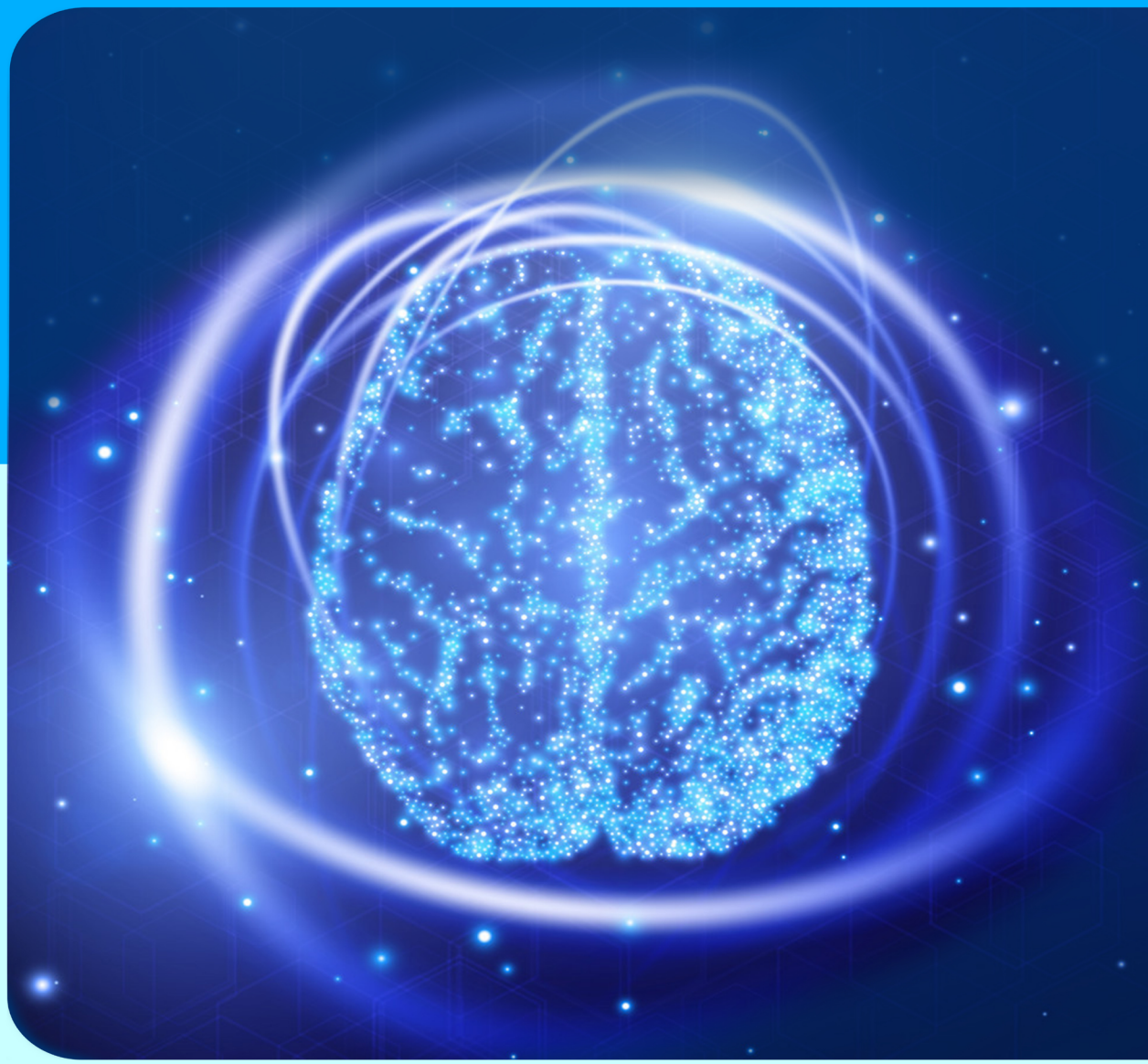
Chronicles of Precision Medical Researchers

Editor in Chief
Resul YILMAZ, Prof. Dr.

ISSN: 2757-6124

VOLUME: 5 ISSUE: 1 YEAR: 2024



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Chronicles of Precision
Medical Researchers

ISSN: 2757-6124

VOLUME 5 ISSUE 1 YEAR 2024
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Chronicles of Precision Medical Researcers.

Prof. Dr. Resul YILMAZ
Address: Selçuk Üniversitesi, Tıp Fakültesi Çocuk Yoğun Bakım Bilim Dalı
Alaeddin Keykubat Yerleşkesi Selçuklu/Konya 42075 Türkiye
Phone: +90 (332) 241 50 00-44513
Fax: +90 (332) 241 21 84
e-mail: chronpmr@yandex.com
web: http://www.chronpmr.com

Publisher: MediHealth Academy Publishing

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ISSN: 2757-6124

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INSTRUCTIONS FOR AUTHORS

AIM AND SCOPE

The Journal will not consider manuscripts any that have been published elsewhere, or manuscripts that are being considered for another publication, or are in press. Studies previously announced in the congresses are accepted if this condition is stated. If any part of a manuscript by the same author(s) contains any information that was previously published, a reprint or a copy of the previous article should be submitted to the Editorial Office with an explanation by the authors

A technical review is performed to confirm that all of the required documentation has been submitted and to conduct a preliminary evaluation of the manuscript and supplementary files to assess suitability for the Journal. The manuscript will be returned to the Author in the event of any deficiency.

Chronicles of Precision Medical Researchers operates a blind review process. Contributions deemed suitable are then typically sent to a minimum of two independent expert reviewers in the field of study to assess the scientific quality of the paper.

The Editor/Editors are responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. If necessary, author(s) may be invited to submit a revised version of the manuscript. This invitation does not imply that the manuscript will be accepted for publication. Revised manuscripts must be sent to the Editorial Office within 4 (four) weeks, otherwise they will be considered as a new application. The corresponding author will be notified of the decision to accept or reject the manuscript for publication.

Statements and suggestions published in manuscripts are the authors' responsibility and do not reflect the opinions of the Editor, Associate Editors and the Editorial Board members.

The manuscript will not be returned to the authors whether the article is accepted or not. Copyright fee is not paid for the articles published in the journal. A copy of the journal will be sent to the corresponding author.

Language of the Journal

The official languages of the Journal are Turkish and English. The manuscripts that are written in Turkish have abstracts in English, which makes the abstracts available to a broader audience.

Authorship Criteria

After accepted for publication, all the authors will be asked to sign "Coyright Transfer Form" which states the following: " This work is not under active consideration for publication, has not been accepted for publication, nor has it been published, in full or in part (except in abstract form). I confirm that the study has been approved by the ethics committee. " All authors should agree to the conditions outlined in the form.

Chronicles of Precision Medical Researchers has agreed to use the standards of the International Committee of Medical Journal Editors. The author(s) should meet the criteria for authorship according to the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication. It is available at www.icmje.org.

Ethical Responsibility

The protocol of clinical research articles must be approved by the Ethics Committee.

In all studies conducted on humans, the "Material and Method" section was approved by the relevant committee or the Helsinki Declaration of Principles (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/).

It should be stated in the text that all persons included in the study signed the am Informed Consent Form ".

The articles submitted to the Chronicles of Precision Medical Researchers will be deemed to have been conducted in accordance with the Helsinki Declaration of Principles, and have received ethical and legal permissions and will not be held responsible.

If the "Animal" item was used in the study, the authors stated that in the Material and Method section of the article, they protect the animal rights in their studies in accordance with the principles of Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) and that they have received approval from the ethics committees of their institutions. must specify.

In case reports, Informed Consent a should be obtained from patients regardless of the identity of the patient.

If the article includes the institution (directly or indirectly) providing financial support for the commercial connection or work, the authors; the commercial product used, the drug, the company has no commercial relationship with, or if there is any relationship (consultant, other agreements, etc.), the editor must inform the presentation page.

If Ethics Committee Approval is required in the article; the received document should be sent with the article.

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The manuscript should be submitted to the Academic Plagiarism Prevention Program by the authors.

It is the authors' responsibility to ensure that the article complies with the ethical rules.

Policy of Screening for Plagiarism

The manuscripts are scanned by the Journal using the iThenticate program for determination of plagiarism and non-ethical situations. Chronicles of Precision Medical Researchers will immediately reject manuscripts leading to plagiarism.

TYPES OF MANUSCRIPT

Manuscripts should be submitted online via www.chronpmr.com

Original Articles should not exceed 3000 words and should be arranged under the headings of Abstract (not more than 300 words), Introduction, Materials and Methods, Results, Discussion, Conclusion and References.

Case Reports should not exceed 1000 words and 10 references, and should be arranged as follows: Abstract, Introduction, Case Report, Discussion and References. It may be accompanied by only one figure or table.

Letter to the Editor should not exceed 500 words. Short relevant comments on medical and scientific issues, particularly controversies, having no more than five references and one table or figure are encouraged. Where letters refer to an earlier published paper, authors will be offered right of reply.

Reviews are not accepted unless written on the invitation of the Editorial Board.

PREPARATION OF MANUSCRIPTS

All articles submitted to the Journal must comply with the following instructions:

a) Submissions should be doubled-spaced and typed in Arial 10 points.

b) All pages should be numbered consecutively in the top right-hand corner, beginning with the title page.

c) The title page should not include the names and institutions of the authors.

d) The manuscript should be presented in the following order: Title page, Abstract (English, Turkish), Keywords (English, Turkish), Introduction, Materials and Methods, Results, Discussion, Conclusion, Acknowledgements (if present), References, Figure Legends, Tables (each table, complete with title and foot-notes, on a separate page) and Appendices (if present) presented each on a separate page.

Title

The title should be short, easy to understand and must define the contents of the article.

Abstract

Abstract should be in both English and Turkish and should consist "Aim, Materials and Methods, Results and Conclusion". The purpose of the study, the setting for the study, the subjects, the treatment or intervention, principal outcomes measured, the type of statistical analysis and the outcome of the study should be stated in this section (up to 300 words). Abstract should not include reference. No abstract is required for the letters to the Editor.

Keywords

Not more than five keywords in order of importance for indexing purposes should be supplied below the abstract and should be selected from Index Medicus Medical Subject Headings (MeSH), available at www.nlm.nih.gov/meshhome.html.

Text

Authors should use subheadings to divide sections regarding the type of the manuscript as described above. Statistical methods used should be specified in the Materials and Methods section.

References

In the text, references should be cited using Arabic numerals in parenthesis in the order in which they appear. If cited only in tables or figure legends, they should be numbered according to the first identification of the table or figure in the text. Names of the journals should be abbreviated in the style used in Index Medicus. The names of all authors should be cited when there are six or fewer; when seven or more, the first three should be followed by et al. The issue and volume numbers of the referenced journal should be added.

References should be listed in the following form:

Journal article

Teke Z, Kabay B, Aytekin FO et al. Pyrrolidine dithiocarbamate prevents 60 minutes of warm mesenteric ischemia/reperfusion injury in rats. Am J Surg 2007;194(6):255-62.

Supplement

Solca M. Acute pain management: Unmet needs and new advances in pain management. Eur J Anaesthesiol 2002; 19(Suppl 25): 3-10.

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Online article not yet published in an issue

Butterly SJ, Pillans P, Horn B, Miles R, Sturtevant J. Off-label use of rituximab in a tertiary Queensland hospital. Intern Med J doi: 10.1111/j.1445-5994.2009.01988.x

Book

Sample1: Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

Sample 2: Sümbüloğlu K, Akdağ B. Regresyon Yöntemleri ve Korelasyon Analizi. Hatiboğlu Yayınevi: Ankara; 2007.

Chapter in a book

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. I n: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93113.

Journal article on the Internet

Abood S. Quality improvement initiative in nursing homes: The ANA acts in an advisory role. Am J Nurs [serial on the Internet] 2002 [cited 12 Aug 2002]; 102. Available from: www.nursingworld.org/AJN/2002/june/wawatch.htm

Website

Cancer-pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources [updated 16 May 2002; cited 9 Jul 2002]. Available from: www.cancer-pain.org

An organization as an author

The Intensive Care Society of Australia and New Zealand. Mechanical ventilation strategy in ARDS: Guidelines. Int Care J Aust 1996;164:282-4.

Acknowledgements

The source of financial grants and the contribution of colleagues or institutions should be acknowledged.

Tables

Tables should be complementary, but not duplicate information contained in the text. Tables should be numbered consecutively in Arabic numbers, with a descriptive, self-explanatory title above the table. All abbreviations should be explained in a footnote. Footnotes should be designated by symbols in the following order: *,†, ‡, §, ¶.

Figures

All illustrations (including line drawings and photographs) are classified as figures. Figures must be added to the system as separate .jpg or .gif files (approximately 500x400 pixels, 8 cm in width and at least 300 dpi resolution). Figures should be numbered consecutively in Arabic numbers and should be cited in parenthesis in consecutive order in the text.

Figure Legends

Legends should be self-explanatory and positioned on a separate page. The legend should incorporate definitions of any symbols used and all abbreviations and units of measurements should be explained. A letter should be provided stating copyright authorization if figures have been reproduced from another source.

Measurements and Abbreviations

All measurements must be given in metric system (Système International d'Unités, SI). Example: mg/kg, µg/kg, mL, mL/kg, mL/kg/h, mL/kg/min, L/min, mmHg, etc. Statistics and measurements should always be given in numerals, except where the number begins a sentence. When a number does not refer to a unit of measurement, it is spelt out, except where the number is greater than nine.

Abbreviations that are used should be defined in parenthesis where the full word is first mentioned. Some common abbreviations can be used, such as iv, im, po, and sc.

Drugs should be referred to by their generic names, rather than brand names.

Editorial Correspondence

Prof. Dr. Resul YILMAZ
Selçuk Üniversitesi, Tıp Fakültesi
Çocuk Yoğun Bakım Bilim Dalı
Alaeddin Keykubat Yerleşkesi Selçuklu/Konya 42075 Türkiye
Phone: +90 (332) 241 50 00-44513
Faks: +90 (332) 241 21 84

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Checklist for Manuscripts

Review guide for authors and instructions for submitting manuscripts through the electronic submission, website at

http://www.chronpmr.com

ISSN: 2757-6124

Chronicles of Precision Medical Researchers

YAZARLARA BİLGİ

AMAÇ ve KAPSAM

Chronicles of Precision Medical Researchers Dergisi, dört ayda bir yayımlanır ve üç sayı ile bir cilt tamamlanır. Dergi; pediatri ile ilgili tüm nitelikli klinik ve deneysel araştırmaları, olgu sunumlarını ve editöre mektupları yayımlar.

Chronicles of Precision Medical Researchers Dergisi, bilimsel yayınlara açık erişim sağlar. Dergi basımından hemen sonra, makalelerin tam metinlerine ücretsiz ulaşılabilir.

Dergide yayımlanmak üzere gönderilen yazıların daha önce başka bir yerde yayımlanmamış veya yayımlanmak üzere gönderilmemiş olması gerekir. Daha önce kongrelerde sunulmuş çalışmalar, bu durum belirtilmek koşuluyla kabul edilir. Makale, yazar(lar) ın daha önce yayımlanmış bir yazısındaki konuların bir kısmını içeriyorsa bu durum belirtilmeli ve yeni yazı ile birlikte önceki makalenin bir kopyası da Yayın Bürosu'na gönderilmelidir.

Gerekli tüm belgelerin sunulduğunu teyit etmek ve dergiye uygunluğunu değerlendirmek için makale ve ek dosyaların ön değerlendirmesini yapmak üzere teknik bir inceleme yapılır. Herhangi bir eksiklik olması halinde makale yazara iade edilecektir. Chronicles of Precision Medical Researchers Dergisi kör bir inceleme süreci yürütmektedir. Uygun görülen yazılar daha sonra makalenin bilimsel kalitesini değerlendirmek için çalışma alanında en az iki bağımsız uzmana gönderilir. Editör / Editörler makalelerin kabulü veya reddi ile ilgili nihai karardan sorumludur.

Editörün kararı kesindir. Gerekli olduğu durumlarda, yazar(lar) dan düzeltme istenebilir. Yazardan düzeltme istenmesi, yazının yayımlanacağı anlamına gelmez. Bu düzeltmelerin en geç 21 gün içinde tamamlanıp dergiye gönderilmesi gereklidir. Aksi halde yeni başvuru olarak değerlendirilir. Sorumlu yazara yazının kabul veya reddedildiğine dair bilgi verilir.

Dergide yayımlanan yazıların etik, bilimsel ve hukuki sorumluluğu yazar(lar)a ait olup Editör, Editör Yardımcısı ve Yayın Kurulu'nun görüşlerini yansıtmaz.

Dergide yayımlanması kabul edilse de edilmese de, yazı materyali yazarlara geri verilmez. Dergide yayımlanan yazılar için telif hakkı ödenmez. Bir adet dergi, sorumlu yazara gönderilir.

Derginin Yazı Dili

Derginin yazı dili Türkçe ve İngilizcedir. Dili Türkçe olan yazılar, İngilizce özetleri ile yer alır. Yazının hazırlanması sırasında, Türkçe kelimeler için Türk Dil Kurumundan (www.tdk.gov.tr), teknik terimler için Türk Tıp Terminolojisinden (www.tipterimleri.com) yararlanılabilir.

Yazarlık Kriterleri

Dergide yayınlanması uygun bulunan tüm yazıların araştırma ve yayın etiğine uygun hazırlandığı, varsa sağlanan fonun kaynağının tanımlandığı, başka yerde yayımlanmadığı veya yayımlanmak üzere gönderilmediği, çalışmaya katılan tüm yazarlar tarafından yazının son halinin onaylandığı, yayımlanacak yazı ile ilgili telif haklarının dergiye devredildiği, tüm yazarların imzaları ile "Yayın Hakkı Devir Formu"nda belirtilmesi gerekir.

Chronicles of Precision Medical Researchers Dergisi, Uluslararası Tıp Dergileri Editörleri Kurulu'nun (International Committee of Medical Journal Editors) "Biyomedikal Dergilere Gönderilen Makalelerin Uyması Gereken Standartlar: Biyomedikal Yayınların Yazımı ve Baskıya Hazırlanması (Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication)" standartlarını kullanmayı kabul etmektedir. Bu konudaki bilgiye www.icmje.org adresinden ulaşılabilir.

Etik Sorumluluk

Etik Sorumluluk / Kurallar: Klinik araştırma makalelerinin protokolü Etik Komitesi tarafından onaylanmış olmalıdır.

İnsanlar üzerinde yapılan tüm çalışmalarda "Gereç ve Yöntem" bölümünde çalışmanın ilgili komite tarafından onaylandığı veya çalışmanın Helsinki İlkeler Deklarasyonu'na (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/) uyularak gerçekleştirildiğine dair bir cümle yer almalıdır.

Çalışmaya dahil edilen tüm kişilerin Bilgilendirilmiş Onam Formu'nu imzaladığı metin içinde belirtilmelidir.

Chronicles of Precision Medical Researchers Dergisi'ne gönderilen makalelerdeki çalışmaların Helsinki İlkeler Deklarasyonu'na uygun olarak yapıldığı, kurumsal etik ve yasal izinlerin alındığı varsayılacak ve bu konuda sorumluluk kabul edilmeyecektir.

Çalışmada "Hayvan" öğesi kullanılmış ise yazarlar, makalenin Gereç ve Yöntem bölümünde hayvan haklarını Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) prensipleri doğrultusunda koruduklarını, çalışmalarında ve kurumlarının etik kurullarından onay aldıklarını belirtmek zorundadır.

Olgu sunumlarında hastanın kimliğinin ortaya çıkmasına bakılmaksızın hastalardan "Bilgilendirilmiş rıza" alınmalıdır.

Makalede ticari bağlantı veya çalışma için maddi destek veren kurum (doğrudan veya dolaylı) mevcut ise yazarlar; kullanılan ticari ürün, ilaç, firma ile ticari hiçbir ilişkisinin olmadığını veya varsa nasıl bir ilişkisinin olduğunu (konsültan, diğer anlaşmalar vs.), editöre sunum sayfasında bildirmek zorundadır.

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Makalede Etik Kurul Onayı alınması gerekli ise; alınan belge makale ile birlikte gönderilmelidir.

Makale yazarlar tarafından akademik intihal önleme programından geçirilmelidir.

Makalenin etik kurallara uygunluğu yazarların sorumluluğundadır.

İntihal Taraması Politikası

Makaleler, intihal ve etik olmayan durumların belirlenmesi için iThenticate programı kullanılarak Journal tarafından taranır. Chronicles of Precision Medical Researchers Dergisi intihallere yol açan makaleleri derhal reddedecektir.

YAZI TÜRLERİ

Yazılar, elektronik ortamda www.chronpmr.com adresine gönderilir.

Orijinal makaleler, 3000 sözcük sayısını aşmamalı, "Öz (en fazla 300 kelime), Giriş, Gereç ve Yöntem, Bulgular, Tartışma, Sonuç, Kaynaklar" bölümlerinden oluşmalıdır.

Olgu Sunumu, "Öz, Giriş, Olgu Sunumu, Tartışma, Kaynaklar" şeklinde düzenlenmelidir. En fazla 1000 sözcük ile sınırlıdır. Sadece bir tablo veya şekil ile desteklenebilir.

Editöre Mektup, yayımlanan metinlerle veya mesleki konularla ilgili olarak 500 sözcüğü aşmayan ve beş kaynak ile bir tablo veya şekil içerecek şekilde yazılabilir. Ayrıca daha önce dergide yayınlanmış metinlerle ilişkili mektuplara cevap hakkı verilir.

Yayın Kurulu'nun daveti üzerine yazılanlar dışında derleme kabul edilmez.

MAKALENİN HAZIRLANMASI

Dergide yayınlanması istenilen yazı için aşağıdaki kurallara uyulmalıdır.

a) Yazı; iki satır aralıklı olarak, Arial 10 punto ile yazılmalıdır.
b) Sayfalar başlık sayfasından başlamak üzere, sağ üst köşesinde numaralandırılmalıdır.
c) Online makale sistemine yüklenen word dosyasının başlık sayfasında (makalenin adını içeren başlık sayfası), yazarlara ait isim ve kurum bilgileri yer almamalıdır.
d) Makale, şu bölümleri içermelidir: Her biri ayrı sayfada yazılmak üzere; Türkçe ve İngilizce Başlık Sayfası, Öz, Abstract, Anahtar Sözcükler, Keywords, Giriş, Gereç ve Yöntem, Bulgular, Tartışma, Sonuç, Açıklamalar (varsa), Kaynaklar, Şekil Alt Yazıları, Tablolar (başlıkları ve açıklamalarıyla beraber), Ekler (varsa).

Yazının Başlığı

Kısa, kolay anlaşılır ve yazının içeriğini tanımlar özellikte olmalıdır.

Özetler

Türkçe (Öz) ve İngilizce (Abstract) olarak yazılmalı, Amaç, Gereç ve Yöntem, Bulgular ve Sonuç (Aim, Materials and Methods, Results, Conclusion) olmak üzere dört bölümden oluşmalı, en fazla 300 sözcük içermelidir. Araştırmanın amacı, yapılan işlemler, gözlemsel ve analitik yöntemler, temel bulgular ve ana sonuçlar belirtilmelidir. Özette kaynak kullanılmamalıdır. Editöre mektup için özet gerekmemektedir.

Anahtar Sözcükler

Türkçe Öz ve İngilizce Abstract bölümünün sonunda, Anahtar Sözcükler ve Keywords başlığı altında, bilimsel yazının ana başlıklarını yakalayan, Index Medicus Medical Subject Headings (MeSH)'e uygun olarak yazılmış en fazla beş anahtar sözcük olmalıdır. Anahtar sözcüklerin, Türkiye Bilim Terimleri'nden (www.bilimterimleri.com) seçilmesine özen gösterilmelidir.

Metin

Yazı metni, yazının türüne göre yukarıda tanımlanan bölümlerden oluşmalıdır. Uygulanan istatistiksel yöntem, Gereç ve Yöntem bölümünde belirtilmelidir.

Kaynaklar

Chronicles of Precision Medical Researchers Dergisi, Türkçe kaynaklardan yararlanmaya özel önem verdiğini belirtir ve yazarların bu konuda duyarlı olmasını bekler.

Kaynaklar metinde yer aldıkları sırayla, cümle içinde atıfta bulunulan ad veya özelliği belirten kelimenin hemen bittiği yerde ya da cümle bitiminde noktadan önce parantez içinde Arabik rakamlarla numaralandırılmalıdır. Metinde, tablolarda ve şekil alt yazılarında kaynaklar, parantez içinde Arabik numaralarla nitelendirilir. Sadece tablo veya şekil alt yazılarında kullanılan kaynaklar, tablo ya da şeklin metindeki ilk yer aldığı sıraya uygun olarak numaralandırılmalıdır. Dergi başlıkları, Index Medicus'ta kullanılan tarza uygun olarak kısaltılmalıdır. Kısaltılmış yazar ve dergi adlarından sonra nokta olmamalıdır. Yazar sayısı altı veya daha az olan kaynaklarda tüm yazarların adı yazılmalı, yedi veya daha fazla olan kaynaklarda ise üç yazar adından sonra et al. veya ve ark. yazılmalıdır. Kaynak gösterilen derginin sayı ve cilt numarası mutlaka yazılmalıdır.

Kaynaklar, yazının alındığı dilde ve aşağıdaki örneklerde görüldüğü şekilde düzenlenmelidir.

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Dergilerdeki yazılar

Teke Z, Kabay B, Aytekin FO et al. Pyrrolidine dithiocarbamate prevents 60 minutes of warm mesenteric ischemia/reperfusion injury in rats. Am J Surg 2007;194(6):255-62.

Ek sayı (Supplement)

Solca M. Acute pain management: Unmet needs and new advances in pain management. Eur J Anaesthesiol 2002;19(Suppl 25):3-10.

Henüz yayınlanmamış online makale

Butterly SJ, Pillans P, Horn B, Miles R, Sturtevant J. Off-label use of rituximab in a tertiary Queensland hospital. Intern Med J doi: 10.1111/j.1445-5994.2009.01988.x

Kitap

Örnek 1: Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.
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Kitap bölümü

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. I n: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93113.

İnternet makalesi

Abood S. Quality improvement initiative in nursing homes: The ANA acts in an advisory role. Am J Nurs [serial on the Internet] 2002 [cited 12 Aug 2002]; 102. Available from: www.nursingworld.org/AJN/2002/june/wawatch.htm

Web Sitesi

Cancer-pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources [updated 16 May 2002; cited 9 July 2002]. Available from: www.cancer-pain.org

Yazar olarak bir kuruluş

The Intensive Care Society of Australia and New Zealand. Mechanical ventilation strategy in ARDS: Guidelines. Int Care J Aust 1996;164:282-4.

Açıklamalar

Varsa finansal kaynaklar, katkı sağlayan kurum, kuruluş ve kişiler bu bölümde belirtilmelidir.

Tablolar

Tablolar metni tamamlayıcı olmalı, metin içerisinde tekrarlanan bilgiler içermemelidir. Metinde yer alma sıralarına göre Arabik sayılarla numaralandırılıp tablonun üstüne kısa ve açıklayıcı bir başlık yazılmalıdır. Tabloda yer alan kısaltmalar, tablonun hemen altında açıklanmalıdır. Dipnotlarda sırasıyla şu semboller kullanılabilir: *, †, ‡, §, ¶.

Şekiller

Şekil, resim, grafik ve fotoğrafların tümü "Şekil" olarak adlandırılmalı ve ayrı birer .jpg veya .gif dosyası olarak (yaklaşık 500x400 piksel, 8 cm eninde ve en az 300 dpi çözünürlükte) sisteme eklenmelidir. Şekiller metin içinde kullanım sıralarına göre Arabik rakamla numaralandırılmalı ve metinde parantez içinde gösterilmelidir.

Şekil Alt Yazıları

Şekil alt yazıları, her biri ayrı bir sayfadan başlayarak, şekillere karşılık gelen Arabik rakamlarla çift aralıklı olarak yazılmalıdır. Şeklin belirli bölümlerini işaret eden sembol, ok veya harfler kullanıldığında bunlar alt yazıda açıklanmalıdır. Başka yerde yayınlanmış olan şekiller kullanıldığında, yazarın bu konuda izin almış olması ve bunu belgelemesi gerekir.

Ölçümler ve Kısaltmalar

Tüm ölçümler metrik sisteme (Uluslararası Birimler Sistemi, SI) göre yazılmalıdır. Örnek: mg/kg, µg/kg, mL, mL/kg, mL/kg/h, mL/kg/min, L/min, mmHg, vb. Ölçümler ve istatistiksel veriler, cümle başında olmadıkları sürece rakamla belirtilmelidir. Herhangi bir birimi ifade etmeyen ve dokuzdan küçük sayılar yazı ile yazılmalıdır.

Metin içindeki kısaltmalar, ilk kullanıldıkları yerde parantez içinde açıklanmalıdır. Bazı sık kullanılan kısaltmalar; iv, im, po ve sc şeklinde yazılabilir.

İlaçların yazımında jenerik isimleri kullanılmalıdır.

