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ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Evaluation of Syrian Patients Followed in Children Intensive Care Unit

Çocuk Yoğun Bakımda Takip Edilen Suriye Uyruklu Hastaların Değerlendirilmesi

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ABSTRACT

Aim: In this study, the clinical and demographic characteristics of Syrian patients hospitalized in the Pediatric Intensive Care Unit were investigated.

Material and Method: The data of patients aged between 1 month and 18 years who were followed up in S.B.U Ankara Pediatrics Hematology Oncology training and research hospital between 01.03.2017-01.03.2019 were evaluated. Age, gender, reason for hospitalization, presence of chronic disease, duration of hospitalization, final status of patients, respiratory support device connection status and mortality rates were evaluated.

Results: 1170 patients who were treated at S.B.U Ankara Child Health and Diseases Hematology Oncology Training and Research Hospital between 01.03.2017 and 01.03.2019 were included in this study. Of these patients, 126 (9.3%) were Syrian immigrant (SM). While the mean age of all patients was 4.26±7.22 years, it was 5.75±6.34 years among SM. While the most common reasons for hospitalization in the PICU were bronchiolitis, sepsis, pneumonia, trauma, congenital heart disease, status epilepticus, hematological diseases, oncological diseases, diabetic ketoacidosis, and metabolic diseases; bronchiolitis, sepsis, trauma, congenital heart diseases, metabolic diseases and intoxications were more common in SM patients.

Conclusion: Initiatives should be taken to ensure that our SM patients, which is a problem of our country and the world, benefit from health services adequately and to take necessary measures to reduce child mortality. Raising the overall quality of life of Syrian refugees, ideally, to the level of Turkish citizens, is the most important way to solve this problem.

Keywords: Pediatric intensive care unit, Syrian immigrant, mortality

ÖZ

Amaç: Bu çalışmada Çocuk Yoğun Bakım Ünitesinde yatan Suriye uyruklu hastaların klinik ve demografik özellikleri incelendi.

Gereç ve Yöntem: 01.03.2017-01.03.2019 tarihleri arasında S.B.Ü Ankara Çocuk Sağlığı ve Hastalıkları Hematoloji Onkoloji eğitim ve Araştırma hastanesinde takip edilen, yaşları 1 ay ile 18 yaş arasında değişen hastaların verileri değerlendirildi. Hastaların yaş, cinsiyet, yatış nedeni, kronik hastalık varlığı, yatış süreleri, hastaların son durumları, solunum destek cihazına bağlanma durumu ve mortalite oranları açısından incelendi.

Bulgular: 01.03.2017-01.03.2019 tarihleri arasında S.B.Ü Ankara Çocuk Sağlığı ve Hastalıkları Hematoloji Onkoloji eğitim ve Araştırma hastanesinde tedavi gören 1170 hasta çalışmaya dahil edildi. Bu hastalardan 126'sı (%9.3) suriyeli göçmen (SG) hastalar oluşturmaktaydı. Tüm hastaların ortalama yaşları 4,26±7,22 yıl iken SG de ise 5,75±6,34 idi. ÇYBÜ'ne yatan hastaların en sık yatış tanıları Bronşiolit, Sepsis, Pnomoni, Travma, Konjenital kalp Hastalığı, satatus epileptikus, Hematolojik hastalıklar, onkolojik hastalıklar, Diabetik ketoasidoz, Metabolik hastalıklar iken, SG hastalarda bronşiolit, sepsis, travma, konjenital kalp, metabolik hastalıklar ve intoksikasyonlar daha sık görülmekteydi.

Sonuç: Ülkemizin ve dünyanın bir sorunu olan SG hastalarımızın sağlık hizmetlerinden yeterince faydalanması ve çocuk ölümlerinin azaltılması için gereken önlemlerin alınması için girişimlerin yapılması gerekir. Suriyeli mültecilerin genel yaşam kalitesini ideal olarak Türk vatandaşları düzeyine çıkarmak bu sorunu çözmenin en önemli yoludur.

Anahtar Sözcükler: Çocuk yoğun bakım ünitesi, Suriyeli göçmen, mortalite

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INTRODUCTION

In 2011, war and turmoil has begun in Syria and refugee migration to neighboring countries has begun. Turkey, which has the longest border with Syria, was the most affected country from this refugee incident (1). In this case, children and women were the most affected ones (2). Children are most vulnerable because of being at developmental stage, their need for their parents, and their inability to protect themselves (3). The refugee movement brought both social and health problems together. After all, the right to health is a universal right. Living in tents or containers makes refugees susceptible to diseases. The most common health problems were nutritional disorders, growth and development retardation, infectious diseases, chronic diseases, and mental problems. The number of Syrian refugees included in the scope of temporary protection in our country has exceeded 3.7 million today (4). The most basic problem of refugees is difficulty in accessing health services due to legal and physical barriers. In addition, language and cultural differences make it difficult to receive adequate health services. The health problems experienced by Syrian refugees were similar to those described above.

