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ORIGINAL ARTICLE

Common pediatric surgical diseases of refugee children: health around warzone

Idil Rana User[1,2] · **Bulent Hayri Ozokutan**[1]

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Abstract

Purpose We aim to evaluate the sociodemographic and medical features of child-aged refugee patients and identify their health-related problems.

Methods Refugee children admitted to pediatric surgery department of a teaching hospital during the years 2012–2017 were included. Patients' files were reviewed retrospectively for sociodemographic and medical features.

Results A total of 254 patients with the mean age of 4.6 ± 4.15 years (0–16 years) were treated. Male-to-female ratio was 1.7. Most common diagnosis were inguino-scrotal pathologies ($n = 50$, 19.7%) followed by foreign body ingestion ($n = 37$, 14.6%) and corrosive esophagitis ($n = 22$, 8.7%). The cause of admission was a potentially preventable trauma in 24.4% of cases. Comorbid medical conditions were present in 49 patients (19.3%). Anemia was detected in 23.2% of cases. Weight according to age and gender were < 3 percentile in 29.1% of patients. Difficulties in communication, lack of former medical history and advanced presentation of disease were the challenges faced by caregivers.

Conclusion The primary diagnoses for admission of refugee children were different from the routine practice and a significant part were from preventable causes. Comorbidities were common potentially having a negative influence on treatment processes. This can be a result of unfavorable living conditions and lack of medical care during migration.

Keywords Child · Refugee · Pediatric surgery

Introduction

Each year, millions of people migrate from their home country to another because of natural disasters, famine, political issues and wars. Migration due to these reasons is challenging and severely affects the living conditions of the people [1]. Children are amongst the most vulnerable age group since they are in a rapidly growing period of life. Access to nutrition, sanitation, education, health services and safe living environment are disturbed both during migration and sometimes in place of final destination. Furthermore, management of patients with chronic diseases is troublesome because of unknown medical history, language and communication barriers, lack of previous medical reports relevant to their diseases or surgical procedures. In the recent 5 years, hundreds of thousands of Syrian people migrated to Turkey due to civil war. Some of them are placed in refugee camps, some settled in cities across Turkey [2]. Another group of people still live in Northern Syria and hence get medical aid from Turkey in hospitals located in border region. Our hospital resides in a border city of Turkey neighboring Syria, and everyday hundreds of immigrants apply with various medical problems. Herein, we aim to present our experience on immigrant children with pediatric surgical diseases and emphasize the challenges faced during this process.

Method

All patients under 18 years of age and of Syrian descent submitted to pediatric surgery clinic during the years 2012–2017 were included in the study. Children living in refugee camps, city centers of Turkey or in Syria were

✉ Idil Rana User
idilranau@yahoo.com

Bulent Hayri Ozokutan
ozokutan@hotmail.com

[1] Department of Pediatric Surgery, Faculty of Medicine, Gaziantep University, Sahinbey, Turkey

[2] Sahinbey Arastirma Uygulama Hast., Cocuk Cerrahisi AD, Sahinbey, Gaziantep, Turkey

included in the study. Our hospital is a referral center and receives patients from a large geographic area of Turkey and also Northern Syria. It was designed as a retrospective cross-sectional study. Data were based on patients' files and included age, gender, weight, diagnoses, accompanying diseases and conditions, laboratory results and place of birth and residence. These data were processed by the SPSS program. Cases were stratified for age, gender and diagnoses for further analysis. Ethical consent was taken from local ethics committee (issue number: 2018/210).

Results

The total number of children admitted in this time period was 254. The mean age of patients was 4.6 ± 4.15 years. Age distribution was as follows: 104 infant (0–2 years), 64 pre-school (2–5 years), 64 school-aged (5–12 years) and 22 adolescent (12–16 years) patients were treated. Males outnumber females by a ratio of 1.7 (162/92) (Table 1).

Patients were grouped into diagnostic groups with respect to their primary acute and chronic cause for attendance to pediatric surgery clinic. The groups including most patients with a primary pediatric surgical diagnosis were inguinoscrotal pathologies ($n=50$, 19.7%), foreign body ingestion ($n=37$, 14.6%), corrosive esophagitis ($n=22$, 8.7%), Hirschsprung's disease ($n=17$, 6.7%), anorectal malformation ($n=15$, 5.9%) and acute abdomen ($n=12$, 4.7%). Acute appendicitis, invagination and intestinal obstruction cases were grouped under the heading of acute abdomen. The other major group of children were the ones with a chronic illness requiring surgical intervention. Central venous access for leukemia patients ($n=12$, 4.7%), peritoneal dialysis for chronic kidney failure ($n=13$, 5.1%), splenectomy for hemolytic anemia ($n=9$, 3.5%), genitoplasty for congenital adrenal hyperplasia ($n=6$, 2.4%) were the most common diagnoses under this heading (Table 2).

Among the patients operated for a primary surgical disease, 19.3% had an associated comorbidity. Congenital cardiac malformations ($n=12$, 4.7%) and neurologic conditions like cerebral palsy and epilepsy ($n=13$, 5.1%) were the most commonly encountered ones. Anemia defined as hemoglobin level below 10 g/dl was detected in 59 (23.2%) patients. Weight according to age and gender showed that 73 children (28.7%) were below third percentile.

Place of birth was Syria in 77.2% and Turkey in the remaining. Current residency was refugee camps in 47.4%, city centers of Turkey in 39.3% and still living in Syria in 13.3%. The last group crosses the border for medical aid and goes back to their country at the end of the treatment. Syrian families settled in city centers are also legally regarded as refugee according to Turkish government. One of our female patients aged 16 was married and had a 6-month-old baby. Another girl aged 15 was engaged and planning to marry soon.