İletişim

Prof. Dr. Resul YILMAZ
Selçuk Üniversitesi, Tıp Fakültesi Çocuk Yoğun Bakım Bilim Dalı
Alaeddin Keykubat Yerleşkesi Selçuklu/Konya 42075 Türkiye
Tel: +90 (332) 241 50 00-44513
Faks: +90 (332) 241 21 84

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ISSN: 2757-6124

Chronicles of Precision Medical Researchers

VOLUME 5 ISSUE 1 YEAR 2024

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Chron Precis Med Res 2024; 5(1): 1-6
DOI: 10.5281/zenodo.10885992

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Knowledge and Opinions of Consultant and Resident Anesthesiologists on the Features and Use of Defibrillators and Automatic External Defibrillators: A Cross-Sectional Survey Study in Türkiye

Anesteziyoloji ve Reanimasyon Uzman ve Uzmanlık Öğrencilerinin (Asistanlarının) Manuel ve Otomatik Eksternal Defibrilatörler Hakkındaki Bilgi ve Görüşleri ile Deneyimleri: Kesitsel Bir Araştırma

Yeşim Andıran Şenaylı[1], Tuğba Aşkın[2], Gül Baytan[3]

[1]Yozgat Bozok University, Faculty of Medicine, Department of Anesthesiology and Reanimation, Yozgat, Turkey
[2]Dr. Abdurrahman Yurtarslan Training and Resarch Hospital, Ankara,Turkey
[3]Ankara, Turkey

ABSTRACT

Aim: When there is a rhythm like ventricular fibrillation or pulseless ventricular tachycardia, prompt and effective defibrillation is the critical intervention in cardiac arrest. Therefore, knowing what to do and being familiar with the instruments used for this purpose is vital. The present study aimed to investigate the possibility of insufficient knowledge and opinions of consultant and resident anesthesiologists about defibrillators and to put forward constructive proposals for reforming, if necessary.

Material and Method: This cross-sectional survey study included consultant and resident anesthesiologists. We sent questionnaires to 467 anesthesiologists via e-mail. The questionnaire included demographics, working status, duration, residency institution, workplace, experience with the defibrillator and automated external defibrillator (AED), previous cardiopulmonary resuscitation (CPR) training, and technical knowledge of defibrillators &AEDs.

Results: Three hundred and forty (72.8%) anesthesiologists filled out the questionnaires. Their mean age was 38.3±8.3 years. Twenty-five percent of them were residents. Of the anesthesiologists, 325(95.6%) used a defibrillator, 129(37.9%) witnessed out-hospital cardiac arrest, 69(20.3%) used AEDs, and 216(63.5%) attended CPR courses. There are significant differences in opinions and knowledge of anesthesiologists about defibrillator/defibrillation when compared to working duration, workplace, being a consultant, and having a previous CPR course.

Conclusion: Experience and information about defibrillators among anesthesiologists seem to be lacking. Continuous retraining through the guidelines can be considered as a possible updating method.

Keywords: Cardiac arrest, ventricular fibrillation, pulseless ventricular tachycardia, defibrillation, automatic external defibrillation

ÖZ

Amaç: Kardiyak aresttе ventriküler fibrilasyon veya nabızsız ventriküler taşıkardi gibi bir ritim olduğunda hızlı ve etkili defibrilasyon kalp durmasında kritik bir müdahaledir. Bu nedenle nasıl defibrilasyon ayapılacağını bilmek ve bu amaç için kullanılan ekipmanlara aşina olmak hayati öneme sahiptir. Bu çalışmada, olasılığını araştırmayı amaçladı. Anesteziyoloji ve reanimasyon uzman ve asistanların bilgi ve görüşlerinin yetersiz olması olasılığını ve gerekirse yapıcı öneriler geliştirmeyi amaçladık.

Gereç ve Yöntem: Bu kesitsel araştırmada, ülkemizdeki 467 anesteziyoloji ve reanimasyon uzman ve asistanlarına e-posta ile çalışma anketi ulaştırıldı. Ankette demografik bilgiler, mesleki süre, çalıştıkları kurum, önceki kardiyopulmoner resüsitasyon (KPR) eğitimi ile manuel defibrilatör ve otomatik eksternal defibrilatör (OED) hakkında teknik bilgiler ve deneyimler soruldu.

Bulgular: Üç yüz kırk (%72,8) anestezist ankete katıldı. Katılımcıların ortalama yaşları 38,3±8,3 yıl idi. Bunların yüzde yirmi beşi asistan idi. Anestezi uzmanlarından,325'i (%95,6) defibrilatör kullanmış, 129'u (%37,9) hastane dışı kardiyak areste tanık olmuş, 69'u (%20,3) OED kullanmış ve 216'sı (%63,5) KPR kurslarına katılmış idi. Çalışma süreleri ve yerleri, uzman olmaları, KPR kursu almış olmaları karşılaştırıldığında anestezi hekimlerinin defibrilatör/defibrilasyon konusundaki görüş ve bilgilerinde ciddi farklar vardır.

Sonuç: Defibrilatörlerle ilgili deneyim ve bilgiler anestezistler arasında eksik gibi görünmektedir. Kılavuzlar aracılığıyla sürekli ve yeniden eğitimlerin verilmesi olası bir güncelleme yöntemi olarak düşünülebilir.

Anahtar Kelimeler: Kardiyak arest, ventriküler fibrilasyon, nabızsız ventriküler taşikardi, defibrilasyon, otomatik eksternal defibrilasyon

Corresponding Author: Yeşim Andiran Şenayli
Address: Yozgat Bozok University School of Medicine Department of Anesthesiology and Reanimation, Yozgat, Turkey
E-mail: yesimsenayli@gmail.com

Başvuru Tarihi/Received: 04.11.2023
Kabul Tarihi/Accepted: 23.02.2024

INTRODUCTION

Sudden cardiac arrest is a significant health problem. A substantial percentage of sudden cardiac arrest is witnessed in out-of-hospital settings (1, 2). Survival rates are low in both in-hospital cardiac arrest (IHCA) and out-of-hospital cardiac arrest (OHCA) because survival depends on high-quality cardiopulmonary resuscitation (CPR) (3, 4). The International Consensuses on CPR have emphasized the importance of immediate recognition, early CPR, and early defibrillation as critical elements in survival (5, 6). When there is a rhythm such as ventricular fibrillation or pulseless ventricular tachycardia, prompt and effective defibrillation becomes the essential intervention, especially in adult patients (7).

Defibrillators having different features are available, including automated external defibrillators (AEDs) in public locations for citizen use (8). According to evidence-based data, it is recommended to prefer defibrillators having biphasic shock waveforms and adhesive pads instead of paddles, if possible (9). Innovative programs, coordinated organizational infrastructure, and emergency medical systems are carefully planned (10, 11). As a result, there is a piece of evidence for improvement in survival rates after OHCA, especially if it is due to the life-threatening rhythm (6). AEDs are also considered in hospital settings, especially in areas where staffs have no rhythm recognition skills or defibrillators are used infrequently to decrease collapse to first shock time (12).

The current literature suggests the importance of non-technical skills in high-quality CPR; however, retraining healthcare personnel still does not maintain its significance (13). The 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations has underlined that retraining cycles of 1 to 2 years are inadequate to maintain competence in resuscitation skills (6).

AED use is not very common in Turkiye yet; however, training about AED use has found its place in CPR courses. Legislation and legal infrastructure work for the use and maintenance of AEDs in our country are about to be completed with the efforts of the Turkish Society of Anesthesiology and Reanimation administrators. Anesthesiologists are crucial in training healthcare workers and developing quality standards regarding in-hospital CPR.

In our country, data is still lacking about the knowledge and experience of an anesthesiologist in defibrillators and AED. For this reason, we aimed to investigate the opinions and expertise of consultants and resident anesthesiologists about defibrillator devices in Turkiye to support the existing data and, if possible, to provide availability for strategy planning in training.

METHODS

This study was approved by Dr. Abdurrahman Yurtarslan Training and Resarch Hospital Clinical Research Ethics Committee (Date: 11.06.2015, Decision no: 2015-07/172). We conducted this cross-sectional survey study between 15.9.2015 and 15.03.2016 between consultant and resident anesthesiologists.

After the current literature search, we developed the survey content by consensus and included 23 open-ended and categorical questions. The first part of the questionnaire had demographic characteristics, including age, gender, working statuses of the anesthesiologists as consultants or residents, duration of work, residency institution, and workplace. The second part of the questionnaire included questions about an experience with defibrillator and AED use, previous CPR training, and technical knowledge of defibrillators and AEDs.

We sent questionnaires to 467 anesthesiologists who registered with the Turkish Society of Anesthesiology and Reanimation via e-mail. A reminder e-mail was sent to all anesthesiologists one week after the first e-mailing. Anesthesiologists who filled out the questionnaire were included in the analysis.

Statistical Analysis

Analyses were performed using the Statistical Package for the Social Sciences version 17.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were expressed as mean± standard deviation or median (minimum-maximum) for numerical cut-off variables, while categorical variables were expressed as some participants and percentages. Fisher's exact test was used in cases where the expected frequency was less than 5 in 2×2 cross tables. When the predicted frequency was in the range of 5-25, the Continuity Corrected Chi-Square test was used; and when the expected frequencies were over 25, Pearson's Chi-Square test was used. The likelihood ratio test was used when the standard frequency was less than 5 in at least two eyes in the R×C crosstabs. Otherwise, Pearson's Chi-square test was used. The results were considered statistically significant in the case of $p < 0.05$.

RESULTS

Among 467 anesthesiologists to whom the questionnaires were sent, 340 (72.8%) filled out the questionnaires, and 215 (63.2%) were female. The mean age of the anesthesiologists was 38.3± 8.3 years (range, 25-63 years). Of the anesthesiologists, 25.0% were residents. Demographic characteristics of the anesthesiologists are presented in **Table 1**.

Table 1. Demographic characteristics of the anesthesiologists included in the study

Characteristics	N=340
Age, year, mean± SD (range)	38.3±8.3 (25-63)
Gender, n (%)	
Female	215 (63.2)
Male	125 (36.8)
Resident anesthesiologists, n (%)	85 (25.0)
Working duration, n (%)	
1 year	24 (28.2)
2 years	20 (23.5)
3 years	13 (15.3)
4 years	20 (23.5)
5 years	8 (9.4)
Institution where the training was received, n (%)	
University Hospital	52 (61.2)
Education and Research Hospital	33 (38.8)
Consultant anesthesiologists, n (%)	255 (75.0)
Institution where the training was received, n (%)	
University Hospital	154 (60.4)
Training and Research Hospital	101 (39.6)
Working duration, n (%)	
0-5 years	68 (26.7%)
6-10 years	78 (30.6%)
>10 years	109 (42.7%)
Working place, n (%)	
University Hospital	75 (29.4)
Training and Research Hospital	102 (40.0)
State Hospital	39 (15.3)
Private Hospital	39 (15.3)
Academic position	
Specialist	172 (67.5)
Assistant professor	26 (10.2)
Associated professor	40 (15.7)
Professor	17 (6.7)

SD, standard deviation

Details about previous training about CPR, defibrillator and AED usages are presented in **Table 2**. The result reveals that training for CPR and practical usage of AED is at critically low levels. For residents, these parameters can be accepted as suitable levels. parameters can be accepted as suitable level.

Table 2. Distribution of the anesthesiologists regarding previous cardiopulmonary resuscitation training/course, and defibrillator and automatic external defibrillator use experiences

	Consultant anesthesiologists (n=255) n (%)	Resident anesthesiologists (n=85) n (%)	Total (n=340) n (%)
Having CPR training/course			
Yes	187 (73.3)	29 (34.1)	216 (63.5)
Defibrillator use	251 (98.4)	74 (87.1)	325 (95.6)
Have you ever encountered an OHCA?/Yes	113 (44.3)	16 (18.8)	129 (37.9)
Have you ever seen AED?/Yes	175 (68.6)	40 (47.1)	215 (63.2)
Have you ever used AED?/Yes	65 (25.5)	4 (4.7)	69 (20.3)

CPR, cardiopulmonary resuscitation; OHCA, out-of-hospital cardiac arrest; AED, automatic external defibrillator

The distribution of the anesthesiologists regarding the knowledge about features of defibrillators and AEDs are presented in **Table 3**. In this table, we revealed that biphasic shockwave form, manual mode, paddle type of AED, presence of cardioversion, and OHCA conditions were significantly known by consultants.

Table 3. Distribution of the anesthesiologists in terms of their opinions and knowledge about the use and features of defibrillators and automatic external defibrillators

	Consultant anesthesiologists (n=255) n (%)	Resident anesthesiologists (n=85) n (%)	p value
Defibrillators			
Placement of paddles			
Standard	226 (90.0)	66 (89.2)	>0.999†
Anteroposterior	28 (11.2)	7 (9.5)	0.841†
Bi-axillary	17 (6.8)	1 (1.4)	0.086‡
Shockwave form			
Monophasic	67 (26.3)	30 (35.3)	0.145†
Biphasic	214 (83.9)	62 (72.9)	0.037†
Not known	18 (7.1)	13 (15.3)	0.039†
Mode			
Manual	158 (62.0)	36 (42.4)	0.002¶
Automatic	84 (32.9)	30 (35.3)	0.691¶
Not know	47 (18.4)	27 (31.8)	0.015†
Types of paddles			
Paddle	205 (80.4)	58 (68.2)	0.030†
Adhesive pads	55 (21.6)	17 (20.0)	0.878†
Not know	32 (12.5)	22 (25.9)	0.006†
Pediatric paddles			
Absent	42 (16.5)	16 (18.8)	0.739†
Present	134 (52.5)	36 (42.4)	0.103¶
Not know	79 (31.0)	33 (38.8)	0.183¶
PACE			
Absent	57 (22.4)	20 (23.5)	0.940†
Present	108 (42.4)	30 (35.3)	0.251¶
Not know	90 (35.3)	35 (41.2)	0.330¶
Cardioversion			
Absent	5 (2.0)	7 (8.2)	0.013‡
Present	216 (84.7)	60 (70.6)	0.006†
Not know	34 (13.3)	18 (21.2)	0.117†
AEDs			
Conditions in which AEDs are used			
OHCA	239 (93.7)	69 (81.2)	<0.001†
IHCA	114 (44.7)	29 (34.1)	0.087‡

OHCA, out-of-hospital cardiac arrest; IHCA, in-hospital cardiac arrest AED, automatic external defibrillator, † Continuity corrected Chi-square test, ‡ Fisher's exact test, ¶ Pearson's Chi-square test.

Also, consultants defined best the needs of airport AEDs in **Table 4**. Finally, consultants pointed out nurses, anesthesia technicians, and paramedics can use AED in **Table 4**.

Anesthesiologists' distribution of their opinions and knowledge about the use and features of defibrillators and AEDs for having or not having a CPR course is presented in **Table 5**. In this table, opinions and experiences of the "Having a CPR course before" consultants and residents are most significant in specific parameters, as shown in the table.

Table 4. Distribution of the consultant anesthesiologists according to their working places in terms of their opinions and knowledge about the placement of defibrillators and automatic external defibrillators

	Working places				p value
	University Hospital (n=75) n (%)	Research and Training Hospital (n=102) n (%)	State Hospital (n=39) n (%)	Private Hospital (n=39) n (%)	
AEDs should be placed in					
Airport	75 (100.0)[d,b]	95 (93.1)[a]	37 (94.9)	36 (92.3)[a]	0.032†
Plane	64 (85.3)	83 (81.4)	30 (76.9)	33 (84.6)	0.693‡
Restaurant	43 (57.3)	45 (44.1)	20 (51.3)	16 (41.0)	0.249‡
School	62 (82.7)[d,b]	65 (63.7)[a]	27 (69.2)	25 (64.1)[a]	0.040‡
Apartment	28 (37.3)[d,b]	14 (13.7)[a]	9 (23.1)	5 (12.8)[a]	<0.001‡
Hospital	51 (68.0)	57 (55.9)	19 (48.7)	20 (51.3)	0.148‡
Metro station	72 (96.0)[b,c,d]	84 (82.4)[a]	30 (76.9)[a]	31 (79.5)[a]	0.014‡

OHCA, out-of-hospital cardiac arrest; IHCA, in-hospital cardiac arrest AED, automatic external defibrillator, † probability test, ‡ Pearson's chi-square test, a significantly different from university hospital at p<0.05, b significantly different from training and research hospital at p<0.05, c significantly different from state hospital at p<0.05, d significantly different from private hospital at p<0.05

Table 5. Distribution of the anesthesiologists with respect to having or not having a CPR course before in terms of their opinions and knowledge about the use and features of defibrillators and automatic external defibrillators.

	Having a CPR course before (n=216) n (%)	Not Having a CPR course before (n=124) n (%)	p value
Defibrillators			
Placement of paddles			
Standard	194 (91.1)	98 (87.5)	0.411†
Anteroposterior	25 (11.7)	10 (8.9)	0.557†
Bi-axillary	17 (8.0)	1 (0.9)	0.016†
Shockwave form			
Monophasic	60 (27.8)	37 (29.8)	0.685‡
Biphasic	191 (88.4)	85 (68.5)	<0.001†
Not known	12 (5.6)	19 (15.3)	0.005†
Mode			
Manual	136 (63.0)	58 (46.8)	0.004‡
Automatic	79 (36.6)	35 (28.2)	0.117‡
Not known	36 (16.7)	38 (30.6)	0.003‡
Types of paddles			
Paddle	180 (83.3)	83 (66.9)	<0.001‡
Adhesive pads	50 (23.1)	22 (17.7)	0.240‡
Not known	22 (10.2)	32 (25.8)	<0.001†
Pediatric paddles			
Absent	35 (16.2)	23 (18.5)	0.687†
Present	116 (53.7)	54 (43.5)	0.071‡
Not known	65 (30.1)	47 (37.9)	0.140‡
PACE			
Absent	41 (19.0)	36 (29.0)	0.033‡
Present	105 (48.6)	33 (26.6)	<0.001‡
Not known	70 (32.4)	55 (44.4)	0.028‡
Cardioversion			
Absent	4 (1.9)	8 (6.5)	0.034¶
Present	191 (88.4)	85 (68.5)	<0.001†
Not known	21 (9.7)	31 (25.0)	<0.001†
AEDs			
Conditions in which AEDs are used			
OHCA	201 (93.1)	107 (86.3)	0.062†
IHCA	98 (45.4)	45 (36.3)	0.103‡
Only in adults	12 (5.6)	8 (6.5)	0.921†
Not known	7 (3.2)	14 (11.3)	0.006†
Processes performed by AEDs			
Rhythm analysis	180 (83.3)	84 (67.7)	<0.001‡
Defibrillation	199 (92.1)	101 (81.5)	0.006‡
Chest compression	16 (7.4)	9 (7.3)	>0.999†
Cardioversion	101 (46.8)	63 (50.8)	0.472‡
Not known	5 (2.3)	15 (12.1)	<0.001†

OHCA, out-of-hospital cardiac arrest; IHCA, in-hospital cardiac arrest AED, automatic external defibrillator, † Continuity corrected Chi-square test, ‡ Fisher's exact result Chi-square test, ¶ Pearson's Chi-square test.

DISCUSSION

A physician may witness IHCA or OHCA and be expected to intervene; defibrillation training is essential in medical training. Consultants of anesthesiology and reanimation have a leading role in training healthcare workers about developing and implementing defibrillation standards in hospital settings. The present study's results showed some knowledge gaps about the technical features of defibrillators and AEDs and different opinions on their use.

It was surprising that a critical rate of the consultants stated that they did not know about the mode, paddle or adhesive pad, existence of pediatric paddles, and PACE and cardioversion features of defibrillators. The residents are expected to have less knowledge than the consultants due to less experience and uncompleted training. Studies about CPR conducted with physicians working in different specialties have revealed a difference in understanding of defibrillation and AED, and all of them have underlined the importance of retraining (14-16). The results of the present study showed that prior training differed the expertise and opinions of anesthesiologists about defibrillators and AED features and use. In guidelines, it has also been underlined the importance of retraining healthcare workers to prevent the degradation of CPR skills (6).

Variation among anesthesiologists may partly be related to the lack of standardization of resuscitation care and the CPR committee's existence to improve CPR quality in hospitals. In the US, a nationally representative survey showed that defibrillation standardization is high (88%), but debriefing is low (17). Therefore, institutions increased simulation training to strengthen the quality of CPR in hospitals (17). However, our study did not directly measure the impact of organizational factors or defibrillation standardization in hospitals. On the other hand, organizational factors might have affected the retraining cycle. In another study, higher knowledge and competence of anesthesiologists working in teaching hospitals resulted from more references of critical patients to tertiary care hospitals (16). Consultants

working in teaching hospitals or academic members actively participate in training students and residents, which may affect their knowledge about defibrillation.

The present results might also be related to national practical differences. In our study, the trademarks of the devices were not questioned; therefore, we did not know the technical features of the devices used by anesthesiologists. Our study found adhesive pads to be less used and known, whereas defibrillators are mainly known and used in biphasic shock wave mode. The rare usage and knowledge might have been due to the unavailability of adhesive pads. In a survey conducted among European countries, including Turkiye, there were differences regarding the implementation of resuscitation guidelines. In this guideline, the authors concluded that "there were still countries where adhesive pads were low due to economic and traditional reasons." However, guidelines recommended adhesive pads when bi-phasic defibrillators were used (6, 18).

The principal aim of promoting AED use was to increase survival and to decrease collapse to first shock time under 3 minutes in OHCAs (12, 19). However, AEDs have begun to be recommended in IHCA especially witnessed by staff with no rhythm recognition skills or in areas where defibrillators are not readily available (12). In the present study, a low rate of anesthesiologists agreed that AEDs could be used in IHCA, and the anesthesiologists did not know what AEDs could do except defibrillation. AED programs in hospitals are relatively new and not very common in Turkiye; therefore, the anesthesiologists who participated in the study might not be very experienced in using AEDs. It was shown that the knowledge of younger anesthesiologists about AEDs was better than the elder. Better understanding of young might explain why anesthesiologists who worked more than eleven years did less in some parameters regarding AEDs in our study.

AEDs with voice prompts can be used without training (16). In a recent study, it was found that AED-user-dependent time loss occurred in placing pads in IHCA. This loss could have been decreased if the "chain of advice" of AEDs interrupted first shock time was improved; thereby, the authors concluded that healthcare workers should be trained to use AEDs (20). On the other hand, opinions of the anesthesiologists about where AEDs should be placed and by whom AEDs should be used differed in the present study. Contrary to available literature and recommendations, only 58.2% of the anesthesiologists agreed that everyone could use AEDs.

Optimal public placement strategies have been based on population demographics, building time, mathematical optimization of initial cardiac arrest calls, and novel mathematical modeling approaches (10, 21). On the other hand, there was an evidence-based knowledge gap about optimal public AED deployment strategy (6). Thus, different opinions about AED placement can be expected, which is a more complex issue requiring the teamwork of other experts.

Limitations

The present study has some limitations. First, the ratio of participation in our study was low. Second, as our target population was the registered members of the Turkish Society of Anesthesiology and Reanimation, and as all anesthesiologists in Turkey do not register with this society, the survey results could not be generalized to all anesthesiologists in Turkiye. Third, there was a possibility of bias since those with more knowledge or experience were more likely to respond to the study questionnaire. However, we believe the present study might serve as a guide for developing and implementing training strategies for effective defibrillators.

CONCLUSION

There was a knowledge gap about the features of defibrillators among anesthesiologists. Previous CPR training and working as an academic member significantly differed in knowledge about parts of defibrillators and opinions of the participants about AED use. The residency training program should be re-evaluated regarding defibrillators. Continuous retraining cycles updated through the recommendations of current guidelines should be implemented about defibrillation as a part of CPR in hospitals, not for all healthcare workers but also consultants and residents of anesthesia and resuscitation.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by Dr. Abdurrahman Yurtarslan Training and Resarch Hospital Clinical Research Ethics Committee (Date: 11.06.2015, Decision no: 2015-07/172).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 7-11
DOI: 10.5281/zenodo.10891220

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Evaluation of the Relationship between Vitamin Supplement Use Levels and Diagnoses of Patients Referred to Dermatology Outpatient Clinic

Dermatoloji Polikliniğine Başvuran Hastaların Takviye Vitamin Kullanım Durumları ve Tanıları Arasındaki İlişkinin Değerlendirilmesi

Bahar ÜRÜN ÜNAL[1], Furkan URCAN[1], Cahit YAVUZ[2]

[1]Selcuk University, Faculty of Medicine, Department of Family Medicine, Konya, Turkey
[2]Selcuk University, Faculty of Medicine, Department of Dermatology, Konya, Turkey

ABSTRACT

Aim: The aim of this study was to evaluate vitamin D levels of patients with skin diseases and the effect of vitamin D supplementation on different dermatologic diseases and the complaints caused by these diseases.

Material and Method: The study was conducted on 150 patients aged 15-79 years who applied to the Skin and Venereal Diseases Outpatient Clinic between July and September 2023. In this descriptive and cross-sectional study, a questionnaire consisting of 18 questions was applied.

Results: The mean age of the participants was 37.07±15.95 years and 56.7% (n=85) of these participants were women. Patients over 45 years of age were significantly less likely to use supplements (vitamins, minerals, herbal supplements) compared to other ages. No significant difference was found in the relationship between chronic disease and vitamin D levels. In addition, the deficiency in vitamin D levels of those who did not use supplements was 1.4 times higher than those who did.

Conclusion: New research on vitamin supplementation continues to emerge and is becoming an increasingly important topic. Vitamin D supplementation, which is frequently prescribed by both dermatologists and family physicians and recommended to be used when necessary, has been observed to be important both in our study and in different and large scale studies.

Keywords: Vitamin D supplementation, skin diseases, family medicine

ÖZ

Amaç: Bu çalışmada cilt hastalığı olan hastaların D vitamin düzeyleri ile takviye vitamin kullanımının farklı dermatolojik hastalıklar ve bu hastalıkların yol açtığı şikayetlerin üzerindeki etkisinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Çalışma, Temmuz- Eylül 2023 tarihleri arasında Deri ve Zührevi Hastalıkları Polikliniği'ne başvuran, 15-79 yaş aralığındaki 150 hasta üzerinde yapıldı. Tanımlayıcı ve kesitsel tipte yapılan bu çalışmada 18 sorudan oluşan bir anket uygulandı.

Bulgular: Katılımcıların yaş ortalaması 37,07±15,95 idi ve bu katılımcıların %56,7'(n=85)ini kadınlar oluşturmaktaydı. 45 yaş üzeri hastalarda takviye ürün(vitamin, mineral, bitkisel destek) kullanımının diğer yaşlara göre anlamlı daha az olduğu görüldü. Kronik hastalık ve D vitamini düzeyleri arasındaki ilişkide anlamlı bir fark bulunamadı. Ayrıca, takviye ürün kullanmayanların D vitamini düzeylerindeki eksikliğin, kullananlara göre 1,4 kat daha fazla olduğu görüldü.

Sonuç: Vitamin takviyesi ile ilgili yeni araştırmalar ortaya çıkmaya devam etmektedir ve gün geçtikçe daha önemli bir konu haline gelmektedir. Özellikle hem dermatologlar hem de aile hekimleri tarafından sıkça reçete edilen ve gerektiği durumlarda kullanılması önerilen D vitamini takviyesinin hem bizim çalışmamızda hem de daha farklı ve geniş çaplı çalışmalarda önemli olduğu gözlenmiştir.

Anahtar kelimeler: D vitamini takviyesi, cilt hastalıkları, aile hekimliği

Corresponding Author: Bahar ÜRÜN ÜNAL
Address: Selcuk University, Faculty of Medicine, Department of Family Medicine, Konya, Turkey
E-mail: urunbahar@gmail.com

Başvuru Tarihi/Received: 05.12.2023
Kabul Tarihi/Accepted: 13.03.2024

INTRODUCTION

Vitamins and minerals, both in topical and oral forms, play an important role in the treatment of many dermatological problems. The recent introduction of vitamin D analogs for diseases such as psoriasis and keratinization disorders has led to significant advances in clinical practice (1). This shows that vitamins will be more important in skin diseases in the future. Vitamins are increasingly used therapeutically and prophylactically in the treatment of skin diseases. The fact that vitamins are safe, acceptable and cost-effective enables them to be used as special additives in creams (2).

Vitamin D is important for bone structure and the health of the skin on it. It is synthesized in the skin and is involved in the function of keratinocytes and regulation of calcium and phosphate metabolism. The main cause of vitamin D deficiency is inadequate dietary intake. Decreased endogenous synthesis and insufficient sun exposure in the elderly may also lead to deficiency. Vitamin D synthesis in the epidermis is reduced in diseases that cause epidermis damage and in generalized keratinization disorders. The daily dose requirement is 200 IU from birth to 50 years of age, 400 IU between 51 and 70 years of age, and 600 IU at 71 years of age and above. In the past, vitamin D was marketed as a combined cream to accelerate wound healing in topical creams. The vitamin D analog calcipotriol has been approved by the FDA for use in treatment. Vitamin D appears to be a major factor in the expression of cathelicidin, the substance responsible for the red facial appearance of rosacea. Oral vitamin D supplementation is thought to be protective against skin aging process and skin cancer development (3).

Vitamins, especially vitamin D, are closely related to skin diseases due to their immunomodulatory and anti-inflammatory effects. In the name of preventive medicine, it is of great importance in clinical practice to prevent these diseases as much as possible and to determine the relationship between vitamin use levels and the treatment accordingly. In this study, it was aimed to evaluate the effect of vitamin supplementation on different dermatologic diseases with blood vitamin levels of patients with skin diseases.