In this study, we wanted to reveal the characteristics of Syrian migrant patients who were treated in the pediatric intensive care unit (PICU) of our hospital between 01.03.2017-31.03.2019.

MATERIAL AND METHOD

The records of the patients hospitalized between 01.03.2017 and 01.03.2019 in the 22-bed PICU of our hospital were evaluated retrospectively. All patients were divided into two groups as Syrian immigrant patients and non-immigrant patients. Patient files were evaluated in terms of age, gender, reason for hospitalization, presence of chronic disease, duration of hospitalization, final status of patients, respiratory support device connection status and mortality rates. Patients, who were hospitalized for less than 24 hours, were not included in the study.

This study was authorized by the Ministry of Health (Ethics Committee-E2-22-1246) and the local ethics committee approval was obtained at 05.01.2022 (Ethics Committee no: 1246).

The information obtained from the data was evaluated using the SPSS 17.0 software program. Categorical data are expressed as percentages. The median and interquartile range were used for quantitative data. Differences between categorical variables were evaluated with the Chi-Square test, and differences between continuous variables were evaluated with the non-parametric test (Mann-Whitney U). A P value of <0.05 was found to be statistically significant.

RESULTS

A total of 1170 patients, who were admitted to the PICU during the two-year period, were included in this study. The number of Syrian migrant (SM) patients was 126 (9.3%). While 533 (51%) of all patients were male, 69 (55%) of SM patients were male (p=0.089). Considering the age groups, the number of SM patients were higher between the ages of 1-5. SM patients were older than all patients in terms of mean hospitalization age. While the mean hospitalization duration of all patients was 12.47±20.16 in SM patients, the total length of hospital stay was 15±11.89 SM patients, either death or discharged, have longer duration of follow-up when compared with patients in other groups (p=0.214). The percentages of connecting to respiratory support devices such as high-flow nasal cannula (HFNC), non-invasive positive airway pressure (NIV) was close to each other. Despite this, the need for a mechanical ventilator was 36% (n:376) in all patients, while it was 52% (n:66) in SM patients. Tracheostomy opening rate was less in SM patients. Inotropic and central venous catheter use (CVC) in SM patients was similar to other patients. While the mortality rate was 10.8% in all patients, it was 14.8% in SM patients (p=0.023). Recovery rate with sequelae was also higher in SM patients. Demographic data of the patients are given in **Table 1**.

Infections (especially bronchiolitis), trauma, congenital heart disease, and seizures were the most common diagnoses for admission to the PICU in both groups. On the other hand, hospitalization diagnoses of metabolic disease and intoxication are more common in SM patients than other group of patients. The diagnoses of the patients hospitalized in the PICU are given in **Table 2**.

DISCUSSION

Considering that Turkey is currently home to the largest Syrian refugee population in the world, the steps taken for the integration of refugees in Turkey are very important. One of Turkey's biggest problems is the health problems of refugees. Health problems of Syrian immigrants, who make up a large part of refugees, have an important role in PICU. The rate of SM patients admitted to the PICU is closely related to the location of the hospital and the size of the hospital. Although our hospital is located in a good socioeconomic place in Ankara, SM patients with poor conditions are mostly admitted to our hospital because it is a reference hospital. Respiratory tract infections are the most common reason for hospitalization in the PICU in our country (5). Trauma, metabolic diseases, and intoxication were common in SM patients hospitalized in our hospital, with respiratory tract diseases being the most common. The reason for this is that SM patients live in worse conditions, the care rate is low, and consanguineous marriages are high. Such

Table 1. Demographic data of Syrian patients hospitalized in the Pediatric Intensive Care Unit

Demographic data, n:1170 n (%) veya ± SD	All patients n:1044	SM patients n:126	P value
Age (years) of all patients	4.26±7.22	5.75±6.34	0.089*
Sex			0.486
Male	533 (%51)	69 (%55)	
Female	511 (%49)	57 (%45)	
Hospitalization rates by age			
1 month to 1 year	%24	%22	
1 year to 5 years	%34	%38	
6 years to 10 years	%12	%18	
11 years to 18 years	%30	%22	
Mean length of stay of all patients	12.47±20.16	15±11.89	0.214
Total length of stay of patients discharged from PICU	7.6±12.16	9.8±10.12	0.366
Total length of stay of patients who died in PICU	23±15.82	25±11.82	0.389
Duration of mechanical ventilation for all patients	9±15.04	13±22.04	0.001*
Duration of mechanical ventilation for patients discharged from PICU	3±4.13	5±5.13	
Duration of mechanical ventilation for patients who died in PICU	17.25±24.82	22.25±21.16	0.001*
High-flow nasal cannula	%33	% 35	0.544
NIV/CPAP/BiPAP	%35	%42	0.329
Tracheostomy	%5.1	%3.8	0.446
Use of inotropes	%35.4	%42.8	0.367
Extracorporeal membrane oxygenation	% 0.6	%0	-
Mortality rate	%10.8	%14.8	0.023*
Sequelae rate	%4.8	%6.9	0.069
Use of central venous catheter	%32	%34	0.875