Table 1 Table showing gender and age distribution of patients

	n (%)
Gender	
Female	92 (36.3%)
Male	162 (63.7%)
Age distribution	
Infant (0–2 years)	104 (40.9%)
Pre-school (> 2–5 years)	64 (25.2%)
School-aged (> 5–12 years)	64 (25.2%)
Adolescent (> 12–16 years)	22 (8.7%)

Table 2 List of the most common diagnoses among refugee children admitted to pediatric surgery clinic

List of diagnoses	*n* (%)
Inguino-scrotal pathologies	50 (19.7%)
Foreign body ingestion	37 (14.6%)
Corrosive esophagitis	22 (8.7%)
Hirschsprung's disease	17 (6.7%)
Anorectal malformation	15 (5.9%)
Chronic renal failure	13 (5.1%)
Acute abdomen	12 (4.7%)
Leukemia	12 (4.7%)
Hemolytic anemia	9 (3.5%)
Congenital adrenal hyperplasia	6 (2.4%)
Trauma	6 (2.4%)
Others	55 (21.6%)

Discussion

According to The United Nations Refugee Agency, Turkey hosts the greatest number of Syrian refugees and the number reached 3.5 million people by 2017 [3]. Turkey provides free of charge healthcare service and medicine to all registered Syrian refugees in the country. In this context, nearly one million surgical procedures, 26 million outpatient clinic service have been performed since the beginning of this humanitarian crisis in 2011. The total cost of humanitarian assistance reached $6 million till date. From the pediatric perspective, 224,750 Syrian babies have been born in Turkey [4]. A report on global estimation of surgical procedures on forcibly displaced people revealed that obstetric and pediatric surgical operations constitute a significant part [5]. All these numbers reflect the huge burden of refugee health on Turkish medical system. In this study, we try to share our

experience with treatment of these children in a pediatric surgery clinic located in a border city.

Childhood is the most demanding period of life. Proper nutrition, healthy environment, sanitation, vaccination and protection from infections, trauma and other acquired diseases are fundamental for normal growth and development. Furthermore, infants are vulnerable to malnutrition and infections with their limited body reserves. Infants and pre-school-aged children constitute 66% of our refugee patient group and age distribution was similar to the study of Bucak et al. [6]. Weight for gender and age was below third percentile in one-quarter of our patients. Another quarter had anemia. A study on the nutritional status of refugee children showed chronic malnutrition and anemia which resolves after settlement in a substantial group of children [7]. Although childhood anemia and malnutrition are multifactorial and affected by various environmental parameters, it is obvious that detection and treatment are possible and can change the health status of a child dramatically.

Congenital malformations, genetic diseases and various types of trauma constitute the majority of pediatric surgical admissions. This situation is different among refugee children. A study from Germany, focusing on health status of refugee children living in camps revealed that 42% had a previous history of surgical intervention and tonsillectomy, male circumcision, female genital mutilation and inguinal herniotomy were the most common procedures [8]. In our study, we observed that inguino-scrotal pathologies, corrosive esophagitis and foreign body ingestion were among the most frequent diagnoses somehow different from our usual pediatric surgical practice. Trauma admission rate was below expected because those patients were referred to the trauma centers which were located in border. Low number of patients with the diagnosis of acute abdomen was explained with the fact that we work as a referral center for more complicated conditions. Abundance of potentially preventable accidental injuries may be attributed to uneducated parents, unfavorable living conditions and consecutive childbirths. Furthermore, cultural disparities play a role in the dissimilarities of diagnostic spectrum. For instance, consanguineous marriage and underage childbearing are common among Syrian population [9]. These social facts can lead to increased frequency of congenital malformations and negatively affect maternal and neonatal health. A study conducted among Syrian refugees settled in Lebanon revealed that child marriage was a common practice in pre-conflict Syria and seem to increase after displacement. The driving factors were safety issues, poverty and discontinued education [10].

Management of a surgical pediatric patient with a chronic disease is challenging with their specialized perioperative care. Even after simple surgical interventions, patients with cardiac, liver or renal failure may need intensive care unit admission. Asylum seekers with chronic diseases compose another difficulty with no reports of their previous medical interventions or results of investigations performed in their home country [11]. Studies among immigrants showed greater incidence of chronic illnesses and comorbidities compared to local population [12, 13]. Our results were in concordance with others studies and nearly 20% of children with a surgical disease had at least one additional medical condition or a previous history of surgical intervention. Pediatric consultations, preoperative preparations and prolonged hospitalization all impose a serious workload on the medical system [14].

Healthy living conditions and parental collaboration are an integral part of treatment in any disease. Neglect of follow-up controls and noncompliance of advices from medical professionals are the two main problems we faced during immigrant children's treatment processes. These issues are mainly due to language barriers [10]. Besides, 13% of our patients were still living in Syria and crossed the border for treatment. Returning back to Turkey for follow-up may be hindered due to the civil war in Syria.

The main limitations of our study are inclusion of only one center of pediatric surgery. Collaborative studies on refugee children's health should be designed to better understand their problems and finding solutions. However, this is the first report to our knowledge in literature focusing specifically on immigrant children's pediatric surgical diseases.

Conclusion

Immigrant people's health, especially in childhood age group should be a major concern for all medical society. Unfavorable living conditions, being devoid of medical help, nutrition, vaccination and lack of education during migration process can contribute to formation of diseases. After settlement, they face cultural and linguistic differences which is challenging for both patients, parents and medical professionals. From the perspective of pediatric surgery discipline, increased workload, different diagnostic spectrum, high incidence of malnutrition, anemia and chronic diseases are our facts in management of these children.

Compliance with ethical standards

Conflict of interest İdil Rana User declares that she has no conflict of interest. Bülent Hayri Ozokutan declares that he has no conflict of interest.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

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