MATERIAL AND METHOD

This descriptive and cross-sectional study was conducted on 150 patients aged 15-79 years who applied to the Skin and Venereal Diseases Outpatient Clinic and agreed to participate in the study. After the decision numbered 2023/347 of the Local Ethics Committee dated 18.07.2023, all individuals were informed about the study and a signed informed consent document was obtained from the people participating in the study, and the questionnaire was applied with face-to-face interview technique. The questionnaire form consists of 18 questions that determine the sociodemographic characteristics of the patients, their current diagnoses and reasons for application, if any, how long they have had complaints that will cause the application, whether they have used supplementary vitamins in the last 1 year, if so, how long they have been used, whether the use of supplementary vitamins has a positive effect on the current reason for application and skin disease according to the patients' discourse, and their supplementary vitamin use status. In addition, blood vitamin D test results in the last 1 month, which were available in the hospital system and routinely obtained during outpatient clinic visits of patients, were also evaluated. No extra tests were requested from the patients for the study. Vitamin D levels were based on the levels of vitamin D available in the system requested from the patients during routine controls. Most of the guidelines consider vitamin D levels above 20 ng/ml (50 nmol/L) as adequate, levels between 10 and 20 ng/ml (25-50 nmol/L) as insufficient, and levels below 10 ng/ml (25 nmol/L) as deficiency(4). Therefore, vitamin D levels below 20 ng/ml were considered low.

Statistical Analysis

All data were evaluated using SPSS (Statistical Package for Social Sciences) for Windows 22.0 statistical package program and necessary statistical methods. In statistical analyses, descriptive data were expressed as numbers and percentages. Descriptive statistical methods such as number, arithmetic mean and ratio were used in the evaluation of the data. In comparative analyses, the data were evaluated with the chi-square test. The significance level for comparison tests was taken as $p<0.05$.

RESULTS

The mean age of the participants was 37.07±15.95 years (min:15 years median:33 years max:79 years) and 56.7% (n=85) of these participants were women. The mean age of men was 35.01 years and the mean age of women was 26.45 years. In addition, 42.2% (n=63) of the participants were in the 26-45 age range. Regarding the educational level of the participants in the study, 48.6% (n=73) were university and above. Sociodemographic characteristics of the patients are given in **Table 1**. The comparison of supplement use and knowledge about skin diseases is given in **Table 2**. **Table 3** shows the comparison of vitamin levels according to sociodemographic data. **Table 4** shows the comparison of supplement use status according to sociodemographic data. Patients over 45 years of age were less likely to use supplements compared to other ages and this was found to be statistically significant (p=0.015).There was no statistically significant difference in the relationship between chronic disease and vitamin levels. There was no statistically significant difference between genders in terms of the reason for admission. In addition, vitamin levels were found to be 1.4 times more deficient in those who did not use supplements than in those who did, but there was no statistically significant difference between the two groups. The duration of taking supplements (vitamins, etc.) was mostly between 1 week and 1 month with 39.3%. Among the prescribed drugs, vitamin D was prescribed the most with 64.3%.

Table 1. Information on Sociodemographic Characteristics of Patients

	n	%
Gender		
Male	65	43.3
Female	85	56.7
Age		
Under 25 years old	33	28.6
26-45 years	63	42.2
45 years and older	44	29.2
Education Level		
Primary school and below	18	12.0
Middle and High School	59	39.4
University and above	73	48.6
Profession		
Not working	65	43.4
Public servant	56	37.3
Private sector	29	19.3
Presence of Chronic Disease		
Yes	52	34.7
No	98	65.3
Medication Used		
Yes	84	56.0
No	66	44.0
Prescripted medicine		
Vitamin D	36	64.2
Vitamin B12	16	28.5
Others*	4	7.3
Duration of medication use		
Less than 1 week	7	12.5
1 week to 1 month	22	39.3
1 month to 6 months	23	41.1
Longer than 6 months	4	7.1

*Vitamin C and Zinc

Table 2. Supplement Use Status and Knowledge of Skin Diseases

	n	%
Reason for Application		
Itching	51	34,0
Acne	27	18,0
Wounds on the skin	67	44,7
Hair loss	5	3,3
Skin Problem Duration		
Less than 1 month	31	20,7
1-6 months	36	24,0
More than 6 months	83	55,3
Vitamin D Levels		
Inadequate	91	60,7
Adequate	59	39,3
Were Vitamins Prescribed by a Doctor?		
Yes	55	36,0
No	95	64,0
Supplement use status		
Yes	88	58,7
No	62	41,3
Supplement Product Contents		
Vitamin*	66	79,0
Mineral**	9	10,8
Herbal Support	13	10,2
Do you think there is a relationship between taking vitamin supplements and skin disease?		
Yes	76	50,6
No	74	49,4

*Vitamin D and vitamin B12, **Zinc and Iron etc.

Table 3. Vitamin levels according to sociodemographic data

	Inadequate		Adequate		p value
	n	%	n	%	
Gender					0.412
Male	37	40.7	28	47.5	
Female	54	59.3	31	52.5	
Age					0.504
Under 25 years old	30	33.0	17	28.8	
26-45 years	30	33.0	25	42.4	
45 years and older	31	34.0	17	28.8	
Education Level					0.791
Primary school and below	12	13.2	9	15.3	
Middle and high school	21	23.1	11	18.6	
University and above	58	63.7	39	66.1	
Profession					0.070
Not working	46	50.5	19	32.2	
Public servant	31	34.1	25	42.4	
Private sector	14	15.4	15	25.4	
Skin problem duration					0.055
Less than 1 month	13	14.3	18	30.5	
1-6 months	23	25.3	13	22	
More than 6 months	55	60.4	28	47.5	
Reason for application					0.171
Itching	31	34.1	20	33.9	
Acne	19	20.9	8	13.6	
Wounds on the skin	36	39.6	31	52.5	
Hair loss	5	5.4	0	0	
Presence of chronic disease					0.492
Yes	34	37.4	18	30.5	
No	57	62.6	41	69.5	
Medication used					0.521
Yes	23	26.0	15	24	
No	66	74.0	46	76	
Supplement use status					0.083
Yes	59	64.8	29	49.2	
No	32	35.2	30	50.8	
Supplement product contents					0.314
Vitamin*	42	71.2	24	82.8	
Mineral**	8	13.6	1	3.4	
Herbal Support	9	15.2	4	13.8	
Use of supplements with doctor's advice					0.093
Using	35	59.3	23	79.3	
Not using	24	40.7	6	20.7	
If not used with doctor's advice, whose advice?					0.395
Friend	10	43.5	5	71.4	
Relative	4	17.4	0	0	
Family	3	13.0	0	0	
Pharmacist	6	26.1	2	28.6	
Thinking there is a relationship between supplement use and skin disease					0.333
Yes	49	53.8	27	45.8	
No	42	46.2	32	54.2	
Do you think your skin problems have improved after supplement use? (For Supplement Users)					0.760
Yes	31	50.8	13	44.8	
No	30	49.2	16	55.2	

*Vitamin D and vitamin B12, **Zinc and Iron etc.

Table 4. Supplement use according to sociodemographic data

Use of supplements	Yes		No		P value
	n	%	n	%	
Gender					0.167
Male	34	38.6	31	50	
Female	54	61.4	31	50	
Age					0.015
Under 25 years old	31	35.2	16	25.8	
26-45 Years	37	42	18	29	
45 Years and older	20	22.8	28	45.2	
Presence of chronic disease					0.86
Yes	30	34.1	22	35.5	
No	58	65.9	40	64.5	
Medication used					0.658
Yes	20	24.9	18	27.4	
No	67	76.1	45	72.6	
Education level					0.228
Primary school and below	9	10.2	12	19.4	
Middle and high school	18	26.5	14	22.6	
University and above	61	69.3	36	58.1	
Profession					0.344
Not working	36	41	29	46.8	
Public servant	37	42	19	30.6	
Private sector	15	17	14	22.6	
Skin problem duration					0.945
Less than 1 month	19	21.6	12	19.4	
1-6 months	21	23.9	15	24.2	
More than 6 months	48	54.5	35	56.2	
Reason for application					0.144
Itching	28	31.8	23	37.1	
Acne	21	23.9	6	9.7	
Wounds on the skin	37	42.0	30	48.4	
Hair loss	2	2.3	3	4.8	

DISCUSSION

Decreased vitamin D levels in patients with seborrheic dermatitis and earlier development of seborrheic dermatitis in patients with severe vitamin D deficiency suggest that low vitamin D levels are associated with seborrheic dermatitis. In a study by Akbaş (5) et al. vitamin D levels were found to be low in patients with seborrheic dermatitis. Vitamin D serum concentrations should be kept at normal levels in patients with atopic dermatitis, psoriasis, vitiligo, polymorphous light eruption, mycosis fungoides, alopecia areata, systemic lupus erythematosus and melanoma (6). Because vitamin D levels play an important role in the pathogenesis of these diseases. In a study conducted by Zuhal (7) and coworkers among 40 individuals, it was found that vitamin D levels were low in the Turkish population, but the mean values were lower in patients with onychomycosis. In our study, vitamin D levels were found to be low in patients presenting with skin wounds (dermatitis, rash, etc.), although there was no statistical significance. In a study conducted by Lim (8) and colleagues on 160 people, it was shown that vitamin D deficiency was more common in patients with acne, that this was inversely correlated with disease severity, and that vitamin D deficiency played a potential role in the pathogenesis of acne. Today, there is a need for more studies like this, especially in the use of cosmetic products. In our study, vitamin D levels were deficient in more than 50% of patients presenting with acne, but statistical significance was not found. Therefore, it is clear that there is a need for studies on acne with a larger population and a larger time period.

The findings and results of many studies support that the urticaria population, especially adult chronic urticaria patients, may be at increased risk associated with low serum vitamin D levels. In a meta-analysis of 17 studies by Yaija Li (9) et al., vitamin D supplementation decreased both the severity of urticaria and improved quality of life. In our study, vitamin D levels were found to be low in more than 50% of patients presenting with pruritus (urticaria, etc.).

In a study by Morimoto S (10) and colleagues, an 83-year-old male patient with osteoporosis and long-standing psoriasis was given 1µg/day active Vitamin D3 to treat osteoporosis, and while the treatment was continuing, there was an unexpected regression in the skin lesions of the patient who did not receive any treatment for psoriasis. Thus, the use of vitamin D in the treatment of psoriasis was discovered by chance and entered clinical practice. Vitamin D plays an important role in dermatologic diseases as in almost all diseases. In the dermatologic patient group, 25OHD3 deficiency can be commonly seen especially in inflammatory skin diseases. Among infectious skin diseases, dermatophytoses are most commonly associated with vitamin D deficiency. Hair diseases such as hair loss are also diseases that may be associated with vitamin D deficiency. According to a retrospective evaluation by Çifci (11) et al. on 548 patients, vitamin D affects many skin diseases. Vitamin D levels should be evaluated in dermatologic patients. Considering the relationship between vitamin D and various dermatologic diseases, the present findings suggest that vitamin D deficiency may be an important problem that may lead to serious consequences.

In a study conducted by Öğüş (12) et al. on 4168 patients, it was found that there was a significant difference between vitamin D levels when patients were compared according to gender, age and months. In a study conducted by Türe (13) et al. on 4153 pediatric patients, it was concluded that vitamin D levels varied depending on gender and age. In our study, no significant difference was found between vitamin D levels according to age and gender. The main reason for this may be that the study was conducted in a shorter period of time and in a narrower population of 150 patients.

The reason for the statistically significant lower use of supplements in patients over 45 years of age compared to other ages in our study may be that the supplements used until this age were used with high expectations and were probably not effective enough to meet this expectation for patients due to different factors (such as misuse, intervening infections). It is clear that more data and studies are needed to clarify this situation.

Several dermatologic conditions including vitiligo, aphthous stomatitis, atopic dermatitis and acne have been related to cobalamin excess or deficiency. Pathological conditions where patients have cobalamin excess, such as chronic myelogenous leukaemia and hyperoesinophilic syndrome, can manifest cutaneously. Hyperoesinophilic syndrome may present with eczema erythroderma, lichenification, recurrent urticaria, angioedema and mucosal ulcers. Deficiency in vitamin B12 can manifest as hyperpigmentation, notably in flexural areas, palms, soles and inside the oral cavity. There can also be hair and nail changes, as well as oral changes including glossitis, recurrent ulcers, dysgeusia and stomatitis. Cobalamin deficiency can also be seen in patients with malabsorption, pernicious anaemia, patients with an ileocecal resection and patients receiving protracted therapy with proton-pump inhibitor medications. A 2015 review of vitamin B12 explored the manifestations of vitamin B12 excess, deficiency and the mucocutaneous complications of therapy (14).

Limitations of the Study

For this study, only vitamin D levels could be accessed from the system. These findings and results should be evaluated together with many other parameters. Another limitation is the small number of volunteer patients who participated in our study.

CONCLUSION

New research on vitamin supplementation continues to emerge and is becoming an increasingly important topic. In particular, vitamin D supplementation, which is frequently prescribed by both dermatologists and family physicians and recommended for use when necessary, has been observed to be important both in our study and in different and large-scale studies. The use of vitamin supplements for the prevention and treatment of dermatologic problems needs to be further developed. Larger, multicenter and long-term clinical studies are needed to obtain more efficient results in the use of vitamin supplements, which have become more important with the development of technology and the increase in dermatological problems, and perhaps to prevent dermatological diseases in the future.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by Selcuk University Local Ethics Committee (Date: 18.07.2023, Decision no: 2023/347).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 12-16
DOI: 10.5281/zenodo.10891232

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

The Effect of Homecare on Mortality in Post-operative Hip Fracture Patients

Kalça Kırığı Cerrahisi Sonrası Evde Bakım Hizmetlerinin Mortaliteye Etkisi

Süleyman Kozlu[1], Fırat Yaman[3], Nihat Demirhan Demirkıran[2], Turan Cihan Dulgeroğlu[2], Süleyman Kaan Öner[2]

[1]Orthopaedics and Traumatology, Kütahya Health Sciences University Evliya Çelebi Training and Research Hospital, Kutahya, Turkey
[2]Orthopaedics and Traumatology, Kütahya Heath Sciences University, Kutahya, Turkey
[3]Orthopaedics and Traumatology, Anatolia Hospital, Antalya, Turkey

ABSTRACT

Aim: Hip fractures are an important cause of mortality in the geriatric population. Even if a patient's general condition is good in the post-operative period, mortality is often observed due to complications after patient discharge. This study aimed to investigate the effect of homecare services on mortality after hip fracture surgery.

Material and Method: Between October 2013 and September 2018, a total of 228 patients who underwent surgery for hip fractures were retrospectively reviewed for homecare services follow up documents. Age, type of homecare service, number of homecare visits, whether the patient was healthy or exitus, and the otherwise healthy period after fracture treatment were recorded, and the relationships between these facts were statistically analyzed using the Pearson correlation method.

Results: 82 (43.3%) of 189 patients who did not receive homecare services and 7 (18.9%) of 37 patients who did receive homecare services were recorded as exitus. The average number of homecare visits to patients receiving homecare services was 5.13. There is a strong correlation between the number of homecare visits and post-operative life expectancy ($p< 0.01$). The number of homecare visits reduced the exitus numbers significantly ($p< 0.05$). Both of these correlations were found to be stronger in patients younger than 65 years.

Conclusion: It is thought that the dressing of wounds and mobilization of patients by homecare services personnel can provide early diagnosis of serious complications and can decrease the risk of wound infection and embolism. Routinely planned home care for patients with hip fractures in the post-operative period will have positive effects on both life expectancy and quality of life.

Keywords: Hip fracture, home care, geriatric mortality

ÖZ

Amaç: Kalça kırıkları geriatrik popülasyonda önemli bir ölüm nedenidir. Ameliyat sonrası dönemde hastanın genel durumu iyi olsa bile taburculuk sonrasında gelişen komplikasyonlar nedeniyle sıklıkla mortalite gözlenmektedir. Bu çalışmada kalça kırığı ameliyatı sonrası evde bakım hizmetlerinin mortaliteye etkisinin araştırılması amaçlandı.

Gereç ve Yöntem: Ekim 2013 ile Eylül 2018 tarihleri arasında kalça kırığı nedeniyle ameliyat edilen toplam 228 hastanın evde bakım hizmetleri takip belgeleri geriye dönük olarak incelendi. Yaş, evde bakım hizmeti türü, evde bakıma başvuru sayısı, hastanın sağlıklı olup olmadığı, kırık tedavisi sonrası diğer sağlıklı dönemler kaydedildi ve bu veriler arasındaki ilişkiler Pearson korelasyon yöntemi kullanılarak istatistiksel olarak analiz edildi.

Bulgular: Evde bakım hizmeti almayan 189 hastanın 82'si (%43,3) ve evde bakım hizmeti alan 37 hastanın 7'si (%18,9) çıkış olarak kaydedildi. Evde bakım hizmeti alan hastaların ortalama evde bakım ziyaret sayısı 5,13 oldu. Evde bakıma başvuru sayısı ile ameliyat sonrası yaşam beklentisi arasında güçlü bir ilişki vardır ($p< 0.01$). Evde bakıma başvuru sayısı çıkış sayılarını anlamlı derecede azalttı ($p< 0,05$). Her iki korelasyonun da 65 yaş altı hastalarda daha güçlü olduğu görüldü.

Sonuç: Evde bakım hizmetleri personeli tarafından yaraların pansumanlanması ve hastaların mobilize edilmesinin ciddi komplikasyonların erken teşhisini sağlayabileceği, yara enfeksiyonu ve emboli riskini azaltabileceği düşünülmektedir. Kalça kırığı olan hastaların ameliyat sonrası dönemde rutin olarak planlanan evde bakımı hem yaşam beklentisi hem de yaşam kalitesi üzerinde olumlu etkiler yaratacaktır.

Anahtar Kelimeler: Kalça kırığı, evde bakım, geriatrik mortalite

Corresponding Author: Suleyman Kaan Öner
Address: Department of Orthopaedics and Traumatology, Kutahya Health Sciences University Evliya Celebi Training and Research Hospital, Kutahya, Turkey
E-mail: skaanoner@gmail.com

Başvuru Tarihi/Received: 06.12.2023
Kabul Tarihi/Accepted: 01.03.2024

INTRODUCTION

Hip fractures are among the leading causes of mortality in the elderly population. Presently, mortality rates associated with hip fractures are 37.1% in men and 26.4% in women (1). The highest mortality is observed in the early post-operative period and then the rate decreases gradually (2). In addition, half of the patients who live an active lifestyle before a hip fracture cannot return to their independent lives again ever (3).

Hip fractures include fractures of the proximal femur and are named by the ICD-10 codes: S72.0 (femoral neck fracture), S72.1 (pertrochanteric fracture of the femur), S72.1A (intertrochanteric fracture of the femur), S72.1B (trochanteric fracture of the femur), and S72.2 (subtrochanteric fracture of the femur). Surgical intervention is needed in these fracture types. Decisions about the surgical technique are made by the surgeon according to the patient's age, type of fracture, joint osteoarthritis, bone quality, past activity levels, and the future expectations of the patient.

Complications can be divided into orthopedic and medical complications. Orthopedic complications include dislocations, non-union of the fracture and avascular necrosis, leg-length discrepancy, pain, heterotopic ossification, implant relaxation, nerve injuries, and wound infections (4). Medical complications include deep vein thrombosis, cardiovascular diseases, pulmonary dysfunction (pulmonary edema, pneumonia), urinary tract infection, pressure sores, and delirium. However, serious complications and life-threatening conditions still occur during the post-discharge period, which makes further medical visits vital. In the geriatric population, a long-term hospital stay of patients with good general condition can cause complications such as wound infection, sepsis, and delirium (5,6).

Providing homecare services for wound dressing enables the patient to benefit from other services as well. Besides the wound dressing, general condition assessment, catheter requirements, bed wound control, physical therapy for mobilization, and examinations for general health problems are routinely performed during homecare visits. At the same time, as recommended by the surgeon, having homecare personnel bring the patient to the outpatient clinic may decrease morbidity and mortality.

Homecare services are initiated with the mission of delivering high standard health care for patients in the setting of their own homes. The effectiveness of homecare services and their impact on mortality rates have not been thoroughly evaluated. The main purpose of this study is to compare the post-operative healthy life duration of patients who received homecare services after hip fracture surgery, with those who did not.

MATERIAL AND METHOD

Between October 2013 and September 2018, 228 patients who underwent fracture fixation surgery for proximal femur fractures were retrospectively reviewed. Besides the demographic data of patients, mortality rates, the otherwise healthy period after fracture treatment, homecare referral, and the number of homecare visits were evaluated and statistically analyzed. Mortality rates of patients receiving and not receiving home care were compared. Patients who received homecare services were divided into two groups: below 65 and over 65 years of age. Correlation between mortality rates and homecare visits were also analyzed separately for these subgroups.

RESULT

82 (43.3%) of 189 patients who did not receive homecare services and 7 (18.9%) of 37 patients who did receive homecare services were recorded as exitus. The average number of homecare visits to patients receiving homecare services was 5.13. Demographic data of hip fracture patients receiving and not receiving home care are shown in **Table 1**. Data obtained on patients receiving home care are shown in **Table 2.**

Table 2. Data of the homecare patients.

	Total patients	Total homecare visits	Average homecare visits	Average homecare follow-up time (days)
Home care	37	190	5.13	77.9

There is a strong correlation between the number of homecare visits and post-operative life expectancy ($p<0.01$). The number of homecare visits decreased the number of exitus significantly ($p<0.05$). Both of these correlations were found to be stronger in patients younger than 65 years.

Table 1. Demographic data of hip fracture patients.

Groups	n	Exitus	Exitus %	65 years old	65 years old	General anesthesia	Proximal femur nail	Bipolar endoprosthesis
Received home care	37	7	18.9	21	16	3	6	31
Did not receive home care	189	82	43.3	116	73	18	58	131
Total	228	89	39	137	89	21	64	164

DISCUSSION

The importance of preventive health care is becoming better understood by governments worldwide; thus, these governments reserve a greater financial budget for primary care every year. This foresighted action helps to avoid vast hospital expenses over the shoulders of social security institutions and patients alike.

As Pala et al. stated in their study, preventative services increased the prevalence and awareness of one of the most important medical and public health issues: hypertension. We believe that preventative healthcare services can also help prevent and diagnose post-surgery–related complications (7).

Çopuroğlu et al. found that in a study conducted on 923 patients with hip fractures between 2000 and 2009, the incidence of hip fractures increases every year. Also, the average age of patients diagnosed with hip fractures rises annually (8). Obviously, as the average life expectancy increases, hip fractures will continue to be an elderly care problem worldwide. The number of hip fractures throughout the world by the year 2050 is expected to be 6.3 million (9-11).

A homecare visit for wound dressing and mobilization provides a chance for patients to be evaluated by a healthcare professional, which can lead to intervention in the early period of any possible complication. In a 2006 study by Sahlen et al., researchers investigated whether preventive homecare visits postpone mortality. Outcomes indicated that mortality is altered by preventive homecare visits. Plus, many senior participants described visits provided a certain sense of security and a feeling of importance. They also reported improved overall healthiness over the course of the visits (12). This also shows the positive psychological effects of home care. However, these positive outcomes are achieved only as long as visits are continued systematically and regularly.

Homecare services have developed in recent years and have become a comprehensive and high-quality service in Turkey. Services provided by homecare professionals are listed below (**Table 3**) (13,14)

Fast-track surgery has been a hot topic in recent years. Its main target is to operate on the patient within 24 hours of admission, achieving a quick post-operative mobilization, providing adequate nutrition, and minimizing the use of analgesic drugs (15). Zuckerman et al. reported that a delay of more than two days for an operation was a major cause of mortality within a year for patients with an active life before the fracture, and that operation would be optimal within two days after admission to the hospital (16). Early surgical intervention, early mobilization, and active physical rehabilitation are all proven to improve outcomes and reduce mortality rates in the geriatric population.

Sarıcaoğlu et al.'s study conducted on 392 geriatric femur fractures shows that anesthesia types significantly impacted both intensive care unit (ICU) stays and total hospitalization periods; however, it did not affect complication or mortality rates. It is shown that patients who received general anesthesia have prolonged hospital stays compared to those who received regional anesthesia (17).

Mutlu et al. also carried out a study comparing the 30-day mortality of patients who underwent surgery for hip fractures and are over 90 years of age. They found no significant difference between patients who died within the 30-day period after surgery and the survivor group regarding anesthesia type, fracture localization, and duration of surgery (18).

Tüzün et al. emphasized the fact that in the subacute period after surgery, independent mobilization is the main goal, and also preparation for further rehabilitation processes, which will also take place in the patient's permanent residence. The pre-operative functional state of the patient is also important in guidance of post-operative rehabilitation and actual mobility expectancy (19).

Table 3. Services provided by a homecare service unit in Turkey from 2012-2017.

Service Name	Number Supplied	Service Name	Number Supplied
Patient Exam	3,563,826	Tracking with Ventilator	2774
Oxygen Inhalation Treatment Session	17,287	Enteral Hyperalimentation Tracking	9327
Consultation	372,132	Burn Dressing	22,200
Subcutaneous Injection	101,229	Wound Dressing	1,471,351
Health Committee Report (Medical Device)	62,028	Connecting the Patient to the MEK Ventilator	2336
Suturing	40,432	Electrocardiogram Shooting at Home	12,433
Health Committee Report (Treatment)	105,202	Injection	347,590
Total Parenteral Nutrition Tracking	6232	Intravenous Drug Infusion	257,634
Steam Treatment	4940	Physical Therapy Practices	60,400
Drug Application with Nebulizer	446	Educational Practices	1,438,282
Enema	15,591	Bladder Probe Application	525,925
Expert Physician Report (Medication)	213,336	Rehabilitation Practices	56,112
Phototherapy	1143	Pacemaker Control	454
Nasogastric Probe Application	40,612	Psychiatric Practices	41,174
Blood Collection for Examination	788,725	TOTAL	9,581,153

Patients' subacute rehabilitation periods are usually spent in the hospital. In this period, patients are educated and aided by physiotherapists and prepared for long-term rehabilitation. The aim of long-term rehabilitation is to return the patient to his or her day-to-day activities in the long run. It is important for the activities in this period to be carried out in the safest place possible for the sake of the treatment. For most patients, the home is the best place since arrangements can be made individually to prevent indoor accidents. Physical therapy, which is included in homecare services, is crucial in returning patients with hip fractures to their everyday lives (19,20).

In a study carried out by Patzelt et al. in 2016, the question, "What do you associate with 'healthy aging?'" was directed to 4 elderly focus groups: women aged 65 to 75 years, men aged 65 to 75 years, men aged 76 years and older, and women aged 76 years and older. "Physical activity" was the single common answer of all focus groups (21). As seen here, physical activity and independence in mobility is the utmost important issue from an elderly point of view, and must be carefully addressed, especially in post-operative hip fracture patients.

At the same time, home healthcare services are much more beneficial for both the individual and the government in terms of economy. According to the study conducted by Karabağ, patients' short- and long-term homecare costs are much lower compared to the costs of hospitalization (22).

In light of these data, homecare services provide benefits in terms of mortality, morbidity, early return to daily activities, and overall cost in post-operative hip fracture patients. We recommend homecare services be routinely planned for patients who have experienced hip fractures.

CONCLUSION

In this study, the importance of home care services was tried to be emphasized with the patient questionnaire and cost-effectiveness. Clearly, a more detailed study with accompanying co-morbidities of patients, mean length of hospital stay, length of post-operative ICU days (if any), and broader-scale sampling with more patients would be valuable. Also, we did not have data on patients' daily drug use, smoking habits, and alcohol consumption, as well as patients' physiological status quo including body mass index, disease severity, and sociodemographic status. With these limitations in mind, it is possible to widen and improve investigations related to this subject and make sweeping changes in national healthcare systems.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by Kütahya Health Science University Non-interventional Clinical Research Ethics Committee (Date: 09.01.2019, Decision no: 2019/01).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 17-21
DOI: 10.5281/zenodo.10891249

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Endoscopic and Histopathological Findings of Upper Gastrointestinal Tract Lesions in Pediatric age Group

Pediatrik Yaş Grubunda Üst Gastrointestinal Sistem Lezyonlarının Endoskopik ve Histopatolojik Bulguları

Tuğba Günler[1], Esra Yılmaz[1], Yaşar Ünlü[1], Aylin Yücel[2]

[1]Department of Pathology, Konya City Hospital, Konya, Turkey
[2]Department of Pediatrics, Division of Pediatric Gastroenterology, Necmettin Erbakan University, Meram Medical Faculty, Konya, Turkey

ABSTRACT

Aim: Upper gastrointestinal (GI) tract endoscopy is a diagnostic procedure utilized to identify pathologies within this region, establish treatment plans, and determine prognoses. This procedure, commonly employed in adults, is now considered safe for use in pediatric patients. The objective of this study was to conduct a retrospective analysis of the results obtained from upper GI endoscopies performed on pediatric patients at a single center.