Table 2. Diagnoses of patients admitted to the pediatric intensive care unit (PICU)

	n %	n%
Diagnoses of admitted patients, n:1170	All patients n:1044	SM patients n:126
Infections	250 (24)	35(28)
Bronchiolitis	114(11)	14(11)
Sepsis	94(9)	13(10)
Pneumonia	21(2)	6(5)
Other infection causes	21(2)	2(2)
Trauma	146(14)	20(16)
Congenital heart disease	125(12)	15(12)
Seizures	115(11)	15(12)
Hematological diseases	94(9)	9(7)
Oncological diseases	73(7)	5(4)
Diabetic ketoacidosis	62(6)	1(1)
Metabolic diseases	42(4)	9(7)
Intoxication	31(3)	8(6)
Gastrointestinal system (GIS) diseases	22(2)	1(1)
Kidney diseases	22(2)	1(1)
Other*	62(6)	7(5)
Total	1044(100)	126(100)

*: Hypertension, bronchial asthma attack, urticaria, primary immunodeficiency, endocrinological emergencies, choking

high levels of intoxication are due to psychological and behavioral problems such as stress, anxiety, inability to express themselves, sleep and eating disorders, school failure, smoking and alcohol addiction, suicide and hyperactivity. The reason for the frequent occurrence of chronic diseases such as respiratory system diseases and diabetes is that these diseases cannot be followed well during refugee movements and the necessary drugs cannot be reached during this period. Insufficient economic situation, malnutrition, lack of hygiene and infrastructure in immigrant societies make it easier for immigrants to have infectious diseases. Lack of vaccination, which is a part of primary health care of refugee children, increases susceptibility to epidemics and infections (6). Malnutrition causes an increase in chronic diseases and susceptibility to infection.

In the literature review, different rates were given regarding the gender, mean age and length of hospital stay of the patients hospitalized in the PICU (7,8). The ratio of males was 51% and 55% in all patients and SM patients, respectively. This showed that SM patients gave priority to boys. While the mean age was 4.26±7.22 in all patients, it was 5.75±6.34 in SM patients. Considering the studies conducted in our country, the length of stay in PICUs varies between 2-5.3 days (9). In various studies conducted outside our country, it has been reported that the length of stay in PICU varies between 4.5 and 8.1 days (10). In this study, the length of hospital stay was 12.47±20.16 days in all patients, while it was 15±11.89 days in SM patients. The mean length of stay in SM patients was higher than in all children. The hospitalization period is prolonged in SM patients due to presence of a severe clinic, and the progression of the disease because of problems in transportation to the hospital and financial inadequacies. Children aged

between 1-5 years are admitted to intensive care more frequently among SM patients. In particular, it may be related to the possibility that infants under the age of 1 have been sacrificed and older children working at work. It is also relevant that there are no parents to take care of children who have lost their mother or father in the war. The fact that universities and private hospitals do not accept these patients is also an important factor. In various studies conducted in our country, it has been shown that Syrian children are hospitalized in PICU at a higher rate and the length of stay is longer than Turkish children (11,12).

Different mortality rates have been given in various studies conducted in PICUs. Mortality rate in PICU varies between 3-7% in the world (13,14). While the mortality rate of all patients was 10.8%, it was 14.8% in SM patients. The reason for such a high mortality rate is that SM patients have been hospitalized in the PICU for a longer time and the duration of stay on mechanical ventilation is longer. In studies, it has been shown that prolonged stay on mechanical ventilator and therefore longer hospital stay increases the rate of mortality (15,16). The high prevalence of hereditary diseases, incomplete vaccination, and lack of shelter and nutrition also increase mortality significantly. The use of more inotropes and catheters in SM patients was also a factor that increased the mortality. Central venous catheter (CVC) use and mechanical ventilator support are associated with higher mortality and complications (17,18). Besides, the recovery rate with sequelae was higher in patients with SM. In particular, consanguineous marriage and the frequency of hereditary diseases were important factors in recovery with sequelae.

CONCLUSION

It is necessary to improve health services for Syrian migrant patients and to ensure their easy access to health services. Necessary measures should be taken for them to live in more suitable conditions and for their integration into Turkish society, and plans should be made for integration. It is very important to ensure language and communication, especially between healthcare personnel and patient relatives. These patients should be provided with shelter and preventive health services, and they should benefit from palliative care services. They should be informed to provide early applications to health centers for the early diagnosis of their diseases and to protect them from preventable accidents. The main objective, to protect the health of Syrian refugee children in Turkey, should be to create decent living conditions with adequate shelter and sufficient income to alleviate their basic food and hygiene needs..

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was authorized by the Ministry of Health (Ethics Committee-E2-22-1246) and the local ethics committee approval was obtained at 05.01.2022 (Ethics Committee no: 1246).

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

Referee Evaluation Process: Externally peer-reviewed.

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