Material and Method: During the period between September 2017 and March 2020, we evaluated total of 488 patients who were aged between 5 months and 17 years and who underwent upper GI endoscopy and biopsy at the Pediatric Gastroenterology Department of Konya Training and Research Hospital.

Results: A total of 488 pediatric patients underwent upper GI endoscopy and biopsies were obtained in 30 months. The most commonly reported complaints were abdominal pain and dyspepsia. The most common lesions seen during the endoscopy procedure were gastritis, duodenitis and ulcers. Histopathologic examination revealed chronic gastritis in the stomach and chronic duodenitis and esophagitis in the duodenum and esophagus, respectively. In 195 cases, *Helicobacter pylori* infection was detected. Eight patients had intestinal metaplasia and three had gastric atrophy. Sixty-four patients were diagnosed with celiac disease and started on a gluten-free diet. Barret's esophagus was also detected in four patients.

Conclusion: Endoscopic procedures are becoming increasingly significant in diagnosing pediatric patients due to their ease of use under appropriate sedation and low incidence of complications. These procedures are crucial in ensuring accurate diagnosis and avoiding unnecessary treatment for children.

Keywords: Children, endoscopy, gastrointestinal system, biopsy

ÖZ

Amaç: Üst gastrointestinal (GI) sistem endoskopisi, bu bölgedeki patolojileri tanımlamak, tedavi planlarını oluşturmak ve prognozları belirlemek için kullanılan tanısal bir prosedürdür. Yetişkinlerde yaygın olarak kullanılan bu prosedürün artık çocuk hastalarda da kullanılmasının güvenli olduğu düşünülmektedir. Bu çalışmanın amacı, tek bir merkezde çocuk hastalara yapılan üst GI endoskopilerinden elde edilen sonuçların retrospektif bir analizini yapmaktır.

Gereç ve Yöntem: Eylül 2017 ile Mart 2020 tarihleri arasında, Konya Eğitim ve Araştırma Hastanesi Çocuk Gastroenteroloji Bölümü'nde üst GI endoskopi ve biyopsi yapılan, yaşları 5 ay ile 17 yaş arasında değişen toplam 488 hasta değerlendirilmiştir.

Bulgular: Otuz ayda toplam 488 pediatrik hastaya üst GI endoskopisi yapıldı ve biyopsiler alındı. En sık bildirilen şikayetler karın ağrısı ve dispeptik şikayetler idi. Endoskopi işlemi sırasında en sık görülen lezyonlar gastrit, duodenit ve ülserdi. Histopatolojik incelemede, midede en sık kronik gastrit, duodenumda ve özofagusta ise sırasıyla kronik duodenit ve özofajit saptandı. Olguların 195'inde *Helicobacter pylori* enfeksiyonu tespit edildi. Sekiz hastada bağırsak metaplazisi, üç hastada ise mide atrofisi görüldü. Altmış dört hastaya çölyak hastalığı tanısı konuldu ve bunun sonucunda glutensiz diyet başlandı. Ayrıca dört hastada Barret özofagusu tespit edildi.

Sonuç: Endoskopik işlemler, uygun sedasyon altında kullanım kolaylığı ve komplikasyon görülme sıklığının düşük olması nedeniyle pediatrik hastaların tanısında giderek daha önemli hale gelmektedir. Bu prosedürler, doğru teşhisin sağlanması ve çocuklarda gereksiz tedavilerin önlenmesi açısından çok önemlidir.

Anahtar Kelimeler: Çocuk, endoskopi, gastrointestinal sistem, biyopsi

Corresponding Author: Tuğba Günler
Address: Konya City Hospital, Department of Pathology, 42020, Karatay, Konya, Türkiye
E-mail: tubagurcan85@hotmail.com

Başvuru Tarihi/Received: 08.12.2023
Kabul Tarihi/Accepted: 19.01.2024

INTRODUCTION

The gastrointestinal tract (GIT) is a complex system comprising the esophagus, stomach, small intestine and large intestine, and it plays a vital role in maintaining homeostasis (1). While pathologies affecting this system can occur at any age, the causes and incidence rates vary between pediatric and adult patients (2). Over the past three decades, endoscopic procedures have become more frequent and safer, particularly in pediatric patients, leading to an increased understanding of pediatric GIT pathologies (3). Esophagogastroduodenoscopy (EGD), also known as gastroscopy, is crucial in defining pathologies within these regions, enabling biopsy, treatment planning, and prognosis determination.

Although its history dates back to 1000 AD, the first fully bendable endoscope was produced by Hirschowitz and Curtiss in 1957. In the 1970s, it started to be used in children. Especially in the last three decades, it has been introduced into routine practice with its increasing use worldwide, putting radiologic applications in the second plan (4-5).

As the frequency of pediatric EGD procedures has risen, so too has the incidence of diseases requiring EGD for diagnosis in children. However, this increase may be due to enhanced disease detection rates rather than a genuine rise in the number of cases. A study by Franciosi et al. revealed that the number of gastroscopies conducted in 2005 was 12 times higher than that in 1985 (4). The same study suggested that performing endoscopy in children with less severe clinical symptoms and obtaining more biopsies per procedure may have contributed to the increased diagnosis rates of lesions in the GI tract.

The objective of this study was to conduct a retrospective analysis of pediatric patients who underwent upper GI endoscopy at a single medical facility within three years. The study aimed to assess the indications for endoscopy, identify the findings and complications associated with the procedure, and evaluate its effectiveness in contributing to diagnosis and treatment.

MATERIAL VE METHOD

All pediatric patients who underwent upper GI endoscopy and biopsy at the Pediatric Gastroenterology Department of Konya Training and Research Hospital between September 2017 and March 2020 were included in this study.

Information regarding the age and gender of the patients at the time of diagnosis, indication for endoscopy, macroscopic findings during the endoscopy procedure, and presence of complications related to the procedure were retrieved from the database.

The available Hemotoxylin & Eosin, modified Giemsa and Periodic acid schiff -Alcian Blue stained pathology slides of the patients were re-evaluated independently by three blinded pathologists under a light microscope. They were re-examined for parameters such as inflammatory cell types and ratios, presence of metaplasia and dysplasia, villus and crypt abnormalities, and presence of infectious agents such as *Helicobacter pylori* and giardiasis.

The research project was discussed at the Local Ethics Committee of the Faculty of Medicine of Karatay University meeting on 17/06/2022 and approved with the decision number 2022/008.

RESULTS

A total of 488 patients aged between 5 months and 17 years underwent upper GI endoscopy during the study period. This number constituted 4.5% of all upper GI endoscopies (10671) performed in all age groups in our center. Of the patients, 333 were female (68.2%), and 155 (31.8%) were male. Children under ten years of age constituted 29.1% of the patients.

The most frequent indications for endoscopy in our center were chronic abdominal pain in 274 patients, dyspepsia in 122 patients, and nausea/vomiting in 70 patients (some of the patients presented to the outpatient clinic with more than one complaint). **Table 1** demonstrates the clinical characteristics of the cases.

Table 1. Demographic and clinical characteristics of the cases.

	n (%)
Gender	
Male	155 (31,8)
Female	333 (68,2)
Age group	
<1	5 (1,02)
1-5	50 (10,28)
6-10	87 (17,8)
>10	346 (70,9)
Indications for endoscopy *	
Abdominal pain	274 (56,14)
Dyspepsia	122 (25)
Nausea and vomiting	70 (14,34)
Developmental delay	34 (6,96)
Upper GIS bleeding	22 (4,5)
Diarrhea	13 (2,66)
Anemia	7 (1,43)
İngestion of caustic products	4 (0,81)

*Some of the patients presented to the outpatient clinic with more than one complaint.

There were no complications associated with the conscious sedation and the procedure.

Considering all age groups, 23 (4.7%) patients had normal EGD. Most lesions were observed in the stomach (73.9%). Endoscopy findings were gastritis in 361 cases, duodenitis in 133 cases, ulcer in 46 cases (8 esophageal, 12 gastric, 19 duodenal, 7 gastric and duodenal localization), and gluten enteropathy in 44 cases (Some patients had more than one finding on endoscopy) (**Table 2**).

Table 2. Endoscopic findings of the cases.

Endoscopic findings *	n (%)
Gastritis	361
Duodenitis	133
Ulser	46
Gluten enteropaty	44
Normal	23
Ectopic pankreas	3
Polyp	2
Pyloric dysfunction	1
Hiatal hernia	1

*Some patients had more than one finding on endoscopy.

Antrum/corpus biopsy was taken from all patients during the endoscopy procedure. In addition, duodenal biopsy was conducted in 310 patients, and esophageal biopsy in 34 patients. The histopathologic features of the cases are summarized in **Table 3**. Sidney classification (6) was performed in the pathology department, and chronic gastritis was observed in 305 gastric biopsy specimens. Chronic active gastritis was the second most common finding. Intestinal metaplasia was observed in 8 patients, and gastric atrophy in 3 patients. No dysplasia was observed. In 22 cases, no specific pathologic findings were observed. The most common finding on examination of duodenal tissues was duodenitis. Intestinal giardiasis was found in 2 cases. Sixty-four patients with villus crypt abnormalities and increased intraepithelial lymphocytes were evaluated for celiac disease. Based on the modified Marsh classification (7), 31 of 64 patients were classified as stage 3a, 25 as stage 3b, and eight as stage 3c. These patients with positive antigliadin antibodies were diagnosed with celiac disease, and gluten-free diet treatment was initiated. There were 74 patients evaluated as normal. Barret esophagus was observed in 4 of 34 patients whose esophageal tissues were examined. The youngest of these patients was five years old, and the oldest was 16 (mean age 11.2 years). One patient with Barret metaplasia had concomitant celiac disease and type 1 diabetes mellitus.

Helicobacter pylori infection was detected in 195 (40%) patients. Of these patients, 144 were girls, 52 were boys, and the mean age was 13 years. *H. pylori* was positive in 18 (39.1%) of 46 patients with ulcers on endoscopy. These patients were started on eradication treatment.

Table 3. Histopathological features of the cases.

	n
Antrum/corpus	488
Chronic gastritis	305
Chronic active gastritis	148
Chemical gastritis	11
Eosinophilic gastritis	1
Hyperplastic polyp	1
Normal	22
Duodenum	310
Duodenit	158
Celiac disease	64
Peptic duodenit	9
Eosinophilic duodenit	5
Normal	74
Esophagus	34
Esophagitis	16
Barret esophagus	4
Eosinophilic esophagitis	3
Squamous papilloma	1
Normal	10

DISCUSSION

The literature suggests that the frequency and indications for endoscopy in pediatric patients vary between developing and developed countries. Recurrent abdominal pain is reported to be the most common indication for pediatric EGD in developing countries, with rates varying between 22% and 90% in some studies. (8-12) Conversely, growth retardation has been reported as the most common indication in developed countries. (13). Other reasons include recurrent vomiting, chronic diarrhea, upper GI bleeding, and ingestion of foreign bodies. (14-15). In our study, abdominal pain was the most common indication for gastroscopy in all age groups and accounted for 56.14% of cases. This percentage was reaching 70%, in patients over the age of seven. The rate of patients presenting with developmental delay was 6.96%. It is worth noting that, compared to the last 30 years, the number of patients undergoing endoscopy for gastrointestinal bleeding has significantly decreased. These findings are consistent with the indications for endoscopy reported in the literature.

The appearance of normal mucosa in endoscopy does not always indicate normal tissue. According to the literature, when biopsies are taken only from mucosal areas that appear abnormal during pediatric endoscopies, 48.5% of cases can miss histopathological abnormalities. (16-17). Therefore, routine esophageal, gastric and duodenal biopsies are recommended during endoscopic procedures, even if the mucosa appears normal (18). The limitation of this study is that esophageal and duodenal biopsies were not obtained from all patients in endoscopy. In our study,

the GI mucosa was found to be normal in endoscopy procedure in 23 cases. However, when the biopsies were evaluated, it was seen that most of these patients had pathologic findings, 12 were diagnosed with *H. pylori* infection and 7 were diagnosed with chronic gastritis. Biopsy results were reported as normal in only 4 cases. These differences in endoscopic and histopathologic findings may be attributed to the fact that biopsies were taken from local areas during the procedure and the lesions were patchy.

Helicobacter pylori (HP) infection is crucial in developing gastritis, peptic ulcers, and duodenal ulcers. It has been identified as a primary carcinogen by the International Agency for Research on Cancer. It is less common in the pediatric age group than in adults, and its prevalence varies between 8% and 70%, depending on the country's developmental status. In developed countries, person-to-person transmission is the main transmission route, while poor hygiene conditions and low socioeconomic status are associated with its presence in developing countries. Eradication treatment for HP is crucial not only to alleviate symptoms but also to prevent late complications. In our study, 40% of cases were infected with HP and received eradication treatment.

Celiac disease has been identified as the most common underlying cause of developmental delay in children, as indicated by various studies (24-25). This condition is a malabsorption syndrome that develops in response to gluten protein in wheat. Although its prevalence varies depending on geographical region, it is estimated to be between 1:77 and 1:300 (17). In order to determine the indication for biopsy, patients' complaints, clinical findings, and some serologic tests can be useful. However, as serologic tests may yield false positive or negative results, a definitive diagnosis is made by small bowel biopsy. Histopathologic examination reveals flattening and atrophy of the villi, increased intraepithelial T lymphocytes, and crypt hyperplasia. These findings are graded according to the Marsh classification, which is widely used by clinicians. (7, 17, 26). Clinical symptoms in most cases of celiac disease tend to improve with a gluten-free diet. However, in rare cases where the response to the gluten-free diet is inadequate, suspicion of celiac disease should be considered. Especially in pediatric patients, poor dietary adherence may be a reason for lack of response to treatment. In our study, 20.6% of patients who underwent duodenal biopsy were diagnosed with celiac disease, with Marsh Stage 3a being the most common. Although this rate was high in our study, we think that factors such as the fact that most of the patients included in endoscopy were suspicious for celiac disease and that the patients were selected affected this rate. Gluten-free diet treatment was initiated in these patients.

Besides congenital anomalies such as esophageal atresia and tracheoesophageal fistula, the most common esophageal diseases in children are gastroesophageal reflux disease (GERD) and burns due to ingestion of corrosive substances (2, 22, 27). While GERD shows symptoms including epigastric pain, chest pain and dysphagia in adolescents and older children as well as in adults, whereas it shows findings including regurgitation, vomiting and refusal to feed in young children (28-29). Endoscopic evaluation is important for accurate diagnosis especially in young age groups who cannot express their complaints clearly. In addition, the esophagus is exposed to high levels of acid in the presence of hiatal hernia and as a result, patients are diagnosed with reflux esophagitis, especially Barrett esophagitis (22). Although very rare in the pediatric age group, esophageal adenocarcinoma developing on the background of Barrett's esophagitis and squamous cell carcinomas developing due to corrosive substance ingestion have also been reported in the literature. (30-31). In our study, Barrett's esophagitis was observed in 4 patients (0.8%). The mean follow-up period was 63 months and no malignancy was observed.

In the literature, the risk of complications associated with GI endoscopy is relatively low. Thakkar et al. reported a complication rate of 2.3% in a study including over 10,000 cases, with most being minor complications. The most frequently observed complication was transient hypoxia due to anesthesia. In the present study, no complications were observed in any patients who underwent GI endoscopy.

CONCLUSION

GI endoscopies have a low complication rate and can be performed easily with appropriate sedation. This retrospective study in a large patient group, supports the importance of endoscopic examination in pediatric patients with common GI complaints in making the correct diagnosis and preventing unnecessary treatment in accordance with the literature. However, more studies are needed to standardize the identification of patients who should undergo endoscopic examination after a detailed physical examination and careful history in patients presenting with recurrent complaints.

ETHICAL DECLARATIONS

Ethics Committee Approval: The research project was discussed at the Local Ethics Committee of the Faculty of Medicine of Karatay University meeting on 17/06/2022 and approved with the decision number 2022/008.

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 22-27
DOI: 10.5281/zenodo.10891265

ORİJİNAL ARAŞTIRMA
ORIGINAL ARTICLE

Kronik Böbrek Yetmezliği Hastalarında Eritrosit Dağılım Genişliği Nabız Dalga Hızı ile İlişkilidir

Red Cell Distribution Width Is Related to Pulse Wave Velocity in Patients With Chronic Kidney Disease

Zeynep Biyik[1], İbrahim Güney[2], Vedat Gençer[3], Yavuz Sultan Selim Akgül[4], Harun Aydemir[5], Adnan Karaibrahimoğlu[6], Yasemin Coşkun Yavuz[1]

[1]Selçuk Üniversitesi İç Hastalıkları Anabilim Dalı, Nefroloji Bilim Dalı, Konya, Türkiye
[2]Konya Şehir Hastanesi, İç Hastalıkları Anabilim Dalı, Nefroloji Bilim Dalı, Konya, Türkiye
[3]Kayseri Şehir Hastanesi, İç Hastalıkları Anabilim Dalı, Nefroloji Bilim Dalı, Kayseri, Türkiye
[4]Erciyes Üniversitesi Tıp Fakültesi, İç Hastalıkları Anabilim Dalı, Geriatri Bilim Dalı, Selçuklu, Kayseri, Türkiye
[5]Balıkesir Atatürk Şehir Hastanesi, İç Hastalıkları Anabilim Dalı, Romatoloji Bilim Dalı, Balıkesir, Türkiye
[6]Süleyman Demirel Üniversitesi, Biyoistatistik ve Tıbbi Bilişim Anabilim Dalı, Isparta, Türkiye

ÖZ

Amaç: Eritrosit dağılım genişliği (RDW) rutin olarak tam kan sayımında elde edilen bir parametredir. Son yıllarda yapılan çalışmalarda kardiyovaskuler hastalığı olanlarda ve sağlıklı gönüllülerde RDW'nin kardiyovaskuler hastalıklarla ilişkili olduğu gösterilmiştir. Böbrek yetmezliği hastalarında RDW ile ilgili yeterli çalışma yoktur. Biz kronik böbrek yetmezliği hastalarında RDW'nin aterosklerozun bir ön göstergesi olan arteriyel sertlik ile ilişkisini araştırdık.

Gereç ve Yöntem: Bu kesitsel çalışma Konya Eğitim ve Araştırma Hastanesi nefroloji polikliniğinden takipli prediyalitik kronik böbrek hastaları ile yapıldı. Koroner arter hastalığı, serebrovaskuler hastalık gibi aşikar aterosklerozu olan hastalar ile kanama ve malignitesi olan hastalar çalışma dışında tutuldu. Nabız dalga hızı (Pulse wave velocity, PWV) ve augmentasyon indeksi Mobil-o-Graph NG arteriograf cihazı kullanarak belirlendi.Karotis intima media kalınlığı (KIMK) ölçüldü.

Bulgular: Çalışmaya evre 3-5 kronik böbrek hastalığı olan diyalize girmeyen 259 hasta dahil edildi. Medyan RDW %13.8 idi. Medyan RDW'ye göre hastalar iki gruba ayrıldı. Yüksek RDWye sahip olan hastalar düşük RDWye sahip olanlar ile karşılaştırıldığında daha yüksek KIMK, BKI ve daha yüksek nabız dalga hızına (PWV) sahip oldukları, daha düşük hemoglobin ve eGFR değerlerine sahip oldukları görüldü. RDW yaş, BKI, KIMK ve PWV ile pozitif korele iken albumin, ferritin,hemoglobin ve eGFR ile negatif korele bulundu.

Sonuç: Bu bulgular göstermektedir ki RDW arteryel sertlikle pozitif koreledir. RDW kronik böbrek hastalarında subklinik aterosklerozun erken değerlendirilmesinde faydalı olabilir

Anahtar Kelimeler: Eritrosit dağılım genişliği, endotel fonksiyonu, nabız dalga hızı, kronik böbrek yetmezliği

ABSTRACT

Aim: Red-cell distribution width (RDW) is a parameter routinely used for diagnosis of different anemia types. Recent studies have shown the RDW relationship with mortality in general population and patients with cardiovascular disease. However, the number of studies on RDW in chronic kidney disease (CKD) is insufficient. We evaluated the relationship between RDW and arterial stiffness, which is a predictor of atherosclerosis, in patients with CKD.

Material and Method: This cross-sectional study was carried out with predialysis patients are followed in nephrology policlinic in Konya Training and Research Hospital. Pulse wave velocity (PWV) and augmetation index was determined using Mobil-O-Graph NG (İ.E.M GmbH Stolberg Germany) arteriography device. Carotis İntima Media Thickness (CIMT) was assessed. Exclusion criteria were the presence of coronary artery disease, cerebrovascular disease, bleeding or malignancy.

Results: Overall, 259 patients with CKD 3 to 5 were included in the study. Median RDW was 13.8%. Patients with RDW values higher than median had significantly higher carotis intima media thickness, BMI, PWV and lower hemoglobin and eGFR values compared with patients who that RDW values below median. RDW was positively correlated with age, BMI, CIMT and PWV, and negatively correlated with albumin, ferritin, hemoglobin, eGFR.

Conclusion: The findings show that elevated RDW is positively correlated to arterial stiffness. RDW may be useful to provide an early recognition of subclinical atherosclerosis in chronic kidney disease.

Keywords: Red cell distribution width, endothelial function, pulse wave velocity, chronic kidney disease

Corresponding Author: Zeynep BIYIK
Address: Department of Internal Medicine, Division of Nephrology, Selcuk University, Selcuklu, Konya, Turkey
E-mail: drzeynepbiyik@gmail.com

Başvuru Tarihi/Received: 31.01.2024
Kabul Tarihi/Accepted: 20.03.2024

GİRİŞ

Kronik böbrek yetmezliği hastalarında kardiyovaskuler hastalık prevalansı oldukça yüksektir ve başlıca mortalite ve morbidite nedenidir (1). Artmış kardiyovaskuler riske geleneksel risk faktörleri ile birlikte arteriyal sertleşme gibi geleneksel olmayan risk faktörleri de katkıda bulunur. Artmış arteriyel sertlik kronik böbrek hastalığı populasyonundaki kardiyovaskuler olaylardan sorumlu olabilir (2). Arteriyel sertlik aterosklerozdan önce ortaya çıkar ve ateroskleroz için bir risk faktörü olarak değerlendirilmektedir (3). Hem son dönem böbrek yetmezliği olan hastalarda hem de prediyaliz hastalarında artmış arterial sertlik kardiyovaskuler olaylar ve tüm nedenli mortalite için bağımsız prediktördür (4). Bu hastalarda erken aterosklerozun klinik belirti vermeden öngörülmesi ve kardiyak ölümlerin azaltılması günümüzde en önemli hedeflerden biridir. Son ateroskleroz araştırmaları endotelyal disfonsiyon ve inflamasyon üzerinde yoğunlaşmıştır.

Eritrosit dağılım genişliği (RDW) dolaşan eritrositlerin boyut değişkenliğinin kantitatif bir ölçümüdür ve klinik uygulamada standart tam kan sayımlarının bir parçasıdır (5). Başlıca aneminin ayırıcı tanısında kullanılır. RDW artışı eritrosit yaşam süresinde değişiklik ve disfonksiyonel eritrositleri yansıtır (6). Son çalışmalarda RDW'nin genel populasyonda mortalitenin prediktörü olduğu bildirilmiştir (7). Ayrıca kalp yetmezliği (8), koroner arter hastalığı (9), periferal arter hastalığı (10), böbrek yetmezliği gibi çeşitli hastalıklarda RDW'nin mortalite için prognostik bir marker olduğu gösterilmiştir. Kronik diyaliz hastalarında (11) ve sürekli renal replasman tedavisi ile tedavi edilen akut böbrek yetmezlikli hastalarda tüm nedenli mortalite için prediktör olabileceği bildirilmiştir (12). Çeşitli hastalıklardaki yaşam süresi ve RDW ilişkisi ortaya koyulmuş olmasına rağmen altta yatan patofizyolojik mekanizma açık değildir. Ancak kardiyovaskuler hastalıklardaki yüksek RDW seviyelerinin inflamasyon ve oksidatif strese bağlı olabileceği ileri sürülmüştür (13).

Evre 1-5 kronik böbrek hastalarında yapılan bir çalışmada RDW'nin endotel disfonksiyonla bağımsız ilişkili olduğu bildirilmiştir (14). 2016 yılında yayınlanan bir çalışmada ise obez hastalarda RDW'nin arteriyel sertliği bağımsız şekilde predikte ettiği gösterilmiştir (15). Bu çalışmada biz kronik böbrek yetmezliği hastalarında RDW'nin aterosklerozun bir ön göstergesi olan arteriyel sertlik ile ilişkisini araştırdık.

GEREÇ VE YÖNTEM

Bu çalışma nefroloji polikliniğinde takipli evre 3-5 kronik böbrek hastalığı olan hastalar ile yapıldı. Toplam 555 kronik böbrek yetmezliği hastası tarandı. 296 hasta dışlandı. Koroner arter hastalığı, serebrovaskuler hastalık, hematolojik hastalığı olanlar, kanama, alkol kullanımı, aktif enfeksiyon, periferik arter hastalığı, kronik karaciğer hastalığı ve malignitesi olan hastalar çalışma dışında tutuldu. Çalışmaya 259 hasta dahil edildi.

Lokal antisepsi sonrası periferik kan örnekleri antekubital venden gece boyu açlık sonrası alındı. RDW ölçümü Sysmex XE 2100 (Symex Corporation, Kobe, Japan) hematoloji analizörü ile ölçüldü. Periferik tam kan sayımının bir parçası olarak ve kırmızı kan hücresi hacim dağılımının varyasyon katsayısı (%) olarak ifade edildi. Beden kitle indeksi kilonun boyun karesine bölünmesi ile elde edildi. Glomerular filtrasyon hızı MDRD formülü ile hesaplandı (16).

Arteriyel sertlik, geçerliliği daha önce son dönem böbrek yetmezliği (SDBY) hastaları (17-18) dahil olmak üzere farklı popülasyonlarda invaziv ve invaziv olmayan ölçümlere karşı test edilmiş olan, brakiyal manşet ile ölçüm sağlanan osilometrik cihaz Mobil-O-Graph (IEM, Stolberg, Almanya) ile gerçekleştirildi. Arterial sertlik testi en az 12 saatlik açlık sonrası sabah 08:00-10:00 arasında yapıldı. Sessiz bir ortamda, oda sıcaklığında en az 10 dakika oturur pozisyonda istirahat ettikten sonra Mobil-O-Graph arteriograf cihazı ile yatar pozisyonda ölçümler alındı. Ölçüm öncesi kafein içeren içecekler, sigara, alkol ve yiyecekler yasaklandı. Uygun kan basıncı manşonu üst kola yerleştirildi. Kalp seviyesine ayarlanarak 30 sn aralıklarla 3 başarılı ölçüm gerçekleştirildi. Cihaz, brakiyal arteri tıkamak için otomatik olarak sistolik kan basıncının üzerinde şişer. Bu, brakiyal arter basıncındaki dalgalanmaların tespit edilmesini sağladı. Dalgalanmalar tonometrik sensör tarafından güçlendirilerek cihaza iletilir. Kaydedilen nabız dalgalarının ayrıntılı analiz edilmesi için bilgisayar programları kullanıldı. (17)

Hastalar en az 5 dakika dinlendirildikten sonra karotis intima media kalınlığı (KIMK) ölçüldü. Supin pozisyonda yatırılan hastaların başları ekstansiyona getirilerek her iki ana karotis arter üzerinde (bulbusun 1 cm proksimalinden) ölçüm yapıldı ve bu iki ölçümden en yüksek değer alındı.

Tüm işlemler etik kurallara ve Helsinki Bildirgesi ilkelerine uygun olarak gerçekleştirildi. Tüm hastalar katılmak için yazılı bilgilendirilmiş onam verdi.

İstatistiksel Analiz

Tüm istatistiksel analizler SPSS versiyon 22.0 (IBM Corporation, ABD) kullanılarak yapıldı. Parametreler normal dağılım gösteren değişkenler için ortalama ±SD, normal dağılım göstermeyen değişkenler için minimum-maksimum medyan olarak ifade edildi. İki grup arasındaki farklar, duruma göre t testi veya Mann-Whitney U testi kullanılarak belirlendi. Ayrıca üç grup arasındaki karşılaştırmalarda (sırasıyla parametrik ve parametrik olmayan değişkenler için) ANOVA ve Kruskal-Wallis testleri kullanıldı. P değerinin <0,05 olması istatistiksel olarak anlamlı kabul edildi. Kategorik verilerin karşılaştırılmasında ki kare testi kullanıldı. İstatistiksel olarak anlamlı değişkenler arasındaki korelasyonu belirlemek için iki değişkenli korelasyon analizini kullandık. RDW ile değişkenler arasındaki korelasyonun belirlenmesinde Pearson korelasyon analizi veya Spearman korelasyon analizi kullanıldı. Tek değişkenli analizdeki tüm potansiyel ilişki değişkenleri, çok değiş-

kenli regresyon analizinde daha ayrıntılı olarak test edildi. Nabız dalga hızıyla bağımsız olarak ilişkili faktörleri belirlemek için çoklu regresyon analizi yapıldı. Çok değişkenli regresyon modeli için Backward eliminasyon yöntemi kullanıldı. Modelin 1. adımına şu değişkenler dahil edildi: Yaş, vücut kitle indeksi (VKI), sistolik kan basıncı, albümin, fosfor, RDW, eGFR, karotis intima medya kalınlığı.

BULGULAR

Çalışmaya 110'u evre 3, 105'i evre 4 ve 44'ü evre 5 olmak üzere toplam 259 kronik böbrek yetmezliği hastası dahil edildi. Hastaların evrelere göre demografik ve klinik özellikleri **Tablo 1**'de verilmiştir. Beklendiği şekilde evreler ilerledikçe hemoglobin değerinde anlamlı azalma gözlendi. Evreler arasında RDW, PWV ve KIMK değerleri açısından istatistiksel olarak anlamlı fark bulunmadı.

Çalışma populasyonumuzun median RDW'si %13.8 olarak bulundu. Çalışmaya katılan hastalar median RDW değerinin altında ve üstünde olan hastalar olarak 2 gruba ayrıldı. Her iki grubun laboratuar değerleri ve klinik özellikleri **Tablo 2**'de gösterilmiştir. Yüksek RDW değerine sahip olan hastalar düşük RDW değerine sahip olan hastalarla karşılaştırıldığında daha düşük hemoglobin, daha düşük eGFR, daha düşük ferritin ve daha düşük albumin değerlerine sahip iken daha yüksek yaş, daha yüksek BMI olduğu tespit edildi. PWV ve KIMK yüksek RDW'li hastalarda anlamlı olarak daha yüksek bulundu. Median RDW'ye göre PWV değerleri **Şekil 1**'de görülmektedir.

Tablo 1: Evrelere göre hastaların demografik ve laboratuar ve klinik özellikleri

	Evre 3	Evre 4	Evre 5	P
Yaş (yıl)	52.0±9.6	48.5±12.1	52.6±8.4	0.713
BKI (kg/m^2)	28.7±5.4	27.9±5.4	30.1±5.1	0.380
Sistolik kan basıncı (mmHg)	135.2±22.8	139.7±18.2	140.9±23.8	0.153
Total kolesterol(mg/dL)	211.3±55.6	199.4±51.7	199.7±63.8	0.954
Trigliserid(mg/dL)	183 (61-1191)	135 (40-325)	185 (99-611)	0.174
HDL kolesterol (mg/dL)	39.3±8.9	39.6±12.3	39.8±13.7	0.980
Kreatinin (mg/dL)	1.78±0.36	3.06±0.62	4.9±0.58	<0.001
eGFR (ml/dk)	42.2±8.11	21.7±3.83	11.8±1.36	<0.001
Kalsiyum (mg/dL)	9.29±0.54	9.05±0.62	8.26±0.50	<0.001
Fosfor (mg/dL)	3.1±0.7	3.5±0.73	4.37±0.81	<0.001
Parathormon (pg/mL)	59.6(10.3-233)	156.8 (48.2-736)	255.7(39.7-713)	<0.001
Ferritin (ng/mL)	61.9 (6.7-491)	89.8 (11.4-321)	146.1(37-719)	<0.001
Hemoglobin (g/dL)	14.4±1.91	13.1±1.86	11.9±1.65	<0.001
RDW (%)	13.9±1.37	14±2.07	13.9±1.02	0.356
PWV(m/s)	7.79±1.36	7.73±1.62	8.17±1.29	0.270
KIMK(mm)	0.72±0.13	0.70±0.15	0.72±0.15	0.812

BKI: beden kitle indeksi; eGFR:tahmini glomeruler filtrasyon hızı; RDW: eritrosit dağılım genişliği; PWV: Nabız dalga hızı; KIMK: karotis intima media kalınlığı

Tablo 2: Median RDW'ye göre hastaların laboratuar ve klinik özellikleri

	RDW<13.8 (n=132)	RDW>13.8 (n=127)	P
RDW (%)	13.1±0.87	15.1±1.44	<0.001
Hemoglobin (g/dL)	13.3±2.02	12.4±1.79	<0.001
Yaş (yıl)	53.6±12.5	58.6±11.7	<0.001
BKI (kg/m^2)	29.4±6.45	31.07±6.20	0.043
Kreatinin (mg/dl)	2.08 (1.14-6.03)	2.29 (1.18-6.35)	0.086
Ürik asit (mg/dl)	7.20±1.53	7.11±1.87	0.677
Kalsiyum (mg/dL)	9.09±0.66	8.92±0.72	0.057
Fosfor (mg/dL)	3.52±1.13	3.68±0.79	0.216
Albumin (g/dL)	4.1 (2.8-4.7)	4(1.6-4.9)	0.012
Ferritin (ng/ml)	88(10-2000)	63.6(10.4-838)	0.019
Total kolesterol (mg/dL)	208.2±45.8	212.3±56.9	0.525
LDL kolesterol (mg/dL)	132.4±35.5	135.4±44.9	0.557
HDL kolesterol(mg/dL)	41.4±13	42.7±12.2	0.416
Trigiserid (mg/dL)	159(38-1191)	159.5(40-481)	0.756
CRP (mg/dl)	3.4 (3.2-160)	4.5 (3.2-201)	0.077
eGFR (ml/dk/1.73m^2)	29.8±12.1	25.4±11.0	0.002
Sistolik kan basıncı (mmHg)	128.1±18.8	129.6±17.9	0.515
Diastolik kan basıncı (mmHg)	91.3±14.4	89.9±13	0.422
Pulse wave velocity (m/s)	8.2±1.76	8.87±1.93	0.005
KIMK (mm)	0.68±0.13	0.76±0.14	0.003

RDW: eritrosit dağılım genişliği; BKI: beden kitle indeksi; CRP: C-reaktif protein; eGFR:tahmini glomeruler filtrasyon hızı; KIMK: karotis intima media kalınlığı

RDW ile korele olan parametreler **Tablo 3**'te gösterilmiştir. RDW; hemoglobin, ferritin, eGFR ve albumin değerleri ile anlamlı ters korelasyon gösterirken, yaş, BKI, PWV ve KIMK ile anlamlı pozitif korelasyon göstermiştir. Multivariate regresyon analizinde yaş, sistolik kan basıncı ve eGFR PWV ile bağımsız ilişkili faktörler olarak bulundu (**Tablo 4**).

Tablo 3:RDW ile ilişkili parametreler

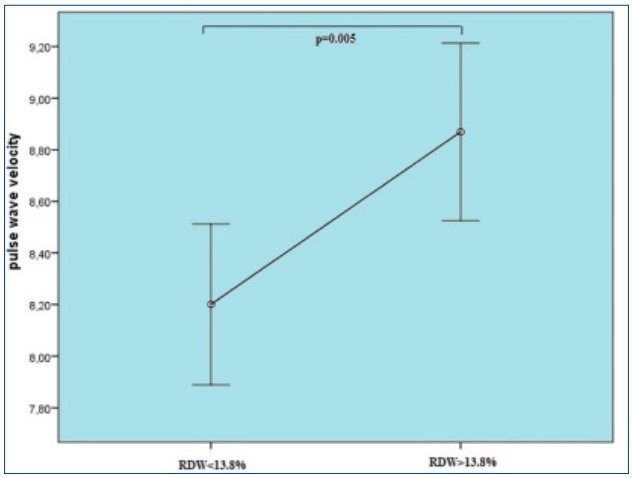
	R	P
Hemoglobin	-0.216	0.001
Ferritin	-0.184	0.003
Yaş	0.178	0.004
PWV	0.168	0.008
KIMK	0.196	0.036
BKI	0.144	0.022
Albumin	-0.212	0.001
eGFR	-0.126	0.044

RDW: eritrosit dağılım genişliği; PWV: nabız dalga hızı; KIMK: karotis intima media kalınlığı BKI: beden kitle indeksi; eGFR:tahmini glomeruler filtrasyon hızı

Tablo 4: PWV ile ilişkili parametrelerin multivariate regresyon analizi ile değerlendirilmesi

	B	SE	B	P
Yaş	0.104	0.003	0.757	<0.001
Sistolik KB	0.029	0.002	0.434	<0.001
eGFR	-0.006	0.003	-0.057	0.023

eGFR:tahmini glomeruler filtrasyon hızı; PWV: Nabız dalga hızı



Şekil 1. Median RDW'ye göre PWV değerleri

TARTIŞMA

Biz biliyoruz ki KBH artmış oksidatif stres ve inflamasyonla ve endotelyal disfonksiyonla karakterizedir (18). Bu durum bu hasta populasyonunda geleneksel olmayan risk faktörleri ile orantısız şekilde artmış kardiyovasküler risk artışını açıklamaya yardımcı olur. Evre 1-5 kronik böbrek hastalığı olan hastalarda yapılan bir çalışmada RDW'nin anemi ve inflamasyondan bağımsız olarak endotelyal disfonksiyon ile ilişkili olduğu bildirilmiştir (14). Bundan birkaç yıl sonra 326 son dönem böbrek yetmezliği hastası 2.7 yıl izlenmiş ve RDW deki progresif artışın SDBY hastalarında kardiyovaskuler olay ve mortaliteyi bağımsız olarak predikte ettiği gösterilmiştir (19). Daha sonra 1075 evre 3-5 KBH hastasının izlendiği bir çalışmada da RDW tüm nedenli mortalite ve kardiyovaskuler hastalıkla ilişkili bulunmuştur (18). Yakın zamanda hem hemodiyaliz hem periton diyalizi hem de prediyaliz kronik böbrek yetmezliği hastalarının dahil edildiği bir çalışmada RDW ve nötrofil lenfosit oranı vasküler kalsifikasyon belirteçleri ile ilişkisi gösterilmiştir (20). Tüm bu bulgular ışığında biz aşikar kardiyovasküler hastalığı olan hastaları dışlayarak erken ateroskleroz ile RDW arasında ilişkiyi araştırmayı amaçladık.

Bu çalışmanın ana sonucu yüksek RDW'li kronik böbrek hastalarında arterial sertlik ve KIMK artmıştır. RDW'nin arteriyel sertlik, kardiyovasküler olaylar ve mortalite ilişkisi pek çok çalışmada bildirilmesine rağmen kesin mekanizma henüz açıklanamamıştır. Bunda rol oynayan olası iki mekanizma oksidatif stres ve inflamasyondur.

Oksidatif stres ve inflamasyon arteriyel ateroskleroz ile ilişkilidir (21). İnflamasyon; hem bozulmuş demir metabolizmasına sebep olarak hem eritropoetin üretimini ve eritropoetin cevabını inhibe ederek hem de eritrosit yaşam süresini kısaltarak RDW artışına katkıda bulunur (22). Oksidatif stres de anizositoza katkıda bulunabilir. Eritrositler çok büyük antioksidan kapasiteye sahiptir. Ancak oksidatif hasara da yatkındırlar ve bu da eritrosit yaşam süresini kısaltır. Oksidatif stresle eritrosit yaşlanmasının hızlanması bu hücrelerin volum dağılımını değiştirir. Çünkü yaşlı eritrositler daha genç olan eritrositlere göre daha küçüktür (23).

Lippi ve arkadaşları rutin medikal check-up yapılan bireylerde RDW ile plazma inflamasyon markerları arasındaki ilişkiyi araştırmışlar ve RDW'nin yaş, cinsiyet, MCV, hemoglobin ve ferritinden bağımsız olarak sedimentasyon ve hsCRPyi predikte ettiğini göstermişlerdir (24). Diyabetik hasta populasyonunda RDW ve CRP seviyeleri arasında pozitif ilişki bildirilmiştir (25). Karotid ateroskleroz ve strok insidansı ile RDW arasındaki ilişkiyi inceleyen bir araştırmada da RDW klasik bir inflamasyon markeri olan WBC ile ilişkili bulunmuştur (26). Tüm bunlarla paralel olarak bizim çalışmamızda da CRP seviyeleri RDW ile pozitif korele idi. Ancak RDW ile bağımsız ilişkili bulunmadı. Bu durum çalışma populasyonumuzun özelliğinden kaynaklanıyor olabilir.

Çalışmamızda RDW yüksek olan grup daha yaşlı idi. RDW ve yaş arasındaki pozitif ilişki önceki çalışmalarla uyumludur (27-29). İleri yaşla birlikte arterlerdeki elastisite azalmaktadır (30). Yaşlı hastalardaki nutrisyonel eksiklik, komorbidite ve inflamatuar durum buna katkıda bulunuyor olabilir. PD hastalarında (28) ve kalp yetmezliği (31) hastalarında RDW'nin albumin, prealbumin ve transferrin gibi nutrisyon markerları ile negatif korele bulunduğu bildirilmiştir. Bununla uyumlu olarak biz de RDW yüksek olan hastalarda albumin değerini düşük bulduk ve albumin RDW ile negatif korele idi.

Altıparmak ve arkadaşları obez ve kilolu hastalarla sağlıklı kontrolleri karşılaştırmışlar ve obes ve kilolu olan bireylerde RDW ve PWV anlamlı yüksek bulunmuştur (15). BKI ve RDW arasındaki ilişkiyi destekleyen diğer çalışmalarla (32, 33) uyumlu olarak biz de RDW ve BKI'i korele bulduk. Obez hastalarda RDW artışının patogenezi henüz tam bilinmemektedir. Önceki çalışmalarda (32, 33) inflamasyon ve hiposideremi bu artıştan sorumlu tutulmuştur.

Bu çalışmanın limitasyonları kesitsel çalışma olması nedeniyle tek RDW ölçümü kullanıldı ve RDW'deki değişiklikler araştırılmadı. Ayrıca arteriyel sertliği değerlendirmek için invaziv bir metod kullanılmadı. Patogeneze ışık tutabilecek inflamatuar sitokinler değerlendirilmedi.

SONUÇ

RDW basit, kolay ulaşılabilir, rutin hemogram testlerinden elde edilebilen bir sonuçtur. Çalışmamızda aşikar kardiyovaskuler hastalığı olmayan kronik böbrek hastalarında yüksek RDW arterial sertlik ile ilişkili bulunmuştur. RDW ateroskleroz için yüksek riskli bireyleri tespit etmede kullanılabilir. Ateroskleroza yatkın bireyler RDW ile daha kolay tespit edilip daha yakın takip edilebilir.

ETİK BEYANLAR

Etik Kurul Onayı: Bu çalışma için Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi İlaç ve Tıbbi Cihaz Dışı Araştırmalar Etik Kurulu'ndan izin alınmıştır (Tarih:21.11.2014 , Kabul no: 2014/23).

Aydınlatılmış Onam: Çalışma retrospektif olarak dizayn edildiği için hastalardan aydınlatılmış onam alınmamıştır.

Hakem Değerlendirme Süreci: Harici çift kör hakem değerlendirmesi.

Çıkar Çatışması Durumu: Yazarlar bu çalışmada herhangi bir çıkara dayalı ilişki olmadığını beyan etmişlerdir.

Finansal Destek: Yazarlar bu çalışmada finansal destek almadıklarını beyan etmişlerdir.

Yazar Katkıları: Yazarların tümü; makalenin tasarımına, yürütülmesine, analizine katıldığını ve son sürümünü onayladıklarını beyan etmişlerdir.

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Chron Precis Med Res 2024; 5(1): 28-33
DOI: 10.5281/zenodo.10891274

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Understanding Parental Perspectives on Childhood Vaccines: Examining Attitudes and Behaviors of Parents with Young Children

Ebeveynlerin Çocukluk Çağı Aşılarına Bakış Açılarını Anlamak: Küçük Çocuğu Olan Ebeveynlerin Tutum ve Davranışlarının İncelenmesi

Nicel Yıldız Silahlı[1], Senay Ture[2], Nefise Zulal Oz[3]

[1]Istanbul Medipol University Faculty of Medicine, Department of Pediatrics, Istanbul, Turkey
[2]Akdeniz University Faculty of Medicine, Department of Pediatrics, Division of Social Pediatrics Antalya, Turkey
[3]Istanbul Medipol University Faculty of Medicine, Istanbul, Turkey

ABSTRACT

Aim: Vaccine hesitancy is a current and global problem. In order to increase social acceptance of vaccination, it is recommended to determine the local situation and propose solutions per cultural norms. Studies have shown that vaccine hesitancy is a steerable situation and that the bond of trust between the health worker and the parent increases vaccine acceptance. In our study, we aimed to examine the attitudes and behaviors of participating parents regarding childhood vaccines.

Material and Method: The study population was home-parents with children aged 0-24 months who agreed to participate by snowball sampling method. Participants completed the "Parental Attitudes Towards Childhood Vaccinations" scale (Bulun et al.) and sociodemographic data form online. An information form was sent to all participants, and informed consent was obtained.

Results: A total of 138 participants were reached online. Of the parents reached, 87.76% (n:86) were mothers, and 66.33% (n:65) had one child. 95.88% (n:93) of the participants reported being married. 53.61% (n:52) of the participants had completed undergraduate education. 98 questionnaires with appropriate age groups and complete answers were evaluated. The number of participants who decided not to vaccinate was 16 (16.33%), while 10 (10%) participants stated that they postponed vaccination. 73% (n: 72) of the participants thought vaccination was more effective than natural immunization. 69.38% (n: 68) of the participants reported trusting the information they received about vaccines. Again, 69.38% (n:68) of the participants reported that they could openly discuss their concerns about vaccines with healthcare professionals. 63% of the participants stated they had no hesitation about childhood vaccines. All participants reported that they would get vaccinated when they had other children. When asked about the sources of information about childhood vaccines, 92.78% (n: 90) of the participants stated that they obtained information from healthcare professionals. In comparison, 53.61% (n: 52) of the participants reported using online sources.

Conclusion: Numerous studies have highlighted that vaccine ambivalence, recognized as a major global issue, can be addressed effectively through collaborative efforts with families via non-judgemental, empathic, supportive, and tailor-made family interviews with solution-oriented approaches. Our study group observed that the concerns raised align with the literature, although epidemiological studies in our country remain limited. When attempting to find scientific solutions by comprehending the family's concerns, it is crucial to reassess the situation during each interaction and persistently pursue solutions with patience, especially regarding child health and societal impacts.

Keywords: Vaccination hesitancy, parents, vaccination, trust

ÖZ

Giriş: Aşı kararsızlığı güncel ve küresel bir sorundur. Aşılamanın toplumsal kabulünü artırmak için yerel durumun tespit edilmesi ve kültürel normlara göre çözümler önerilmesi önerilmektedir. Yapılan çalışmalar aşı kararsızlığının yönlendirilebilir bir durum olduğunu ve sağlık çalışanı ile ebeveyn arasındaki güven bağının aşı kabulünü artırdığını göstermiştir. Çalışmamızda, katılımcı ebeveynlerin çocukluk çağı aşılarına ilişkin tutum ve davranışlarını incelemeyi amaçladık.

Gereç ve Yöntem: Çalışma evreni, kartopu örnekleme yöntemiyle katılmayı kabul eden 0-24 aylık çocukları olan ev ebeveynleridir. Katılımcılar "Çocukluk Çağı Aşılarına Yönelik Ebeveyn Tutumları" ölçeğini (Bulun vd.) ve sosyodemografik veri formunu çevrimiçi olarak doldurmuştur. Tüm katılımcılara bir bilgi formu gönderilmiş ve bilgilendirilmiş onam alınmıştır.

Bulgular: Toplam 138 katılımcıya çevrimiçi olarak ulaşılmıştır. Ulaşılan ebeveynlerin %87,76'sı (n:86) annedir ve %66,33'ünün (n:65) bir çocuğu vardır. Katılımcıların %95,88'i (n:93) evli olduğunu bildirmiştir. Katılımcıların %53,61'i (n:52) lisans eğitimini tamamlamıştır. 98 anket uygun yaş grupları ve eksiksiz cevaplarla değerlendirmeye alınmıştır. Aşı yaptırmamaya karar veren katılımcı sayısı 16 (%16,33) iken, 10 (%10) katılımcı aşılamayı ertelediğini belirtmiştir. Katılımcıların %73'ü (n: 72) aşılamanın doğal bağışıklamadan daha etkili olduğunu düşünmektedir. Katılımcıların %69,38'i (n: 68) aşılar hakkında aldıkları bilgilere güvendiklerini belirtmiştir. Yine katılımcıların %69,38'i (n:68) aşılarla ilgili endişelerini sağlık çalışanlarıyla açıkça tartışabildiklerini bildirmiştir. Katılımcıların %63'ü çocukluk çağı aşıları konusunda herhangi bir tereddüt yaşamadığını belirtmiştir. Katılımcıların tamamı başka çocukları olduğunda aşı yaptıracaklarını bildirmiştir. Çocukluk çağı aşılarıyla ilgili bilgi kaynakları sorulduğunda, katılımcıların %92,78'i (n: 90) sağlık çalışanlarından bilgi aldıklarını belirtmiştir. Buna karşılık, katılımcıların %53,61'i (n: 52) çevrimiçi kaynakları kullandığını bildirmiştir.

Sonuç: Çok sayıda çalışma, önemli bir küresel sorun olarak kabul edilen aşı kararsızlığının, yargılayıcı olmayan, empatik, destekleyici ve çözüm odaklı yaklaşımlarla kişiye özel aile görüşmeleri yoluyla ailelerle işbirliği çabalarıyla etkili bir şekilde ele alınabileceğini vurgulamıştır. Çalışma grubumuz, ülkemizdeki epidemiyolojik çalışmaların sınırlı olmasına rağmen, dile getirilen endişelerin literatürle uyumlu olduğunu gözlemlemiştir. Ailenin kaygılarını anlayarak bilimsel çözümler bulmaya çalışırken, her etkileşim sırasında durumu yeniden değerlendirmek ve özellikle çocuk sağlığı ve toplumsal etkiler konusunda sabırla çözüm arayışını sürdürmek çok önemlidir.

Anahtar Kelimeler: Aşı kararsızlığı, ebeveynler, aşılama, güven

Corresponding Author: Nicel Yildiz Silahli
Address: Istanbul Medipol University Faculty of Medicine, Department of Pediatrics, Istanbul, Turkey
E-mail: nicel.yildiz@medipol.edu.tr

Başvuru Tarihi/Received: 29.12.2023
Kabul Tarihi/Accepted: 18.02.2024

INTRODUCTION

Vaccine hesitancy presents a worldwide concern that poses a risk to public health (1,2). The causes of vaccine hesitancy can be intricate and varied, encompassing misinformation, skepticism, cultural beliefs, social media influence, and lack of trust. It is essential to recognize the local situation and establish solutions in line with cultural norms to diminish vaccine hesitancy and heighten social acceptance of vaccines (1,3,4). Examining the attitudes and behaviors of parents towards childhood vaccines constitutes a crucial research area. Some parents harbor worries about the safety of childhood vaccines, presenting a significant hurdle to vaccine acceptance that jeopardizes public health (5,6). Thus, investigating parents' attitudes and behaviors surrounding childhood vaccines is vital to reducing vaccine ambivalence (5,6). Studies indicate that the degree of communication and trust between parents and healthcare professionals plays a vital role in shaping vaccine hesitancy. Parents expect healthcare professionals to offer dependable information about vaccines, which impacts their decision-making process (2,7,8).

Moreover, healthcare professionals' empathy towards parents' apprehensions and perceptions may reduce vaccine hesitancy. Improving healthcare professionals' skills to communicate effectively with parents is crucial. Sources of vaccine information for parents could also affect vaccine hesitancy (9,10). A considerable number of parents utilize online resources for reliable information on vaccines (6,10).

Nevertheless, apprehensions over the dependability of these sources still need to be made. Healthcare professionals have a crucial role in providing parents with trusted sources of vaccine information and facilitating access to such information (9,10). Concurrently, parental awareness of vaccination is key to mitigating vaccine hesitancy. Insufficient knowledge among many parents about vaccines' advantages, side effects, and disease prevention capabilities further compounds the issue (9,11,12). Providing precise and objective information to parents about vaccines is crucial in raising their awareness levels (9,10). Healthcare professionals should provide comprehensive information about vaccines to parents and address their concerns (10,13). The study aims to evaluate parents' perspectives and conduct relating to vaccinating their children, to define the local vaccine hesitancy situation, and lay the groundwork for devising solution strategies that are by cultural norms for enhancing families' acceptance of vaccination.

MATERIAL AND METHOD

Study Design

This research utilized a cross-sectional study design to investigate parental attitudes toward childhood vaccinations among parents of children aged 0-24 months.

Study Population

The study participants encompassed parents who had children within the designated age bracket and consented to participate in the research. The snowball sampling approach was adopted to recruit participants, whereby the initially enrolled parents were requested to refer other potential participants from their social circles.

Data Collection Instruments

Opel et al. (2011) (14,15) developed the Parent Attitudes About Childhood Vaccines survey, adapted for Turkish use and subjected to a validity and reliability study by Bulun et al. (2020) (16). The Parent Attitudes About Childhood Vaccines scale measures parents' attitudes towards childhood vaccinations using 23 items. The participants also completed a sociodemographic data form to provide demographic information.

Data Collection

The data was collected online, with informed consent obtained from participants who received an information form explaining the study's purpose and guaranteeing anonymity and confidentiality. Online survey software was used to administer the " Parent Attitudes About Childhood Vaccines Survey " and the sociodemographic data form.

Ethical Considerations

Prior to the commencement of the study, ethical approval was obtained from the ethics committee of Istanbul Medipol University. The approval, with the reference number 262, was granted on 17.03.2022. This ensured that the research complied with ethical guidelines and protected the rights and well-being of the participants.

Data Analysis

The participants' sociodemographic characteristics were summarised using descriptive statistics, including percentages and frequencies. The " Parent Attitudes About Childhood Vaccines Survey" responses were analyzed using descriptive statistical methods in a question-and-answer format rather than scoring. Thus, the responses were meticulously scrutinized, emphasizing the specifics outlined in the parent's replies.

RESULTS

A total of 138 parents were contacted using an online survey. Twelve parents declined to participate in the research. Analysis of participant sociodemographic data revealed that the majority of participants, 87.76% (n:86), were mothers, whereas fathers comprised 11.22% (n:12) of the sample. Of the participants, 95.88% (n:93) were married, and 4.12% (n:4) were single. One participant did not disclose their marital status (**Table 1**). In terms of the number of children, 65 participants (66.33%) had one child, 25 participants (25.51%) had two children, 6 participants (6.12%) had three children, and 2 participants (2.04%) had four or more children. With regards to the participants' educational backgrounds, 32.99% (n:32) had completed postgraduate education, 53.61% (n:52) had attained a bachelor's degree, 8.25% (n:8) held an associate degree, and 5.15% (n:5) had completed high school education. The income status of participants was defined as follows: 34.02% (n:33) reported 'my income is more than my expenses', 54.64% (n:53) reported 'my income is equal to my expenses,' and 11.34% (n:11) reported 'my income is less than my expenses.' When the age range of the children was examined, 58 participants (59.18%) were aged between 0 and 24 months, and 40 participants (40.82%) were aged over two years (**Table 1**). Forty children of the participants were excluded from the study for being over two years of age, and 58 questionnaires were evaluated.

Table 1. Sociodemographic data of the participants

Features	n	Percentage (%)
Relationship with the Child		
Mother	86	87.76
Father	11	11.22
Other	1	1.02
Marital Status		
Married	93	95.88
Single	4	4.12
Level of Education		
High School	5	5.15
Pre-license	8	8.25
License	52	53.61
Postgraduate	32	32.99
Income Status		
My income is less than my expenses	11	11.34
My income is equal to my expenses	53	54.64
My income is more than my expenses	33	34.02
Number of Children		
One	65	66.33
Two	25	25.51
Three	6	6.12
Four or more	2	2.04

Sixteen participants (16.33%) opted not to receive vaccination for reasons other than allergies or medical conditions, and 10 (10%) postponed vaccination. Approximately 19.39% (n:19) of participants believed that children receive more vaccinations than necessary, while 51.02% (n:50) believed that the administered vaccines were necessary. Additionally, 29.59% (n:29) expressed indecision on this matter. 81.61% (n=79) of the respondents reported that they regarded the diseases prevented by vaccination as severe, 9.18% (n=9) were uncertain, and 10.20% (n=10) did not consider the diseases prevented by vaccination as serious illnesses. Regarding the effectiveness of vaccination vs. natural immunization, 73% (n=72) of the participants believed vaccination was more effective, while 12.24% (n=12) remained unsure. 18.34% (n: 18) of respondents believed that administering vaccinations simultaneously was more effective, while 46.94% (n: 46) disagreed, and 34.69% (n: 34) remained undecided. Furthermore, 32.65% (n:32) expressed confidence that their child would not experience adverse effects following vaccination, whereas 57.14% (n:56) expressed concerns about potential negative outcomes. 51.02% (n=50) of respondents expressed confidence in the safety of childhood vaccines, while 36.73% (n=36) held reservations and 12.24% (n=12) were unsure. Concerns about the vaccine's efficacy in disease prevention were voiced by 23.47% (n=23) of participants, while 56.13% (n=55) reported no such reservations and 20.41% (n=20) were undecided. 79.59% (n:78) of the participants indicated they would vaccinate their children when they had other offspring, while 7.14% (n:7) were undecided. Concerning trust in vaccine information, 69.38% (n:68) of the participants reported they trusted the information they received. Meanwhile, 21.43% (n:21) remained undecided, and 9.18% (n:9) did not trust the information they received. Additionally, 68 participants (69.38%) responded that they could openly discuss their vaccination concerns with healthcare professionals. 63% of respondents reported no hesitancy towards childhood vaccinations. Of those asked about the sources of information for childhood vaccinations, 92.78% (n: 90) stated healthcare professionals as their primary source, while 53.61% (n: 52) also reported using online sources. 38.14% (n=37) of participants used social media platforms, including Facebook, Twitter, and Instagram, for information gathering. Additionally, 41.23% (n=40) used printed materials such as books, magazines, and newspapers. Furthermore, 31.96% (n=35) reported seeking information from individuals in their immediate surroundings (**Table 2**).

Table 2. Question and Answer

	n	Percentage (%)
In the past, have you put off having your child vaccinated without any allergy or illness concerns?		
Yes	10	10.20
No	87	88.78
I don't know	1	1.02
In the past, have you ever decided not to vaccinate your child without any allergy or illness concerns?		
Yes	16	16.33
No	80	81.63
I don't know	2	2.04
Children get more vaccinations than is good for them.		
Strongly disagree	20	20.41
Disagree	30	30.61
I am not sure	29	29.59
I agree	16	16.33
Absolutely agree	3	3.06
I believe that most of the diseases prevented by vaccines are serious diseases.		
Strongly disagree	6	6.12
Disagree	4	4.08
I am not sure	9	9.18
I agree	31	31.63
Absolutely agree	48	48.98
It is better for my child to be immunized by getting sick than by vaccination.		
Strongly disagree	29	29.59
Disagree	43	43.88
I am not sure	12	12.24
I agree	9	9.18
Absolutely agree	5	5.10
It is also better for children to receive fewer vaccinations.		
Strongly disagree	18	18.37
Disagree	28	28.57
I am not sure	34	34.69
I agree	16	16.33
Absolutely agree	2	2.04
How worried are you that your child may suffer a serious side effect after vaccination?		
I am not worried at all	7	7.4
I am not worried	25	25.51
I am not sure	10	10.20
I am a little worried	46	46.94
I am very worried	10	10.20
How concerned are you that childhood vaccinations may not be safe?		
I am not worried at all	14	14.29
I am not worried	36	36.73
I am not sure	12	12.24
I am a little worried	30	30.61
I am very worried	6	6.12
How worried are you that the vaccine will not prevent the disease?		
I am not worried at all	15	15.31
I am not worried	40	40.82
I am not sure	20	20.41
I am a little worried	21	21.43
I am very worried	2	2.04

Table 2. Question and Answer (continued)

	n	Percentage (%)
If you had another child today, would you want them to get all the recommended vaccinations?		
Yes	78	79.59
No	13	13.27
I don't know	7	7.14
In general, how hesitant would you be about childhood vaccinations?		
I am not worried at all	26	26.53
I am not worried	36	36.73
I am not sure	9	9.18
I am a little worried	24	24.49
I am very worried	3	3.06
I trust the information I have received about vaccinations.		
Strongly disagree	2	2.04
Disagree	7	7.14
I am not sure	21	21.43
I agree	47	47.96
Absolutely agree	21	21.43
I can openly discuss any concerns I have about vaccination with my child's doctor or other health professionals		
Strongly disagree	1	1.02
Disagree	18	18.37
I am not sure	11	11.22
I agree	50	51.02
Absolutely agree	18	18.37
What are the sources you get information about vaccines? (More than one option can be selected)		
Health professionals (physicians, nurses, pharmacists and others)	90	92.78
Near Environment	31	31.96
Web sites	52	53.61
Social media (Facebook, Tweeter, Instagram etc.)	37	38.14
Book/Magazine	35	31.96
Newspaper	5	5.15

DISCUSSION

This study's findings offer valuable insights into the attitudes and beliefs of participants concerning childhood vaccinations. In general, most participants exhibited a favorable perspective on the significance and requirement of vaccinations in ensuring public health. This corresponds to preceding studies that emphasize vaccination effectiveness in averting serious diseases (5,13). The substantial number of respondents who acknowledged the preventive advantages of vaccines is a positive sign, as it suggests an overall appreciation of immunization's role in promoting children's health.

Nevertheless, it is noteworthy that a subset of participants raised apprehensions regarding vaccine safety and efficacy. Specifically, these concerns concentrated on potential severe side effects in children and the belief that immunization is ineffective in preventing illnesses. The results demonstrate vaccine hesitancy and the

impact of false information or misunderstandings related to vaccines. Accurate information is essential to enable well-informed decisions regarding childhood vaccinations (4,5,9).

A significant observation is that some participants believe vaccines are overused. This belief may originate from a need to comprehend the recommended vaccination schedules and their reasoning. Clear communication and education are necessary to clarify the importance of adhering to vaccination schedules and dispel misconceptions about excessive vaccination (17).

The most reliable source of vaccine information came from healthcare professionals during the participants' examinations. This highlights healthcare providers' crucial role in addressing parental concerns, providing accurate information, and promoting vaccine acceptance. Effective communication and providing evidence-based information by healthcare professionals are crucial to counteracting vaccine hesitancy among parents. Active listening to parental concerns is also essential (10,13,18).

The study found that online sources and social media platforms were preferred to gather information about vaccines. This underscores the growing impact of digital platforms on people's health-related choices. However, it is essential to exercise caution regarding the reliability and accuracy of online information, as misinformation can readily proliferate on these channels. Measures should be taken to secure dependable web resources that provide evidence-based vaccine insights.

Limitations

It is crucial to recognize that this study has several limitations. Firstly, utilizing the snowball sampling technique may introduce selection bias, as participants were recruited based on referrals from existing ones. Furthermore, the study relied on self-report measures, which may be subject to social desirability bias. Additionally, the findings of this research are restricted to the specific population of home parents with children aged 0-24 months and may not apply to other populations.

CONCLUSION

The study found that most participants held favorable views toward childhood vaccinations, acknowledging their significance and preventive advantages. Nevertheless, several participants disagreed on vaccine safety, efficacy, and overuse. False beliefs were also identified as a concern. Health professionals were identified as the most trustworthy source of information, underscoring their responsibilities in addressing parental concerns and presenting precise information. The impact of online sources and social media reinforces the necessity of accessible and dependable digital resources to combat the spread of misleading information. Efforts must improve communication strategies, enhance public health education, and foster informed decision-making to promote vaccination acceptance and safeguard public health. It is crucial to ensure a logical progression between the suggestions and explain abbreviated technical terms when first utilized.

Additionally, using clear and objective language with passive tones and avoiding biased or ornamental language is vital. A consistent citation style, footnote formatting, and a formal register must be followed while avoiding grammatical and punctuation errors. Lastly, the vocabulary should be precise, and hedging should be used to maintain a balanced and objective perspective.

ETHICAL DECLARATIONS

Ethics Committee Approval: Approval from the Istanbul Medipol University Ethics Committee (Date: 17.03.2022, Decision No: 262).

Informed Consent: Informed consent form was signed by all participants.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 34-38
DOI: 10.5281/zenodo.10891288

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Comparison of Clinical Features and Outcomes of Foreign Bodies in the Cervical Oesophagus and Thoracic Oesophagus Treated with Rigid Esophagoscopy in Adults: 10 Years of Experience

Erişkinlerde Rijit Özofagoskopi ile Tedavi Edilen Servikal Özofagus ve Torasik Özofagustaki Yabancı Cisimlerin Klinik Özellikleri ve Sonuçlarının Karşılaştırılması: 10 Yıllık Deneyim

Duygu MERGAN İLİKLERDEN [1], Tolga KALAYCI [2], Fuat SAYIR [1], Ufuk ÇOBANOĞLU [1], Görkem KAYGUSUZ [1], Metin TAN [1]

[1]Van Yuzuncu Yıl University Faculty of Medicine, Department of Thoracic Surgery, Van, Turkey
[2]Ağrı İbrahim Çeçen University Faculty of Medicine, Department of General Surgery, Ağrı, Turkey

ABSTRACT

Aim: We aimed to compare the clinical features and outcomes of foreign bodies (FBs) in the cervical and thoracic oesophagus treated with rigid esophagoscopy in adults.

Material and Method: This single-centre study was designed as a retrospective study at a tertiary health centre between March 2010 and December 2020. The clinical records and files of patients over 18 treated with rigid esophagoscopy due to oesophageal foreign bodies (OFBs) were reviewed. The cases were divided into the cervical and thoracic oesophagus groups, according to where FBS were stuck. Outcomes were evaluated as complications and mortality occurring in the first 30 days after FB intake. Since there was no mortality in any patient, outcomes were only complications.

Results: Of the 194 patients, 119 (61.3) were female, and the mean age was 48.45±16.10 years. The most common FB localisation was the cervical oesophagus, with 88.7%, and the remainings at the thoracic oesophagus. The morbidity rate of the study was 4.6%, with no mortality. In comparing the groups, non-bone FBs were detected more frequently in the thoracic oesophagus group (p=0.036). Dysphagia was common in FBs in the cervical oesophagus group, and chest pain in FBs in the thoracic oesophagus group (p<0.001). Length of hospital stay (p=0.018), morbidity rate (p=0.011), and additional surgical intervention (p=0.034) were higher in patients with a FB in the thoracic oesophagus.

Conclusion: FBs in the thoracic oesophagus are challenging to manage due to high morbidity rates, perforation rates, and hospital stays.

Keywords: Foreign body, morbidity, oesophagus, perforation

ÖZ

Amaç: Erişkinlerde rijit özofagoskopi ile tedavi edilen servikal ve torasik özofagustaki yabancı cisim (YC)lerin klinik özelliklerini ve sonuçlarını karşılaştırmayı amaçladık.

Gereç ve Yöntem: Bu tek merkezli çalışma, Mart 2010 ile Aralık 2020 tarihleri arasında üçüncü basamak bir sağlık merkezinde retrospektif çalışma olarak tasarlandı. Özofagus YC'si nedeniyle rijit özofagoskopi ile tedavi edilen 18 yaş üstü hastaların klinik kayıtları ve dosyaları incelendi. Olgular FBS'nin sıkıştığı yere göre servikal ve torasik özofagus gruplarına ayrıldı. Sonuçlar: YC alımından sonraki ilk 30 günde meydana gelen komplikasyonlar ve mortalite olarak değerlendirildi. Hiçbir hastada mortalite olmadığından sonuçlar sadece komplikasyondu.

Bulgular: 194 hastanın 119'u (61,3) kadındı ve yaş ortalaması 48,45±16,10 yıldı. En sık YC lokalizasyonu %88,7 ile servikal özofagusta, geri kalanı ise torasik özofagustaydı. Çalışmanın morbidite oranı %4,6 olup mortalite görülmedi. Gruplar karşılaştırıldığında kemik dışı YC'ler torasik özofagus grubunda daha sık tespit edildi (p=0,036). Servikal özofagus grubundaki YC'lerde disfaji, torasik özofagus grubundaki YC'lerde göğüs ağrısı yaygındı (p<0,001). Torakal özofagusta YC gelişen hastalarda hastanede kalış süresi (p=0,018), morbidite oranı (p=0,011) ve ek cerrahi müdahale (p=0,034) daha yüksekti.

Sonuç: Torasik özofagustaki YC'lerin yüksek morbidite oranları, perforasyon oranları ve hastanede kalış süreleri nedeniyle tedavisi zordur.

Anahtar Kelimeler: Yabancı cisim, morbidite, özofagus, perforasyon

Corresponding Author: Duygu MERGAN İLİKLERDEN
Address: Van Yuzuncu Yıl University Faculty of Medicine, Department of Thoracic Surgery, Van, Turkey
E-mail: duygumergan@hotmail.com

Başvuru Tarihi/Received: 14.01.2024
Kabul Tarihi/Accepted: 20.03.2024

INTRODUCTION

Foreign bodies (FBs) obstructing the gastrointestinal tract are among the conditions that require urgent diagnosis and treatment. FB obstruction can cause severe morbidity and mortality worldwide in adults (1). In the Japan Collaborative Cohort Study published in 2022, the mortality due to FBs was 0.18% (2). Almost 70% of oesophagal obstruction cases due to FB are seen in the first narrowing of the oesophagus. The remainings are equally seen in the second narrowing of the gastro-oesophagal junction (3). The nature and characteristics of the swallowed FB may differ according to geographical regions and cultures. In Asian countries, fish bones are the most frequent cause of FBs; whereas in Western countries, impacted meat is prevalent (4). On the other hand, depending on the intensity of headscarf use in Muslim societies, it is common for people to swallow the needle they use for the headscarf while adjusting the headscarf (5). Differently, accidental FB swallow is most common in elderly edentulous or denture wearers. In addition to accidental swallowing of the needle taken into the mouth and an animal bone stuck in the swallowed meat without good chewing; FB ingestion can also be seen in patients with psychiatric disorders, excessive alcohol intake, and inmates (6, 7).

Most swallowed FBs can spontaneously pass through the gastrointestinal tract, but 20% require endoscopic or surgical treatment (8, 9). As the residence time of FBs present in the oesophagus increases, the removal of the object becomes more difficult, and the risk of perforation increases because the spontaneous passage of the oesophagus decreases due to the foreign body, and the oedema resulting from the trauma due to the object compresses the object even more. In such a case, important complications such as perforation, sepsis, fistula and mediastinitis may occur (10, 11). The shape, anatomical location and structure of the FB are crucial components in the perforation clinic. The perforation risk increases up to 15%-35% with the insertion of sharp objects or fishbones (12, 13).

Oesophageal FB (OFB) obstruction is diagnosed by anamnesis, clinical examination, and radiological imaging (14). Common symptoms are odynophagia, choking sensations, vomiting, dysphagia, and bloodless or bloody secretions. However, patients may be asymptomatic. Plain radiography (posterior-anterior and lateral) and thorax computed tomography are helpful in diagnosis. Rigid esophagoscopy is used in the treatment and shows a high success rate.

This study aimed to compare the clinical features and outcomes of FBs in the cervical and thoracic oesophagus treated with rigid esophagoscopy in adults.

MATERIAL AND METHOD

This single-centre study was designed as a retrospective study after ethical committee approval. The study was conducted in the Thoracic Surgery Clinic of Van Yüzüncü Yıl University Faculty of Medicine, Van, Turkey, between March 2010 and December 2020. During this review period, 328 patients were admitted to our hospital due to FBs in the oesophagus. Since the main group of the study consists of adult patients and patients treated with rigid esophagoscopy, patients under the age of 18 (n=17), patients who followed up with conservative treatment (n=55), patients treated with endoscopy (n=54), and patients referred to our clinic for follow-up in an external center (n=8) were excluded. General characteristics of the 194 patients included in the study were accessed from our hospital's record system (Enlil Hospital Information System) and the patients' medical record archive.

The cases were evaluated in terms of age, gender, type of FB, the location of the FB, main clinical symptoms on admission, hospital admission time, diagnosis method (plain radiography or computed tomography), additional surgical interventions, and complications during follow-up. Based on the location of the FBs, the cases were categorized into two groups: cervical and thoracic oesophagus. FBs are also categorised as bone and non-bone. Moreover, there were three categories for the time to visit the hospital: less than 24 hours, between 24 and 72 hours, and more than 72 hours. Complications and death (mortality) were considered outcomes. Patients who developed complications in the 30 days after surgery were considered as the morbidity-positive group, and those without complications were considered as the morbidity-negative group. There were no mortality, therefore the only consequences were complications.

All procedures performed in studies involving human participants were under the ethical standards of the institutional and national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. Ethical approval was received from Van Yüzüncü Yıl University Faculty of Medicine, Van, Turkey (Decision No: 2021/03-13, Date: 19 February 2021).

Statistical Analysis

Statistical analyses were performed using the IBM Statistical Analyses for Social Sciences (SPSS) ver. 26.0 for Windows. Kolmogorov Smirnov test, Shapiro-Wilk test and evaluation of skewness, kurtosis, and histogram graph were used to evaluate the normality distribution. Standard deviation and mean are given for data that fit the normal distribution, while median, interquartile range and minimum-maximum values are given for data that do not fit the normal distribution. Mann-Whitney U test was used to compare groups, while Chi-Square tests were used to compare qualitative variables. A p-value below 0.05 was considered statistically significant.

RESULTS

General Findings

Of the 194 patients who met the study criteria, 119 (61.3) were female, and the mean age was 48.45±16.10 years (from 19 to 84). The most common FB localisation was cervical oesophagus, with 88.7%, followed by mid-oesophagal localisation (6.2%). The most frequently detected FB was bone, with 87.6%, followed by meat, with 5.7%. At admission, dysphagia was the most common symptom, and most patients were hospitalised within the first 24 hours. Plain radiographs were used in 72.7% for definitive diagnosis. Clinical characteristics of patients who underwent rigid esophagoscopy for the oesophagal FB are shown in **Table 1**.

Table 1. Clinical characteristics of patients who underwent rigid esophagoscopy for oesophagal foreign body

Variables	n (%) or mean ± standard deviation
Age [a]	48.45±16.10 (19-84)
Gender [b]	
Female	119 (61.3)
Male	75 (38.7)
Foreign body location [b]	
Cervical oesophagus	172 (88.7)
Thoracic oesophagus	22 (11.3)
Upper-third	6 (3.1)
Mid-third	12 (6.2)
Lower-third	4 (2)
Foreign body [b]	
Bone	170 (87.6)
Non-bone	24 (12.4)
Meat	11 (5.7)
Fruit seed	4 (2.1)
Metal	3 (1.5)
Toothpick	2 (1)
Watch	1 (0.5)
Needle	1 (0.5)
Gelatine paper	1 (0.5)
Fishbone	1 (0.5)
Main symptom on admission [b]	
Dysphagia	150 (77.3)
Pain	26 (13.4)
Odynophagia	18 (9.3)
Time to hospital [b]	
<24 hours	184 (94.8)
24-72 hours	6 (3.1)
>72 hours	4 (2.1)
Main radiological test [b]	
Plain radiography	141 (72.7)
Computed tomography	53 (27.3)
Additional surgery/intervention [b]	
Yes	3 (1.5)
Thoracotomy	2 (1)
Tracheostomy	1 (0.5)
No	191 (98.5)
Hospital stays [a]	3.71±5.57 (1-65)
Morbidity [b]	
Positive	9 (4.6)
Negative	185 (95.4)

[a]: mean + standard deviation (range), [b]: n (%)

Outcomes

The morbidity rate of the study was 4.6%, with no mortality. Only oesophageal perforation was detected as morbidity due to FB, and oesophageal perforation was detected in 9 (4.64%) patients; thoracotomy was performed in 2 (1.03%) patients, and tracheostomy was performed in 1 (0.51%) patient due to neck abscess and respiratory distress. The remaining patients were followed up with conservative treatment.

Comparison of the Study Groups

In comparing the groups, non-bone FBs were detected more frequently in the thoracic oesophagus group (p=0.036). Dysphagia was common in FBs in the cervical oesophagus group, and chest pain in FBs in the thoracic oesophagus group (p<0.001). Length of hospital stay (p=0.018), morbidity rate (p=0.011), and additional surgical intervention (p=0.034) were higher in patients with a FB in the thoracic oesophagus. A comparison of the clinical features of FBs impacted in the cervical oesophagus, and FBs impacted in the thoracic oesophagus is shown in **Table 2**.

Table 2. Comparison of the clinical features and outcomes of foreign bodies impacted in the cervical and thoracic oesophagus treated with rigid esophagoscopy

Variables	Cervical oesophagus (N=172)	Thoracic oesophagus (N=22)	P value
Age [a]	96.51	105.25	0.492*
Gender [b]			0.487**
Female	107 (62.2)	12 (54.5)	
Male	65 (37.8)	10 (45.5)	
Foreign body [b]			0.036**
Bone	154 (89.5)	16 (72.3)	
Non-bone	18 (10.5)	6 (27.3)	
Main symptom on admission [b]			<0.001**
Dysphagia	140 (81.4)	10 (45.5)	
Chest pain	16 (9.3)	10 (45.5)	
Odynophagia	16 (9.3)	2 (9.1)	
Time to hospital [b]			0.364**
<24 hours	163 (88.6)	21 (11.4)	
24-72 hours	6 (100)	0 (0)	
>72 hours	3 (75)	1 (25)	
Main radiological test [b]			0.312**
Plain radiography	127 (73.8)	14 (63.6)	
Computed tomography	45 (26.2)	8 (36.4)	
Additional surgery/intervention [b]			0.034**
Yes	1 (0.6)	2 (9.1)	
No	171 (99.4)	20 (90.9)	
Morbidity [b]			0.011**
Positive	5 (2.9)	4 (18.2)	
Negative	167 (97.1)	18 (81.8)	
Hospital stays [a]	94.22	123.18	0.018*

[a]: mean rank, [b]: n (%). *Mann Whitney U test, **Pearson chi-square.

DISCUSSION

Foreign body (FB) ingestion has become a relatively common clinical problem, estimated at 13 cases per 100,000 people (15) and accounting for approximately 1500 deaths in the USA annually (6). FB represent a major challenge for emergency department physicians, pediatricians, general surgeons, anesthesiologists, otolaryngologists, and radiologists. The majority of ingested FBs are benign courses that will naturally pass spontaneously through the gastrointestinal tract without harm; however, up to 20% of the patients require intervention, and approximately 1% of patients require surgery (1).

The oesophagus, divided into the cervical oesophagus, thoracic (mediastinal), oesophagus, and abdominal oesophagus, is a muscular tubular structure extending from the 6th cervical to the 11th thoracic vertebra (16). The oesophagus has anatomical stenosis in 3 places: the first is stenosis caused by the cricopharyngeal muscle at the entrance of the oesophagus. It is the place where the oesophageal diameter is the narrowest. The second stenosis is where the left main bronchus and arcus aorta cross the oesophagus, and the final is where the oesophagus crosses the diaphragm. Seventy per cent of oesophagal FBs are situated at the level of the cricopharyngeal muscle (cervical oesophagus), 15% in the thoracic oesophagus and 15% in the gastroesophageal junction (17). On the other hand, there was a male predominancy in the literature studies (18, 19). In our study, in line with previous studies, the upper oesophagus was the most common site of FB obstruction (20). However, this study revealed that, contrary to the literature, female gender was dominant in OFBs.

Sharp objects, mainly fish or chicken bones, were the most common obstructing FBs (1, 9). Also, one-third of the general adult population is edentulous and has removable dentures, a well-known predisposing condition for recurrent FB impaction (21). Retrosternal pain was the most commonly reported symptom, and accompanying respiratory symptoms were present in approximately 4% of cases. The pulmonary symptoms result from compression of the trachea, progression of inflammatory processes in the oesophagus to the larynx and trachea, perforation and aspiration to the left main bronchus due to ulceration in the oesophagus (9). Our findings are consistent with the literature results, and most patients are diagnosed with sharp-edged objects. In addition, non-bone FBs and chest pain were detected more frequently in the thoracic oesophagus, while bone FBs and dysphagia were commonly seen in the cervical oesophagus.

Radiological procedures are essential in determining the presence, location and type of FB and therefore help us determine the most appropriate treatment approach. All cases with suspected OFB are evaluated with posteroanterior lung radiography, bilateral cervical radiography, and, if necessary, direct abdominal radiography (22). FBs, such as bone, are usually seen in the hypopharynx and cervical oesophagus on cervical radiographs. Fish bones and wood chips may not be visible on the plain radiograph. The absence of FB on radiographs does not exclude FB. Contrast-enhanced radiographs can be taken in cases where no FB can be seen radiographically. If perforation is suspected, water-soluble contrast agents should be used (23). Computed tomography should be used as an advanced examination in patients whose FB cannot be detected despite all the tests or complications such as perforation and mediastinitis due to FB are suspected. In this study, the primary radiological imaging tool was plain radiography, and there was no difference between the study groups according to the primary radiological imaging tool.

Most ingested foreign bodies pass through the gastrointestinal tract without any difficulty. Spontaneous passage can mostly be expected within 4–6 days (24). In rare cases this may take up to 4 weeks. Until the foreign body has passed through the patient's body safely, the patient's stools should be continuously observed (9). If a FB get stuck, it should be removed quickly and, if possible, visually to relieve the patient and prevent possible complications. The best treatment method for the removal of FBs is controversial. It should be decided whether intervention is required for FB obstruction, its urgency and the most appropriate intervention. The treatment option depends on many factors, such as the patient's age, clinical condition, size and sharpness of the FB, anatomical localisation, and the physician's experience (23). While endoscopy is an essential method in treating FBs stuck in the oesophagus (25), according to recent studies, almost all FBs can be removed with a success rate of 98% with rigid esophagoscopy (26). Complications can be seen at a rate of 1-5% during the removal of OFBs or in prolonged cases (27).

In the present study, the complication rate was 4.6%, which was in the literature range, and 3 of 9 patients required additional intervention (thoracotomy or tracheostomy). Additional to the literature data, the rate of further intervention (9.1% vs 0.6%) and morbidity (18.2% v 2.9%) were higher in thoracic FBs. As a result of these preponderances, hospital stays were longer in the thoracic FBs.

CONCLUSION

This was the first comparative literature study about the clinical differences and outcomes between FBs in adults' cervical and thoracic oesophagus. The most common obstruction side was the cervical oesophagus, the first narrowing of the oesophagus. According to the present study, non-bone FBs and chest pain were detected more frequently in the thoracic oesophagus, and dysphagia

was common in FBs in the cervical oesophagus. Length of hospital stay, morbidity rate, and additional surgical intervention was common in patients with a FB in the thoracic oesophagus.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study protocol was approved by the Van Yuzuncu Yil University Faculty of Medicine Non-interventional Clinical Researches Ethics Committee (Date: 19.02.2021, Decision No: 2021/03-13).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 39-45
DOI: 10.5281/zenodo.10890865

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Retrospective Analysis of Pediatric Patients with Vitamin B12 Deficiency

Vitamin B12 Eksikliği ile Takip Edilen Çocuk Hastaların Retrospektif İncelenmesi

Derya DUMAN[1], Gonca USLU[2], Barış MALBORA[3]

[1]Mersin University Faculty of Medicine, Pediatric Cardiology Department, Mersin, Turkey
[2]Ankara Dr Sami Ulus Children Health and Diseases Training and Research Hospital, Ankara, Turkey
[3]Yeni Yüzyıl University Faculty of Medicine, Pediatric Hematology and Oncology Department, Istanbul, Turkey

ABSTRACT

Aim: Vitamin B12 (cobalamin) is an important vitamin that plays a role in vital events. This study examines and analyzes patients with vitamin B12 deficiency in a specific region in a wide range of age groups, including infants.

Material and Method: 275 patients with vitamin B12 deficiency aged 0-18 years who were followed and treated in the Hematology outpatient clinic at a 3rd level training and research hospital during 3 years, were analyzed retrospectively.

Results: 120 (43.6%) patients were female of a total of 275 patients with vitamin B12 deficiency. The mean vitamin B12 level was 159.78±33.98 pg/ ml, the mean hemoglobin level was 11.47±2.27 g/dL, and the MCV was 81.51±10.37 fL. 100 patients were under one year of age. 22% of mothers of the infants had vitamin B12 deficiency, while 20.9% of mothers had levels of vitamin B12 that can be presumed border value. 32% of patients had iron deficiency. The 87% of causes that evoked vitamin B12 deficiency were nutritional. Another leading factor for vitamin B12 deficiency was *Helicobacter pylori* (HP) infection and the frequency was 10.2%. The expected increment in vitamin B12 and complete blood count values were observed after treatment.

Conclusion: Vitamin B12 deficiency becomes widespread in the first two years of life and infants are at risk. Another important factor is HP. Eradication of this infection could treat vitamin B12 deficiency.

Keywords: Vitamin B12, children, megaloblastic anemia, *Helicobacter pylori*, anemia

ÖZ

Amaç: Vitamin B12 (kobalamin yaşamsal olaylarda rol alan önemli bir vitamindir. Bu çalışma infantları da içeren geniş kapsamlı yaş grubunda belirli bir bölgedeki vitamin B12 eksikliği olan hastaları analiz etmektedir.

Gereç ve Yöntem: 3. basamak eğitim araştırma hastanesindeki hematoloji polikliniğinde 3 yıllık dönemde, vitamin B12 eksikliği tanısıyla takip ve tedavi edilen 0-18 yaş grubu 275 hastanın dosyası geriye dönük olarak incelendi.

Bulgular: 275 hastanın 120'si (%43,6) kız, 155'i (%56,4) erkekti. Hastaların serum vitamin B12 seviyesi ortalaması 159,78±33,98 pg/mL, hgb ortalaması 11,47±2,27 g/dL, MCV ortalaması 81,51±10,37 fL idi. 100 hasta bir yaşın altındaydı. Bebeklerin annelerinin %22'sinde B12 vitamini eksikliği bulunurken, annelerin %20,9'unda B12 vitamini düzeyi sınırdaydı. İnfantların, serum vitamin B12 seviyesi bakılabilen annelerinde %22 oranında eksiklik saptanırken, %20,9'unda ise sınırda değerler görüldü. Hastaların %32'sine demir eksikliği eşlik ediyordu. Emilimi bozarak B12 eksikliğine yol açan önemli faktörlerden biri olan ***Helicobacter pylori*** enfeksiyonu sıklığı %10,2 olarak saptandı. Hastaların %87'sinde vitamin B12 eksikliğinin nedeninin ön planda nutrisyonel olduğu tespit edildi. Tedavi ile birlikte kan sayımı ve serum vitamin B12 seviyelerinde yükselme gözlendi.

Sonuç: B12 vitamini eksikliği yaşamın ilk iki yılında yaygındır ve infantlar risk altındadır.Yine emilim bozukluğuna yol açan ***Helicobacter pylori*** enfeksiyonunun çocuklarda azımsanmayacak sıklıkta görüldüğü ve bu enfeksiyonun eradikasyonunun vitamin B12 eksikliği tedavisinde katkısı olduğu tespit edilmiştir.

Anahtar Kelimeler: B12 Vitamini, çocuk, megaloblastik anemi, helikobakter pilori, anemi

Corresponding Author: Derya Duman
Address: Department of Pediatric Cardiology, Faculty of Medicine, Mersin University, Mersin, TURKEY
E-mail: drderyaduman@gmail.com

Başvuru Tarihi/Received: 22.02.2024
Kabul Tarihi/Accepted: 20.03.2024

INTRODUCTION

Vitamin B12 (cobalamin) is a water-soluble vitamin that is obtained mainly from animal foods, acts as a coenzyme in important reactions in the body, and is especially involved in the production of Deoxyribonucleic Acid (DNA), which is necessary for cell division and proliferation (1). People meet all their cobalamin needs nutritionally (1, 2).

In vitamin B12 deficiency, tissues that grow rapidly and have rapid cell renewal are especially affected. Deficiency in children causes physical and neuromotor developmental delay, as well as megaloblastic anemia (2-4). Causes of vitamin B12 deficiency in childhood include inadequate intake, vitamin B12 absorption defects that intrinsic factor deficiency, gastric mucosal disease, malabsorption in the small intestines, widespread gastrointestinal malabsorption including vitamin B12 malabsorption, competition with Vitamin B12, Vitamin B12 Transport Defect and metabolism disorders could be considered (5). *Helicobacter pylori* (HP) infection and associated malabsorption might occur in children (6, 7).

Vitamin B12 deficiency causes serious neurological damage and long-term intellectual disorders in children (8). Therefore, prevention, recognition, and treatment of deficiency are important for the healthy development of infants and children.

This study analyzes data from a specific region, including a comprehensive age group classification and different etiological data. It is special in that it simultaneously analyzes infants and those with malabsorption due to gastritis. Our study also aimed to examine the frequency, nutritional history, comorbidities, demographic, clinical, and laboratory characteristics of patients with vitamin B12 deficiency, evaluate the treatment results, and compare the results with the literature.

MATERIAL AND METHOD

The data of patients in the 0-18 age group who were diagnosed with vitamin B12 deficiency and followed up and treated during 3. years in the Hematology Polyclinic of the 3rd Level Training and Research Hospital, living far from the sea and in a certain inland region, were retrospectively examined. These patients were identified by filtering from the hospital information system database. The diagnosis ages of the patients were grouped as newborns, infants, toddlers between 13-24 months, and children over two years of age.

Age at presentation, demographic, clinic, laboratory, and other findings were recorded in the patient follow-up form. Ethical approval was not necessary as the data were collected as part of clinical management and any identifiable data were anonymised fully. Nevertheless, Study Approval was received for this study from the hospital committee. The Helsinki Declaration was taken into consideration. The study was conducted by the Declaration of Helsinki.

Complete blood count and vitamin B12 levels were checked again in some patients for control purposes in the third month after the start of treatment. When evaluating nutritional deficiency; The group consuming red meat once a week or more frequently was considered sufficient, while the others were considered nutritional deficiencies.

The normal range of serum vitamin B12 was considered to be 200-800 pg/mL (9-11). Complete blood count values and the normal range of serum folic acid, ferritin, and homocysteine levels were measured for each age group (12, 13).

HP infection screening was performed using invasive and/or non-invasive tests in patients with upper gastrointestinal symptoms such as epigastric pain, nausea, heartburn, and gastroesophageal reflux symptoms.

Vitamin B12 treatment was administered intramuscularly (IM) every day for 1 week, then 4 doses weekly, and finally 3 doses once a month, according to a standard protocol, after adjusting the vitamin B12 dose according to the age of the patients (1). Ferrous sulfate is given orally at 4 mg/kg/day to patients with iron deficiency; Amoxicillin, clarithromycin, and lansoprazole were also given orally as triple eradication therapy to those who were HP positive.

Biochemical Analysis

Vitamin B12, folic acid, and ferritin were studied with the electrochemiluminescence immunoassay (ECLIA) method on the ADVIA Centaur XP brand device. Serum iron and LDH were studied using the colorimetric method on a Unicel DXC 800 Beckman Coulter brand device. A complete blood count was performed on an ABX Pentra DF 120 automatic blood count device. Homocysteine was studied using the electrochemiluminescence immunoassay (ECLIA) method on the Immulite 2000 XP brand hormone analyzer. Normal serum levels were determined according to the devices used in the laboratory.

Patients to be tested for C14 urea breath were required to have not used proton pump inhibitors, bismuth-containing compounds, and antibiotics in the last 1 month, H2 receptor antagonists in the last 1 week, and antacids in the last 24 hours. Each patient was given a 37 kBq (1µCi) 14C-urea-citric acid composition capsule (Helicap, Noster System AB Stockholm, Sweden) along with 25 ml of water after fasting for at least 4 hours. Breath samples were collected with the heliprobe method.

Patients whose test result was Grade 2 were considered infected with *Helicobacter pylori*.

Statistical Method

Statistical analysis of the data obtained from the research was carried out in the SPSS for Windows 15.0 package program. In evaluations, the Chi-Square test and Fisher-Exact test are used for comparisons of categorical data, and comparisons of quantitative data; Student's t-test was used for comparisons between two groups for normally distributed data, the Mann-Whitney U test was used for non-normally distributed data, One-way Analysis of Variance and Bonferroni test were used for normally distributed data for comparisons of more than two groups, and Kruskall-Wallis Analysis of Variance was used for non-distributed data. Relationships between quantitative variables were examined with Pearson Correlation analysis. Arithmetic mean, standard deviation was used as a descriptive value in quantitative data, and frequencies and percentages were used in qualitative data. The statistical significance limit was accepted as 0.05.

RESULTS

The median age of 275 patients was 7 years (20 days-17.5 years). 120 (43.6%) of these patients were girls and 155 (56.4%) were boys. While the median age of girls was 8 years, the median age of boys was 6 years. The age of girls was found to be significantly higher than that of boys (p<0.01). It was seen that the serum vitamin B12 level increased as the age at diagnosis increased (**Table 1**). However, no statistically significant difference was observed (p: 0.072).

Table 1. Relationship between Age Groups and Serum Vitamin B12 level mean levels.

Age group	N (%)	Vitamin B12 (pg/mL) mean ±SD	P
Newborn	5 (1.8%)	152.60±45.32	=0.072
Infant	95 (34.5%)	152.62±38.33	
>2 years old	146 (53%)	163.94±30.52	
13-24 months	29 (10.5%)	163.52±31.04	

N:numbers, %: percentage, SD: standard deviation.

Patients' History at Admission and Physical Examination Findings

In 204 of 275 patients (74.9%), there was a symptom at admission. The most common signs and symptoms were weakness, fatigue, and pallor. When we look at the most common symptoms of patients according to age groups, not being able to gain weight, growth and mental-motor retardation were at the top of the list in infants.

No pathological physical examination findings were detected in 161 of 275 patients (58.5%) at the time of diagnosis. The most frequently observed pathological physical examination findings in the remaining 114 patients (41.5%) were pallor of the skin and mucous membranes. Jaundice, hypotonia, and growth and mental-motor retardation were the most common findings in infants. Serum vitamin B12 levels of patients with pathological physical examination findings were found to be significantly lower than others (p<0.05).

At the time of admission, 74 out of 275 patients (26.9%) had neurological findings/symptoms. Numbness, tingling in the extremities and headache were the most common neurological findings and symptoms (30 patients), while seizures (16 patients), inability to walk, and hypotonia (10 patients) were more common in infants.

Laboratory and Hematological Data of Patients

The mean vitamin B12 level and other mean values are summarized in **Table 2**.

Table 2. Laboratory Data of the Patients.

	Mean±SD	Min.-Max.
Vitamin B12 (pg/mL)	159.78±33.98	40-200
vitamin B12 in mothers of the infants (pg/ mL)	262.59±92.74	56-528
Hemoglobin (g/dL)	11.47±2.27	5-17
MCV (fL)	81.51±10.37	44-103
Homocysteine (µmol /L)	18.23±22.27	4-189
Ferritin (ng/mL)	64.87±106.88	0.2-880
Folic acid (ng/mL)	12.92±7.53	2.2-30
Control Vitamin B12 (pg/mL)	687.30±545.18	1-2500

SD: standard deviation, min.: minimum, max.: maximum

Low ferritin level was detected in 88 patients (32%) in total. Hgb mean of patients with iron deficiency were found to be significantly lower before treatment than those without iron deficiency (p<0.001). In 9 patients (3.3%), low folic acid was detected in addition to Vitamin B12 deficiency. Laboratory, whole blood, and peripheral smear results are summarized in **Tables 2**, **3**, and **4**. No significant difference was detected between the mean vitamin B12 of patients with and without anemia.

Table 3. Relationship Between Complete Blood Count and Serum Vitamin B12 Mean Level.

Complete blood count findings percentage(%)	No	Yes	P
	Vitamin B12 Mean level (pg/mL) mean±SD	Vitamin B12 Mean level (pg/mL) mean±SD	
Anemia (38.5%)	158.50±33.67	161.81±34.54	>0.05
Leukopenia (25.2%)	159.64±33.89	161.41±35.79	>0.05
Thrombocytopenia (2.9%)	161.18±32.33	113.00±54.09	<0.001
Neutropenia (8.7%)	162.32±31.41	133.17±47.18	<0.001
Bicytopenia(4.4%)/pancytopenia (0.7%)	161.33±32.42	130.86±48.66	<0.001

SD: standard deviation.

Tablo 4. Peripheral smear findings.		
Peripheral smear findings	**N**	**%**
No abnormal findings	206	74.9
Hypersegmentation	9	3.3
hypochromic microcytic erythrocytes	50	18.5
Hypersegmentation + hypochromic microcytic erythrocytes	5	1.8
Blast	1	0.4
N:numbers, %: percentage.		

The mean vitamin B12 of patients with high MCV was found to be significantly lower than those with low or normal MCV (p<0.01). When the mean vitamin B12 of the patients with bicytopenia or pancytopenia were examined, serum vitamin B12 levels were found to be statistically significantly lower in both groups compared to the others (p <0.01). Serum vitamin B12 levels were found to be lower in patients with pancytopenia than in patients with bicytopenia (p<0.01). Bone marrow examination was performed in 13 (4.8%) of 275 patients, and megaloblastic changes were detected in the bone marrow in 3 (23.7%).

Examination of Laboratory Variables of Infants and Their Mothers

There were 100/275 patients who were under the age of one. The mean serum vitamin B12 level of the infants was 152.97±38.48 pg/mL. The mean age of the infants was 5±3.48 months (0-12 months). It was determined that 53% of infants were exclusively breastfed. It was seen that 35% of infants started to consume complementary foods at 6 months or less, and 9% started to consume complementary foods after 6 months. 56% had not started supplementary food yet. It was determined that the time for patients to start complementary foods was delayed.

Serum vitamin B12 levels could be measured in the mothers of 86 (86%) of the patients under one year of age. While the serum vitamin B12 level of 19 (22%) of 86 mothers was <200 pg/ml, the serum vitamin B12 level of 18 (20.9%) was between 201-250 pg/mL, serum vitamin B12 levels of 49 mothers (56.9%) were normal. Nutritional history could be questioned in 80 of 86 mothers. 74 of them (92.5%) consumed red meat once a year or less. While 5 of them consumed meat once a month, 1 of them consumed meat once a week or more frequently.

Associated diseases detected along with Vitamin B12 Deficiency

In 240 (87%) of the patients, the cause of vitamin B12 deficiency was thought to be primarily nutritional. HP infection was present in 28 patients (10.2%), and celiac disease was detected in 5 patients (1.8%). 2 patients were being followed up with a diagnosis of chronic diarrhea. Cystic fibrosis was suspected in 1 patient. Anti-parietal antibody positivity was detected in 6 of 275 patients (2.1%).

There were 15 of our selected infant patients in whom had associated neurologic symptoms and syndromic sign, and they had been tested for inherited metabolic diseases by acylcarnitine analysis with Tandem MS, serum amino acids, urine organic acid analysis. While transcobalamin II deficiency was detected in one patient, cobalamin E disease was detected in one patient, and methylene tetrahydrofolate reductase enzyme defect was detected in another patient. One patient was also diagnosed with West syndrome. A patient was also being followed due to gastric intrinsic factor deficiency. There were no positive viral serology results in the patients. Cobalamin E deficiency is diagnosed by metabolic tests and final diagnosis was made by complementation analysis in cultured fibroblasts. The patient had homocysteine in the urine metabolic screen prompted further testing for metabolites indicative of defects in cobalamin metabolism. He had a high serum homocysteine, low methionine, high methyltetrahydrofolate and normal methylmalonic acid.

Homocysteine was checked in 82 of 275 patients. The mean homocysteine level was 18.23±22.27 µmol/L. A strong, significant, and negative correlation was detected between vitamin B12 and homocysteine (p:0.003 r:-0.344). When looking at age groups, homocysteine levels in infants were significantly higher than other groups (p<0.001).

Patients with Accompanying *Helicobacter pylori* Infection

A screening test for HP infection was performed in 43 patients. HP positivity was detected in 28 of 43 patients (65.11%) and treatment was started. Based on the entire population, the rate was 10.2%. The mean age of those with positive HP screening was 183±21.93 months, while the mean age of those with negative screening was 145.93±44.87 months. The mean age was significantly higher in HP-positive patients than in negative patients (p<0.001). The rate of concomitant iron deficiency in HP-positive patients was 60.7% (17 patients). Among those with negative HP, iron deficiency was accompanied in 10 patients (66.6%).

Post-treatment control complete blood count and control B12 values of these 28 patients with HP infection were re-examined, and a statistically significant increase was detected compared to before treatment (p<0.001).

Follow-up and Treatment Results

Treatment was applied regularly in 244 of the patients (88.7%). 20 patients (7.3%) appeared to have problems complying with treatment.

In 134 of 275 patients, complete blood count tests and serum vitamin B12 levels were re-examined at their third-month follow-up. In 5 of 134 patients, the

serum vitamin B12 level measured in the 3rd month of treatment was found to be below 250 pg/mL. In 3 of these 5 patients, the control serum vitamin B12 level was <200 pg/mL. While two out of 5 patients had HP Infection; one patient was receiving treatment for brucellosis. These patients did not use replacement therapy and other treatments regularly. Neurological findings improved after B12 replacement treatment except one patient with seizure. That patient had still seizure and hypotonia who is diagnosed as West syndrome later.

Among the patients who started vitamin B12 treatment, one patient had contractions such as fasciculation of the tongue and myoclonic movements in the arm on the 4th day of IM treatment. A transcobalamin II defect was detected in this patient. No patient developed hypokalemia or heart failure.

DISCUSSION

Prevention, recognition, and treatment of vitamin B12 deficiency are important for the healthy development of infants and children (10). Among the causes of vitamin B12 deficiency, there are primarily nutritional reasons (14). This study has shown that it can also be seen in breastfed infants and that deficiencies may also occur due to conditions related to absorption problems in the gastrointestinal tract, even when nutritional intake is good. This study is unique in that it covers a wide age range from infants to adolescents and elucidates the etiology in a specific child population with vitamin B12 deficiency. Starting from infancy, vitamin B12 deficiency depends on the mother's vitamin deficiencies. It has also been shown in the study that older children may have malabsorption and vitamin B12 deficiency due to HP infection. The study showed that deficiency was observed even in cases where nutritional intake was good, and it was necessary to consider the absorption problem.

There are many prevalence studies conducted in various countries around the world. A feature of vitamin B12 is that normal values vary between races and societies (2, 15, 16). Looking at prevalence studies conducted around the world, vitamin B12 deficiency has been detected in 22% of school children in some regions of Mexico (2). Although there is no large study conducted throughout Turkey, there are studies conducted regionally and it has been reported that B12 deficiency is seen at a high rate (4, 10, 17, 18). Açkurt et al. reported vitamin B12 deficiency in expectant mothers during pregnancy (19).

The expected increase in MCV value may not occur when there is a thalassemia carrier, iron deficiency anemia, infection, or inflammatory disease along with megaloblastic anemia (13, 20). In a study conducted in the USA in 1994 on 406 adult patients, it was found that the probability of vitamin B12 deficiency was low (<25%) when MCV was normal (21). In the study conducted by Bay et al., the MCV value was below 90 fl in 1/3 of the cases (22). Consistent with the literature, 38.5% of our patients in our study were anemic and there was a significant negative correlation between vitamin B12 level and MCV. 32% of our patients were accompanied by iron deficiency. The mean MCV of those with iron deficiency was significantly lower than those without iron deficiency.

In cases born with low vitamin B12 stores and who receive insufficient vitamin B12 through breast milk, if vitamin B12 is not supplemented with external food, deficiency findings are expected to appear within the first few months of life. It has been reported in infant studies that vitamin B12 deficiency screening should also be added (17). The most important cause of deficiency in babies is due to deficiency in the mother (23).

Paleness, weakness, loss of appetite, inability to gain weight, vomiting, and diarrhea were the most common presenting symptoms in this study. When we look at the studies in the literature, the most common presenting symptoms were weakness, growth retardation, and hypotonia, especially in infants (24, 25). Our results were compatible with the literature.

The lower rates of anemia, thrombocytopenia, neutropenia, and pancytopenia in our study compared to other studies may be because the mean vitamin B12 level of our cases was higher than in other studies and that the vitamin B12 level of 70.5% of the patients was 150≤ pg/ml, which can be considered as mild deficiency. Our results showed that the incidence of neutropenia, bicytopenia, thrombocytopenia, and pancytopenia increased in proportion to the low vitamin B12 level.

Tests for neurological and neurometabolic diseases were made in fifteen infant patients.These patients had persistent symptoms despite adequate treatment and elevation of vitamin B12 level. It could be recommend to the physicians to test further for hematological diseases, for malignancies or for inherited metabolic diseases when there are associated severe systemic, hematological or neurological findings incompatible with vitamin B12 deficiency level or systemic, hematological, or neurological findings that persist despite the increase in levels with B12 treatment require us to suspect hematological, hereditary metabolic diseases and/or neurological diseases (26).

Bone marrow examination should be considered when clinical and laboratory findings like weight loss, fever and laboratory signs such as bicytopenia and pancytopenia. exist despite the elevation of vitamin B12. These

conditions should warn clinicians about hematological diseases or hereditary metabolic diseases in the routine follow-up of vitamin B12 deficiency (18).

HP infection, in which disorders related to the absorption of more than one micronutrient can be observed, could also be considered as another factor in the coexistence of Vitamin B12 deficiency with iron deficiency (6, 7). It has been suggested that HP may cause vitamin B12 deficiency and that treatment of this infection alone may correct anemia (27). Akçam et al. suggests that only achlorhydria caused by acute gastritis, without gastric atrophy, causes vitamin malabsorption (28). In our study, the HP rate was relatively high. It was observed that B12 levels of the patients increased after HP treatment.

Study Limitations

Since the data in our study were obtained by retrospectively examining patient files, our information was limited to what was recorded in the files.

CONCLUSION

This study showed that vitamin B12 deficiency is common in children in a particular region. The number of patients in the first 2 years of age indicates that this age group is at risk. Vitamin B12 levels should be checked in patients with iron deficiency, which indicates insufficient consumption of animal foods. Another risk group includes those with malabsorption diseases such as HP infection and chronic diarrhea. To prevent vitamin B12 deficiency in infants, vitamin B12 levels should be checked in pregnant women and mothers of infants and animal foods should be recommended.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study protocol was approved by the Ankara Dr Sami Ulus Children Health and Diseases Training and Research Hospital Ethics Committee (Date: 23.8.2023, Decision No: E-73799008-799-222823473).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

Acknowledgements: This study was derived from the medical specialization thesis titled : "Vitamin B12 Eksikliği ile Takip Edilen Çocuk Hastaların Retrospektif İncelenmesi" (Thesis number: 822050). We thank the Ankara Dr Sami Ulus Children Health and Diseases Training and Research Hospital.

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Chron Precis Med Res 2024; 5(1): 46-52
DOI: 10.5281/zenodo.10891304

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

The Multi-Dimensional Effect of COVID-19 Infection on Pregnancy Process and Mode of Delivery Investigation

COVID-19 Enfeksiyonunun Gebelik Süreci ve Doğum Şekline Etkisinin Çok Yönlü İncelenmesi

Ozgul Ozgan Celikel[1], Filiz Yildirim[2], Sevgi Ayhan[3]

[1]Department of Obstetrics and Gynecology, Faculty of Medicine, Lokman Hekim University, Ankara Training and Research Hospital, Ankara, Turkey
[2]Department of Internal Medicine, Polatlı Duatepe State Hospital, Ankara, Turkey
[3]Clinic of Gynecologic Oncology, University of Health Sciences Turkey, Ankara City Hospital, Ankara, Turkey

ABSTRACT

Aim: The aim of this study was to investigate the obstetric and neonatal outcomes of pregnant women with COVID-19 infection.

Material and Method: In this study, pregnant women with COVID-19 infection who applied to Lokman Hekim University Ankara Hospital between 01 July, 2021, and 31 December, 2021, in what week and how the pregnancy period ended, whether they received treatment for COVID-19 infection, which drugs they used, age, gravida, parity, hemogram, intrauterin-ex, abortion, premature birth, premature rupture of membranes, fetal weight, cesarean indications for those who had a cesarean section, and whether the babies stayed in the neonatal intensive care unit were examined.

Results: 82 pregnant patients with COVID-19 infection were included in the study. While the average age of the patients was 29.62±4.96 years, the gestational age at which they had COVID-19 was 21.41±9.54, hemoglobin (HGB) 10.62±1.49, hematocrit (HCT) 30.78±6.88, platelet (PLT) 195.32±76.90, birth week 35±8.70, and birth weight 3295.70±517.41. While the gravida of 65.9% is in the 1-2 group, 34.1% is in the 3-5 group. 52.4% have parity. The parity average of those who have parity is 1.47±0.59. 23.2% had abortion. The average abortion rate for those who had an abortion was 1.26±0.56. All of them do not have intaruterin-ex. The delivery method for 32.9% is vaginal birth, while 31.7% is cesarean section. 72% do not have early membrane rupture (EMR).

Conclusion: In this study, there was no maternal death due to COVID-19 infection, but the need for neonatal intensive care was observed to increase. In conclusion; considering all the data we obtained from the study, we think that COVID-19 infection during pregnancy adverse obstetric and neonatal outcomes.

Keywords: COVID-19, obstetric, pregnancy, neonatal

ÖZ

Amaç: Bu çalışmada, COVID-19 enfeksiyonu olan gebe kadınların obstetrik sonuçlarını ve neonatal sonuçlarını araştırmayı amaçladık.

Gereç ve Yöntem: Bu çalışmada 01 Temmuz 2021-31 Aralık 2021 tarihleri arasında Lokman Hekim Üniversitesi Ankara Hastanesi'ne başvuran COVID-19 enfeksiyonu geçiren gebelerin; gebelik sürecinin kaçıncı haftada ve nasıl sonuçlandığı, COVID-19 enfeksiyonu için tedavi alıp almadıkları, tedavi alanların hangi ilaçları kullandıkları, yaş, gravide, parite, hemogram, intaruterin-ex, abortus, erken doğum, erken membran rüptürü (EMR), fetal ağırlık, sezaryen olanların sezaryen endikasyonları, bebeklerin yeni doğan yoğun bakım ünitesinde kalıp kalmadıkları incelendi.

Bulgular: Çalışmaya 82 COVID-19 enfeksiyonu geçiren gebe hasta dahil edildi. Hastaların yaş ortalaması 29,62±4,96 yıl iken COVID-19 geçirdiği gebelik haftası 21,41±9,54, hemoglobin (HGB) 10,62±1,49, hematokrit (HCT) 30,78±6,88, trombosit (PLT) 195,32±76,90, doğum haftası 35±8,70 ve doğum kilosu 3295,70±517,41'dir. %65,9'unun gravidası 1-2 grubunda iken %34,1'inin 3-5 grubundadır. %52,4'ünde parite vardır. Parite olanların parite ortalaması 1,47±0,59'dur. %23,2'sinde abortus vardır. Abortus olanların abortus ortalaması 1,26±0,56'dır. Hiçbirinde intaruterin-ex yoktur. %32,9'unun doğum şekli vajinal doğum iken %31,7'sinin sezaryendir. %72'sinde EMR yoktur.

Sonuç: Bu çalışmada COVID-19 enfeksiyonuna bağlı anne ölümü yaşanmadı ancak yeni doğan yoğun bakım ihtiyacının arttığı görüldü. Sonuç olarak; bu çalışmadan elde ettiğimiz tüm veriler göz önüne alındığında gebelik sırasındaki COVID-19 enfeksiyonunun obstetrik ve neonatal sonuçları etkilediğini düşünmekteyiz.

Anahtar Kelimeler: COVID-19, doğum, gebelik, yeni doğan

Corresponding Author: Filiz Yildirim
Address: Department of Internal Medicine, Polatlı Duatepe State Hospital, Ankara, Turkey
E-mail: drfyildirim@yahoo.com

Başvuru Tarihi/Received: 23.02.2024
Kabul Tarihi/Accepted: 20.03.2024

INTRODUCTION

The Coronavirüs disease 2019 (COVID-19) is causing the severe acute respiratory syndrome coronavirüs pandemic and caused morbiditiy and mortality among countries all over the world. On December 31, 2019, by WHO China Country Office; after reporting that there are many unknown cases of pneumonia in Wuhan city of Hubei province of China, WHO first announced that the cause of these complaints is a new type of coronavirus (2019-nCoV). The WHO Director-General declared this outbreak as the "COVID-19 Pandemic" on March 11, 2020, and "in the past two weeks, the number of cases outside China has increased by thirteen times, and the number of affected countries has tripled (1,2).

Initial evidence demostrated that having COVID-19 during pregnancy causes increased likelihood of adverse maternal, obstetric and neonatal outcomes (3). Hypersensitivity reaction, increased coagulation and hypoxia are observed of severe COVID-19 infection and might be the reasons for the serious side effects during pregnancy and newborn babies (4,5). Moreover, Hariyanto et al. (2020) undertook a meta-analysis which reported that maternal anemi were significantly associated with severe illness COVID-19 infection (6).

Recent study reported that pregnant women with COVID-19 causes increased risk of abortion, preterm birth, intrauterine growth retardation (IUGR), need for endotrachealin tubation, need for intensive care unit (ICU), still birth, coagulation (DIC) (7,8).

In the present study, we aimed to investigate the obstetric outcomes and neonatal outcomes of pregnant women with COVID-19 infection.

MATERIAL AND METHOD

This study is a retrospective cohort study conducted with patients who had pregnant women-COVID-19 symptoms. All patients who applied to Lokman Hekim University, Ankara Hospital with suspected COVID-19 disease between July 01, 2021, and December 31, 2021, and were infected with laboratory-confirmed SARS-CoV-2 were included in the study. How did laboratory–corfirmed SARS-CoV-2 case idenditfy should be explained for example SARS-CoV-2 real-time reverse-transcription-polymerase chain reaction (rRT-PCR) test positive cases identified as laboratory-confirmed cases. This study was approved by the Lokman Hekim University Non-Interventional Clinical Research Ethics Committee (No: 2021/079). The data of 82 patients confirmed with pregnant women-COVID-19 were studied. The COVID-19 patients participating in the study did not have any additional diseases defined. Demographic, clinical characteristics, and laboratory findings of the patients were obtained from hospital information system records. All data were checked by physicians who are experts in gynecologist, internal medicine, infectious diseases, and clinical microbiology. Those who were diagnosed with COVID-19 in the first 12 weeks of pregnancy were included in the first trimester, those who were diagnosed with COVID-19 in the 12-24 weeks of pregnancy were included in the second trimester, and those who were diagnosed with COVID-19 in the 24-40 weeks of pregnancy were included in the group of those who had the disease in the third trimester. All patients participating in this study were laboratory-confirmed COVID-19 patients, and the diagnostic criteria for COVID-19 were based on the positive rRT-PCR tests results. Fetal growth restriction, multifetal pregnancy, gestational diabetes mellitus, epilepsy, and systemic disease were accepted as exclusion criteria.

It is also stated whether pregnant women received medication for COVID-19 and whether they were treated as inpatients. Age, gravity, parity, hemogram, liver and kidney function tests, and fasting blood sugar levels were recorded. Pregnant women were followed until birth. Data of patients who continued their pregnancy follow-up in a different health institution were accessed by phone. Those whose pregnancies ended in abortion, those who presented with premature rupture of membranes, and those who had intrauterine exitus were recorded. Birth types, birth weeks, birth weight of newborns, gender, and whether they need incubators were included in the analysis.

Statistical Analysis

All statistical analyses were performed by using the statistical package SPSS for Windows, version 26.0 (SPSS, Chicago, Illinois, USA). While evaluating the study data, frequencies (number, percentage) for categorical variables and descriptive statistics (mean, standard deviation (SD)) are given for numerical variables.

The normality assumptions of the numerical variables were examined with the Kolmogorov Smirnov test of normality and it was seen that the variables were normally distributed. For this reason, parametric statistical methods were used in the study.

Differences between two independent groups were examined with the Independent Sample t-Test. The relationships between the two independent numerical variables were checked with the Pearson correlation coefficient and the relationships between the two independent categorical variables were checked with Chi-square analysis. Statistical significance was interpreted at the 0.05 level in analyzes.

RESULTS

A total of 82 patients participated in this study. While the mean age and standard deviation of the participants in the study was 29.62±4.96, the gestational week at which they had COVID-19 was 21.41±9.54, hemoglobin (HGB) 10.62±1.49, hematocrit (HCT) 30.78±6.88, platelet (PLT) 195.32±76.90, birth week is 35±8.70, and birth weight is 3295.70±517.41. While 65.9% of them have gravida in the 1-2 group, 34.1% have it in the 3-5 group. The abortus mean and standard deviation of those with parity is 1.47±0.59. 23.2% had abortion. The mean and standard deviation of those who had an abortion were 1.26±0.56. All of them do not have intaruterin-ex. The delivery method for 32.9% is vaginal birth, while 31.7% is cesarean section. 72% do not have early membrane rupture (EMR). 62.2% do not need an incubator (**Table 1**).

As a result of the correlation analysis applied, there is a statistically significant, moderately positive relationship between the week of pregnancy during which COVID-19 was experienced and the week of birth (r=0.499). There is a statistically significant, moderately positive relationship between birth week and birth weight (r=0.560) (**Table 2**).

As a result of the Independent Sample t Test, there is a statistically significant difference in age between people with gravida 1-2 and gravida 3-5 (p<0.05). Accordingly, the age level of people with gravida 3-5 is significantly higher than people with gravida 1-2 (p<0.05). As a result of the applied Chi-square analysis, there is a statistically significant relationship between gravida and parity, abortion, type of birth and EMR (p<0.05). The rate of people with gravida 1-2 having vaginal delivery is significantly higher than those with vaginal birth in gravida 3-5 (p<0.05) (**Table 3**).

As a result of the Independent Sample t Test applied, there is a statistically significant difference in age between people with and without parity (p<0.05). Accordingly, the age level of people with parity is significantly higher than people without parity (p<0.05) (**Table 4**).

Table 1. Descriptive statistics

	Mean	SD
Age (years)	29.62	4.96
COVID-19 pregnancy week	21.41	9.54
HGB	10.62	1.49
HCT	30.78	6.88
PLT	195.32	76.90
Birth week	35.00	8.70
Birth weight	3295.70	517.41
	n	**%**
Gravidity (mean±SD (2.06±1.08))		
1-2	54	65.9
3-5	28	34.1
Parity		
Existent (mean±SD (1.47±0.59))	43	52.4
Absent	39	47.6
Abortus		
Existent (mean±SD (1.26±0.56))	19	23.2
Absent	63	76.8
İntaruterin-ex		
Existent	0	00
Absent	82	100
Type of birth		
Abortus	13	15.9
Vaginal birth	27	32.9
Cesarean section	26	31.7
Past surgery	15	18.3
Still birth	1	1.2
EMR		
Existent	23	28.0
Absent	59	72.0
Gender		
Girl	33	47.1
Man	37	52.9
Incubator need		
Existent	31	37.8
Absent	51	62.2

HGB: Hemoglobin, HCT: Hematocrit, PLT: Platelet, EMR: Early membrane rupture

Table 2. Examining the relationships between variables

		Age	COVID-19 passed through pregnancy week	HGB	HCT	PLT	Birth week	Birth weight
Age (years)	r	1.000	0.063	-0.018	-0.11	-0.11	0.075	-0.122
	p		0.572	0.871	0.324	0.324	0.509	0.314
Pregnancy week with COVID-19	r		1.000	0.053	0.103	0.174	.499**	0.044
	p			0.635	0.358	0.119	0.000	0.719
HGB	r			1.000	.739**	-0.1	0.052	-0.065
	p				0.000	0.37	0.649	0.593
HCT	r				1.000	-0.1	0.033	-0.035
	p					0.372	0.773	0.775
PLT	r					1.000	0.177	0.069
	p						0.116	0.572
Birth week	r						1.000	.560**
	p							0.000
Birth weight	r							1.000
	P							

r: Correlation coefficient *p<0.05, HGB: Hemoglobin, HCT: Hematocrit, PLT: Platelet

Table 3. Examination of differences and relationships according to gravida

	Gravidity				t
	1-2		3-5		
	Mean	SS	Mean	SS	
Age (years)	28.57	4.83	31.64	4.64	-2.763
Pregnancy week with COVID-19	21.74	9.48	20.79	9.78	0.428
HGB	10.64	1.57	10.57	1.33	0.194
HCT	31.65	5.95	29.11	8.25	1.602
PLT	191.26	81.62	203.14	67.59	-0.661
Birth week	35.15	8.63	34.69	9.00	0.218
Birth weighy	3272.60	547.89	3346.09	451.56	-0.549
	n	%	n	%	Chi-square
Parity					27.850
(+)	17	31.5	26	92.9	
(-)	37	68.5	2	7.1	
Abortus					22.074
(+)	4	7.4	15	53.6	
(-)	50	92.6	13	46.4	
Type of birth					14.211
Abortus	6	11.1	7	25.0	
Vaginal delivery	23	42.6	4	14.3	
Cessarian	19	35.2	7	25.0	
Previous surgery	6	11.1	9	32.1	
Still birth	0	0.0	1	3.6	
EMR					3.991
(+)	35	64.8	24	85.7	
(-)	19	35.2	4	14.3	
Gender					0.706
Female	21	43.8	12	54.5	
Male	27	56.3	10	45.5	
Need of neonatal intensive care					0.040
(-)	34	63.0	17	60.7	
(+)	20	37.0	11	39.3	

t: Independet Sample t Test *p<0.05, HGB: Hemoglobin, HCT: Hematocrit, PLT: Platelet, EMR: Early membrane rupture

Table 4. Examination of differences and relationships according to parity

	Parity				t
	(+)		(-)		
	Mean	SS	Mean	SS	
Age (years)	31.00	4.51	28.10	5.04	2.746
Pregnancy week with COVID-19	19.98	9.51	23.00	9.43	-1.443
HGB	10.53	1.47	10.71	1.51	-0.516
HCT	29.95	7.44	31.69	6.17	-1.146
PLT	187.60	72.58	203.82	81.49	-0.953
Birth week	34.41	9.43	35.62	7.93	-0.615
Birth weight	3239.40	434.87	3352.00	589.63	-0.909
	n	%	n	%	Chi-square
Abortus					2.533
(+)	13	30.2	6	15.4	
(-)	30	69.8	33	84.6	
Type of birth					29.742
Abortus	9	20.9	4	10.3	
Vaginal delivery	10	23.3	17	43.6	
Cessarian	8	18.6	18	46.2	
Previous surgery	15	34.9	0	0.0	
Still birth	1	2.3	0	0.0	
EMR					3.996
(-)	35	81.4	24	61.5	
(+)	8	18.6	15	38.5	
Gender					1.433
Female	19	54.3	14	40.0	
Male	16	45.7	21	60.0	
Need of neonatal intensive care					0.328
(-)	28	65.1	23	59.0	
(+)	15	34.9	16	41.0	

t: Independet Sample t Test *p<0.05, HGB: Hemoglobin, HCT: Hematocrit, PLT: Platelet, EMR: Early membrane rupture

As a result of the applied Chi-square analysis, there is a statistically significant relationship between parity, mode of birth and EMR (p<0.05). Accordingly, the rate of birth by cesarean in people without parity is significantly higher than the rate of cesarean by birth in people with parity (p<0.05). The rate of people with parity who have undergone surgery is significantly higher than the rate of people with non-parity who have had surgery (p<0.05). The rate of those without EMR in those with parity is significantly higher than the rate of those without EMR in those without parity (p<0.05) (**Table 5**).

As a result of the Independent Sample t Test applied, there is a statistically significant difference in birth weight between those who need incubators and those who do not (p<0.05). Accordingly, the birth weight of those who need incubators is significantly higher than the birth weight of those who do not need incubators (p<0.05) (**Table 6**).

Table 5. Examining differences and relationships according to EMR

	EMR				t
	(-)		(+)		
	Mean	SS	Mean	SS	
Age (years)	29.73	4.70	29.35	5.69	0.311
Pregnancy week with COVID-19	20.75	9.00	23.13	10.81	-1.018
HGB	10.64	1.45	10.54	1.60	0.274
HCT	31.24	6.26	29.61	8.30	0.963
PLT	201.97	77.87	178.26	73.22	1.259
Birth week	35.51	8.18	33.74	9.95	0.822
Birth weight	3328.90	442.68	3206.58	685.85	0.878
	n	%	n	%	Chi-square
Abortus					0.037
(+)	14	23.7	5	21.7	
(-)	45	76.3	18	78.3	
Type of birth					1.879
Abortus	8	13.6	5	21.7	
Vaginal delivery	19	32.2	8	34.8	
Cessarian	19	32.2	7	30.4	
Previous surgery	12	20.3	3	13.0	
Still birth	1	1.7	0	0.0	
Gender					0.001
Female	24	47.1	9	47.4	
Male	27	52.9	10	52.6	
Need of neonatal intensive care					2.807
(-)	40	67.8	11	47.8	
(+)	19	32.2	12	52.2	

t: Independet Sample t Test *p<0.05, HGB: Hemoglobin, HCT: Hematocrit, PLT: Platelet, EMR: Early membrane rupture

Table 6. Examination of differences and relationships according to incubator need

	Need of neonatal intensive care				t
	(-)		(+)		
	Mean	SS	Men	SS	
Age (years)	29.71	4.52	29.48	5.69	0.195
Pregnancy week with COVID-19	21.80	9.46	20.77	9.78	0.472
HGB	10.55	1.51	10.73	1.45	-0.520
HCT	30.33	7.22	31.52	6.32	-0.753
PLT	198.31	72.18	190.39	85.10	0.450
Birth week	35.22	9.16	34.63	8.01	0.290
Birth weight	3409.33	387.80	3114.74	642.01	2.397
	n	%	n	%	Chi-square
Abortus					0.962
(+)	10	19.6	9	29.0	
(-)	41	80.4	22	71.0	
Type of pregnancy					1.195
Abortus	8	15.7	5	16.1	
Vaginal delivery	16	31.4	11	35.5	
Cessarian	17	33.3	9	29.0	
Previous surgery	9	17.6	6	19.4	
Still birth	1	2.0	0	0.0	

t: Independet Sample t Test *p<0.05, HGB: Hemoglobin, HCT: Hematocrit, PLT: Platelet

DISCUSSION

In the present study, we found moderately positive relationship between the week of pregnancy during which COVID-19 was experienced and the week of birth (r=0.499). Furthermore, that neonatal incubator need rate of %37.8, EMR ratio %28.

Increasing evidence shows that it leads to excessive inflammatory state, maternal fever, hypoxia, which can worsen maternal health, perinatal outcomes (9). Recent study reported that pregnant women with COVID-19 infection had increase risk caserean section, preterm labor and admission to the neonatal intensive care unit (NICU) (10).

Smith et al. meta-analysis reported that COVID-19 infection during pregnancy increased risk of maternal death, admission to intensive care unite. Moreover, increase preterm labor, low birth weight and increase admitted to neonatal care unit after birth (11). Wei et al. systematic review and meta-analysis demonstrated that preeclampsia, preterm labor, and still birth significant increase risk of with COVID-19 infection during pregnancy compared with those without COVID-19 diagnosis. In addition to demonstrated that pregnant women risk factor severe COVID-19 infection was associated with preterm labor, cesarean delivery, admission to the NICU compared with mild COVID-19 infection (3).

Jering et al. reported that the rate of preterm birth in those who had COVID-19 infection during pregnancy was 7.2% (12). Similarly, Simbar et al. meta-analysis including 74 cohort and case-control studies demonstrated that COVID-19 infection during pregnancy increased risk of preterm delivery (13). In this study, we found that the average birth week of pregnant women was 35 weeks.

Current data from Turkey neonatal intensive care unit (NICU) admission rate was %9.9 (14). Our study reported that NICU admission rate was %37.8. The results of our study were found to be higher than the literature. We think that this may be due to the fact that our hospital is a tertiary center and follow-up high-risk patients. We found that increased neonatal birth weight was associated with decreased admission to NICU. However, there is no relationship with the gender factor of newborns admitted to NICU. We demonstrated that no statistically significant relationship between gestational age when COVID-19 infection and the newborns were admitted to NCIU.

Chinn et al. reported that COVID-19 infection not associated with an increased cesarean delivery however preterm labor significant associated with during COVID-19 infection pregnancy (10). However, Smith et al. reported that symptomatic COVID-19 infection were more increased cesarean delivery compared the vaginal labor (11). In our cohort, we demonstrated that the cesarean section rate was found to be statistically significantly higher in primigravida pregnant women than in multiparous pregnant women.

Furthermore, our study reported that premature rupture of membranes was statistically significantly higher in primigravida pregnant women than in multiparous pregnant women

Recent studies reported that COVID-19 infection likehold increases likelihood abortion ratio (15-17). Several authors suggest that the reason for COVID-19 abortion is that the virus causes inflammation on the placenta and can cause placental insufficiency (18,19). However, Rotshenker-Olshinka et al. reported that there was no statistical difference in the rate of spontaneous abortion between the COVID and pre-COVID periods (20). Our study finding that spontan abortus ratio %15.9.

Our study has limitations, which include the following aspects. The absence of severe infection category patients in pregnancy, lack of information about the COVID vaccine, absence of medical history regarding COVID-19 treatment.

CONCLUSION

COVID-19 infection during pregnancy affects obstetric and neonatal outcomes. We reveal the obstetric and neonatal outcomes of patients with COVID-19 during pregnancy. There was no maternal death due to COVID-19 infection, but we detected an increased need for neonatal intensive care.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by the Lokman Hekim University Non-Interventional Clinical Research Ethics Committee (No: 2021/079).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Chron Precis Med Res 2024; 5(1): 53-56
DOI: 10.5281/zenodo.10891320

ORİJİNAL ARAŞTIRMA
ORIGINAL ARTICLE

Nazolabial Kistli Hastaların Tanı ve Tedavi Sonuçları

Diagnosis and Treatment Results of Patients with Nasolabial Cysts

İhsan DELİOĞLU[1], Emrah SAPMAZ[2]

[1]Elbistan Devlet Hastanesi Kulak Burun Boğaz Kliniği Elbistan, Kahramanmaraş, Türkiye
[2]Tokat Gaziosmanpaşa Üniversitesi Tıp Fakültesi Kulak Burun Boğaz Anabilim Dalı Tokat, Turkiye

ÖZ

Amaç: Nazolabial kistler anterior maksiller alanda ortaya çıkan benign nonodantejenik kistlerdir. Standart tedavisi intraoral sublabial yaklaşımla kist eksizyonu olarak tanımlanmıştır. Nazolabial kiste sahip olan ve cerrahi yaptığımız hastaları literatür ışığında yeniden gözden geçirmeği amaçladık

Gereç ve Yöntem: 2014 Ekim 2024 Ocak ayları arasında nazolabial kist nedeni ile opere ettiğimiz dokuz hasta çalışmaya dahil edildi. Hastaların tamamına kistin boyutu ve komşuluğu için bilgisayarlı tomografi çektirildi. Tüm hastalara genel anestezi altında intraoral sublabial yaklaşımla kist eksizyonu yapıldı. Hastalar nüks açısından 12 ay süresince takip edildi.

Bulgular: Hastaların yedisi kadın ikisi erkekti ve yaşları ortalama 42.22 (±11.81) idi. Hastaların tamamında yüzde asimetriye neden olan şişlik şikayeti vardı. Kistlerin en küçüğünün büyüklüğü 18 mm en büyüğünün çapı 40 mm idi (ortalama 29±8.84) Koronal planda çekilmiş paranazal bilgisayarlı tomografilerde, kemiklerde erezyona neden olmayan düzgün yüzeyli kistik lezyonlar tespit edildi. Hastaların ortalama 6.7 (±2.99) aylık takiplerinde nükse rastlanmadı.

Sonuç: Nazolabial kistler nadir görülen kistler olsa da, yüzde asimetriye neden olmuş nazal vestibülde kitle şikayeti ile gelen hastaların ayırıcı tanısında düşünülmelidir.

Anahtar Kelimeler: Nazolabial kist, tanı, tedavi

ABSTRACT

Aim: Nasolabial cysts are benign nonodentigenic cysts that occur in the anterior maxillary area. The standard treatment is defined as cyst excision via intraoral sublabial approach. We aimed to review the patients who had nasolabial cysts and underwent surgery in the light of the literature.

Material and Method: Nine patients who underwent surgery for nasolabial cyst between October 2014 and January 2024 were included in the study. All patients underwent computed tomography for the size and neighborhood of the cyst. All patients underwent cyst excision via intraoral sublabial approach under general anesthesia. Patients were followed up for 12 months for recurrence.

Results: Seven of the patients were female and two were male with a mean age of 42.22 (±11.81) years. All patients complained of swelling causing facial asymmetry. The size of the smallest cyst was 18 mm and the diameter of the largest cyst was 40 mm (mean 29±8.84). Paranasal computed tomographies in the axial plane showed smooth-surfaced cystic lesions without erosion of the bones. No recurrence was observed at a mean follow-up of 6.7 (±2.99) months.

Conclusion: Although nasolabial cysts are rare, they should be considered in the differential diagnosis of patients presenting with a mass in the nasal vestibule causing facial asymmetry.

Keywords: Nasolabial cysts, diagnosis, treatment

Corresponding Author: Emrah SAPMAZ
Address: Tokat Gaziosmanpaşa Üniversitesi Tıp Fakültesi Kulak Burun Boğaz Anabilim Dalı Tokat, Turkiye
E-mail: emrhils@yahoo.com

Başvuru Tarihi/Received: 29.02.2024
Kabul Tarihi/Accepted: 20.03.2024

GİRİŞ

Nazolabial kistler anterior maksiller alanda ortaya çıkan benign nonodantejenik kistlerdir. Nonodantojenik kistlerin yaklaşık %0.7'sini oluşturmaktadırlar (1). Sıklıkla anterior nazal tabanda submukozal olarak yerleşirler ve büyüdükleri zaman inferior konkayı medialize ederler (2). İlk kez 1882 de Emile Zuckerkandl literatüre Klestadt'ın kisti olarak tanımlamıştır (3). Kadınlarda ve sol tarafta daha sık görülmekle beraber %10 oranında bilateral olarak rapor edilmiştir (4).

Nazolabial alanda submukozal olarak başlayıp kemik dışında büyüyerek sıklıkla ağrısız şişlik şikayetine neden olurlar nadiren nazal tıkanıklık ve kozmetik deformiteye neden olabilirler (5). Enfekte oldukları zaman ağrılı şişlik olarak da karşımıza çıkabilirler (6).

Fizik muayenede nazolabial alanda nispeten hareketli, yumuşak, düzgün yüzeyli kitle olarak palpe edilebilirler. Tanıda görüntüleme yöntemlerinden USG, BT, MRI'dan faydalanılabilir (7). Histolojik olarak ilk kez 1898 yılında Brown-Kely tarafından incelenmiştir (6).

Tedavisinde literatürde iki ayrı yaklaşım tariflenmiştir. Birincisi intraoral sublabial yaklaşımla kistin tamamının çıkarılması, diğeri ise 1999 yılda Su ve ark.nın tanımladıkları intranazal endoskopik marsupializasyondur (8). Bizde bu çalışmamızda kliniğimize baş vuran bu hastaların tanı tedavi ve sonuçlarını literatür ışığında değerlendirerek paylaşmayı amaçladık.

GEREÇ VE YÖNTEM

Üniversitemiz Klinik Uygulamalar etik kurulu izni alınarak (24-KAEK-056) 2014 Ekim-2024 Ocak ayı arasında kliniğimize başvuran nazolabial kist eksizyonu yapılan dokuz hastanın dosyaları retrospektif olarak değerlendirildi. Hastaların tamamına operasyon öncesi yapılacak işlemler hakkında bilgilendirme yapılarak onamları alındı. Çalışma Helsinki Deklerasyonu ilkelerine uygun olarak gerçekleştirildi. Dosyalardan demografik veriler, geliş şikayetleri, tedavileri ve tedavi sonrası takipleri hakkında bilgiler elde edildi. Hastaların tamamına fizik muayene sonrası görüntüleme yöntemi olarak paranazal sinüz bilgisayarlı tomografisi çekildi. Hastaların bir tanesinin dış merkezde çekilmiş manyetik rezonans görüntülemesi vardı. Hastaların yedi tanesinden yumuşak doku ultrasonagrafisi çektirilmişti. Hastaların tamamına genel anestezi altında intraoral sublabial insizyon yapılarak kitle tamamen çıkartıldı. Nazal kaviteye uzanan kistler çıkartıldıktan sonra mukozanın tekrar nazal tabana oturması için ekstrafor tampon konuldu. Çıkartılan materyal histopatolojik inceleme için patoloji birimine gönderildi. Nüks edip etmediğinin takibi için hastalar yaklaşık üçer ay arayla bir yıl boyunca takiplere çağırıldı.

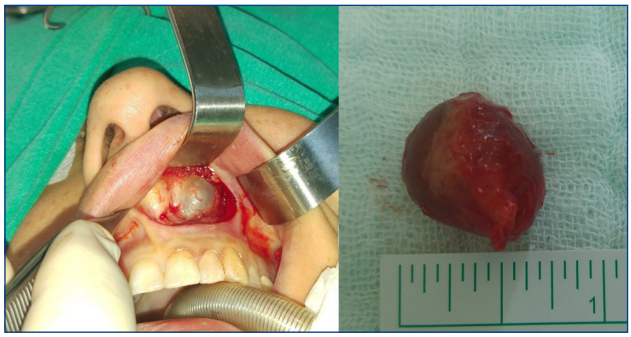
BULGULAR

Hastaların yedisi kadın ikisi erkekti ve yaşları ortalama 42.22 (±11.81) idi. İki hasta hariç tamamı yüzde ağrısız şişlik şikayeti ile kliniğimize baş vururken iki hasta ise şişlik yanında ağrıdan da şikayetçi idi (**Tablo 1**). Aksiyal ve/veya koranal planda çekilmiş paranazal sinus bilgisayarlı tomografi görüntülemelerinde kemiklerde erezyona neden olmayan, düzgün yüzeyli kistik lezyonlar tespit edildi (**Resim 1**). Kistlerin en küçüğünün büyüklüğü 18 mm en büyüğünün çapı 40 mm idi (ortalama 29±8.84). Hastaların beşinin kitlesi sağda, dördünün kitlesi sol taraftan kaynaklanmaktaydı (**Tablo 1**). Hastaların ikisi hariç tamamının kistleri tamamen çıkartıldı (**Resim 2**). Enfekte olan hastaların kistleri nazal kaviteye komşu oldukları alandan diseke edilirken rüptüre oldu. Cerrahi sırasında kist çapı dört cm olan hastada nazal kaviteye komşu olduğu alandan nazal kaviteye girildi ve bu alan primer sütüre edilerek onarıldı. Hastaların ortalama 6.7 (±2.99) aylık takiplerinde nükse rastlanmadı.

Resim 1. Koronal planda çekilmiş paranazal bilgisayarlı tomografide kemiklerde erezyona neden olmayan düzgün yüzeyli kistik lezyon

Tablo 1. Demografik veriler ve hastaların özellikleri

Hasta	Yaş	Cinsiyet	Taraf	Boyut (mm)	Ameliyat	Geliş Sebebi	Takip Süresi (ay)
1.	20	Kadın	Sağ	25	Endblok.	Yüzde şişlik	6
2.	45	Kadın	Sağ enfekte	32	Kist rüptüre oldu	Yüzde ağrılı şişlik	9
3	55	Kadın	Sol	28	Endblok	Yüzde şişlik	3
4	35	Kadın	Sağ	18	Enblok	Yüzde şişlik	3
5	42	Erkek	Sol enfekte	33	Kist rüptüre oldu	Yüzde ağrılı şişlik	6
6	47	Erkek	Sağ	40	Enblok (nazal kaviteye girildi)	Yüzde şişlik	9
7	57	Kadın	Sol	19	Enblok	Yüzde şişlik	5
8	48	Kadın	Sağ	31	Enblok	Yüzde şişlik	8
9	31	Kadın	Sol	30	Enblok	Yüzde şişlik	12



Resim 2. Tamamen Eksize edilen kist

TARTIŞMA

Nazolabial kistlere tanımlandıkları günden günümüze kadar birçok farklı isimlendirme yapılmıştır. Bunlar arasında glandüler retansiyon kisti, kanal kisti, mukoid kist, seromuköz kist, konjenital fibroepitelyal kist, nazovestübüler kist, maksiller kistler yer almaktadır. Rao ve ark. tarafından nazolabial kist olarak tanımlandıktan sonra bu isimle isimlendirilmişlerdir (9). Oluşum mekanizması olarak literatürde iki ayrı teori bulunmaktadır. Bunlardan biri intraüterin medial ve lateral nazal duvar ile maksiller proçesin fizyonundaki defekt sonucu geliştiğidir (10). Diğeri ise ki günümüzde daha doğru olduğu kabul edilen nazolakrimal kanalın inferior kalıntısından geliştiğidir (11).

Hastaların çoğunlukla 2 ile 5. dekatlar arasında olduğu rapor edilmiştir. Bizim hastalarımızında yaşları bu aralıkta idi. Literatürde kistlerin daha sık kadın cinsiyette ve sol tarafta olduğu yer almaktadır. Bizim hastalarımızında çoğunluğunu kadınlar oluştururken, literatürden farklı olarak yerleşim yeri olarak sağ taraf idi (12). Genellikle yüzde asimetriye neden olan, yavaş büyüyen şişlik şeklinde klinik verirler ve nazal tabana doğru büyüyecek olurlarsa nazal obstrüksiyona da neden olabilirler. Bizim hastalarımızın tamamı asimetriden şikayetçi iken sadece iki hastada nazal tıkanıklık şikayeti vardı. Enfekte olmaları durumunda nazal kaviyete veya oral kaviteye fistilüze olabileceği bildirilse de bizim hastalarımızda böyle bir durumla karşılaşmadık ama cerrahi sırasında kist duvarları perfore oldu (6). Aynı zamanda bir hastada da eksizyon sırasında kist duvarı ile nazal kavite mukozasını ayırırken nazal kavite içerisine girildi. Primer sütüre edilerek defekt onarıldı.

Tanı, klinik ve radyolojik görüntülemelerin korelasyonu sonucunda konulabilir. Cerrahi sonrası histopatolojik inceleme ile kesinleştirilir. Muayenede iyi sınırlı kısmen hareketli fuluktuasyon veren kitleler olarak karşımıza çıkar. Yerleşim yerini, çevre dokularla ilişkisini, kemiklerde hasara neden olup olmadığını anlamanın en iyi yolu bilgisayarlı tomografi görüntüleme yöntemidir. Kemik dokuda erezyona neden olan bir lezyon tespit edilirse nazoalveolar kistler ilk planda düşünülmelidir (13).

Tedavisinde bir çok teknik bildirilmiş olmasına rağmen günümüzde en sık yöntem intraoral sublabial yaklaşımla cerrahi eksizyondur. Bununla birlikte endoskopik intranazal marsüpializasyon yönteminin tedavi başarısının, cerrahi eksizyona benzer olduğu literatürde bildirilmiştir. 6 Bizde, hastalarımızın tamamını intraoral sublabial yaklaşımla tedavi ettik. Nadirde olsa hastalarda yüzde dolgunluk, dilde uyuşma, hematom, oronazal fistül gibi komplikasyonlar bildirilse de 6 hastalarımızın hiçbirinde bir komplikasyonla karşılaşılmadı. Tedavi sonrası kist duvarı tamamen eksize edilmiş ise nüks şansının çok düşük olduğu rapor edilmiştir (14). Bizde hastalarımızda kist duvarını rüptüre ettiğimiz iki hastada dahil takiplerde nükse rastlamadık.

SONUÇ

Nazolabial kistler nadir görülen kistler olsa da yüzde asimetriye neden olmuş nazal vestibülde kitle şikayeti ile gelen hastaların ayırıcı tanısında düşünülmelidir.

ETİK BEYANLAR

Etik Kurul Onayı: Çalışma için Tokat Gaziosmanpaşa Üniversitesi Etik Kurulu'ndan izin alınmıştır (Tarih: 29/2/2024, Karar No: 24-KAEK-056)

Aydınlatılmış Onam: Bu çalışmaya katılan hasta(lar)dan yazılı onam alınmıştır.

Hakem Değerlendirme Süreci: Harici çift kör hakem değerlendirmesi.

Çıkar Çatışması Durumu: Yazarlar bu çalışmada herhangi bir çıkara dayalı ilişki olmadığını beyan etmişlerdir.

Finansal Destek: Yazarlar bu çalışmada finansal destek almadıklarını beyan etmişlerdir.

Yazar Katkıları: Yazarların tümü; makalenin tasarımına, yürütülmesine, analizine katıldığını ve son sürümünü onayladıklarını beyan etmişlerdir.

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