

Literature analysis with four years of experience in the burn unit

Yanık ünitesinde dört yıllık tecrübe ile literatür analizi

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ABSTRACT

Aim: Burn is a particular form of trauma that can occur with physical and/or chemical factors, affect all systems of organism, and be seen in all ages and genders. In our study, a retrospective analysis was made on the data of children treated in our burn unit over 4 years.

Materials and Methods: The data of 266 patients hospitalized in the Pediatric Surgery Clinic's burn unit between January 2017 and December 2020 were obtained retrospectively from the hospital information management system.

Results: In four years, the number of patients who were evaluated was 266. Ninety-seven of these patients are girls, and 169 of them are boys. The average age of all patients is 2.86 years. (Average: 2.92 for girls, 2.81 for boys).

Conclusion: Patient treatments are customized according to the depth and width of the burn. With an approach specific to each child, individualized treatment plans, which consider the quality of life of the child and parents, will increase the effectiveness of the treatment. Individualized treatment plans, with specific approaches towards each child in consideration of the quality of life of the child and/or their parents, would increase the effectiveness of the treatments.

Keywords: Burn, burn unit, hospitalization.

Öz

Amaç: Yanık, fiziksel ve kimyasal faktörlerle oluşabilen, tüm organizma sistemlerini etkileyen, her yaş ve cinsiyette görülebilen özel bir travma şeklidir. Çalışmamızda yanık ünitemizde 4 yıl süreyle tedavi gören çocukların verilerinin analizi yapılmıştır.

Gereç ve Yöntem: Ocak 2017-Aralık 2020 tarihleri arasında Çocuk Cerrahisi Kliniği yanık ünitesinde yatan 266 hastanın verileri hastane bilgi yönetim sisteminden geriye dönük olarak elde edildi.

Bulgular: Dört yılda değerlendirilen hasta sayısı 266'dır. Bu hastaların 97'si kız, 169'u erkektir. Tüm hastaların yaş ortalaması 2,86'dır. (Ortalama: kızlar için 2,92, erkekler için 2,81).

Sonuç: Hasta tedavileri yanığın derinliğine ve genişliğine göre kişiye özeldir. Her çocuğa özgü bir yaklaşımla, çocuğun ve ebeveynlerin yaşam kalitesini göz önünde bulunduran bireyselleştirilmiş tedavi planları tedavinin etkinliğini artıracakı düşünülmüştür.

Anahtar Sözcükler: Yanık, yanık ünitesi, hastane yatışı.

INTRODUCTION

The skin, which forms a barrier that protects the body from infection and prevents heat and fluid loss, is the organism's largest organ. If this barrier is removed, it makes the organism unprotected (1).

Burn is a particular form of trauma that can occur with physical and/or chemical factors, can affect all system of organism systems, and can be seen in all ages and genders (2).

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In the USA, 270,000-300,000 people per million are exposed to burns every year, and 60,000-80,000 people are hospitalized due to burns and/or related complications. According to some studies, children under the age of 15 constitute at least 40% of the cases followed up in the hospital due to burns. In the USA, 66% of the patients admitted to the hospital due to burn caused by hot water are children under five years old (3,4). It was aimed to analyze the data of the cases treated in the burn unit between January 2017 and December 2020.

MATERIALS and METHODS

The data of 266 patients, which were hospitalized in the burn unit affiliated to the Pediatric Surgery Clinic, between January 2017 and December 2020 were obtained retrospectively from the hospital information management system.

The burn unit is a separate area with 10 rooms, a hepafilter mechanism planned for burn treatment in the construction phase, and two treatment rooms.

Hand, face, and perineum burns, more than %5 body surface area (BSA) and 2nd- degree superficial burns, electrical burns and burns under 2 years of age were determined as hospitalization indications. All 3rd-degree burns, more than %15 BSA and 2nd-degree deep burns, inhalation burns, and burn patients with comorbid diseases were referred to advanced centers.

The treatment of patients hospitalized in the burn unit varies depending on the depth and severity of the burn. For each patient, pain management, calculations and resuscitation of fluid deficit, closed dressing of the burn area, daily dressing changes, periodic wound culture, infection control, and nutrition are planned separately.

Lund and Browder's method was used in calculating the burned area. On the other hand, Shriner's formula was used to calculate the fluid deficit. The aim is to start the patient's enteral nutrition as soon as possible.

Written consent was obtained from families/relatives for the research. The study was approved by the Balikesir University Clinical Research Ethics Committee (Approval Decision no: 2021/256).

RESULTS

Over four years, 266 patients were hospitalized. Ninety-seven of these patients were female, and 169 of them were male. The average age of the patients were 2.86 years. (Average: 2.92 years for girls, 2.81 years for boys).

Burn causes are shown in Table-1. The most common cause of burns was hot water (n=208). The following factors were flame (n=28) and hot oil (n=19).

Burnt areas and percentages are shown in Table-2. The most common area of burns was head (n=63) and body (n=63). Multiple areas (n=47), hip burns (n=34), hand burns (n=30), foot burns (n=29) were also observed.

The average hospitalization period of a patient was 11.98 days. The discharge types of the patients are shown in Table-3. Two hundred and eleven patients were discharged with full recovery, and 5 patients were referred to a more advanced center on the field.

Table-1. Distribution of burn causes.

Factor	N
Hot water	208
Flame	28
Hot oil	19
Warm milk	7
Hot tomato paste	3
Electricity	1
Total	266

Table-2. Area and percentage of burns.

Burn area	Number	Burn percentage
Head	63	8
Body	63	15
Multi-area	47	IS
Hip	34	15
Hand	30	5
Foot	29	10
Total	266	11.33

Table-3. Type of discharge.

Type of discharge	Number
Full recovery	211
Referring to the advanced unit	5
Treatment refusal	20
Partial recovery	30
Total	266

DISCUSSION

As seen in studies conducted at different times in different locations in Turkey, hot water is the most common cause of burns, and children under 2 years of age are the most affected (5). Aktaş defined that burn, which is not a localized case that only affects the skin, is a pervasive trauma that affects the whole organism and determines the prognosis with its physiopathological effects (1).

Burn causes hypovolemia, infection, deformities, organ loss, and even death by causing physiological changes in the tissue (4). The circumference of the burn wound and the degree of local blood supply determines the integrity of the cellular response. Injury on the human skin due to heat occurs in two stages. The first one is the injury caused by heat that occurs immediately with cell damage. Çetinkale stated that the second one is the delayed injury due to cell death resulting from progressive dermal ischemia (3).

The gender and age distributions of the patients evaluated are compatible with the literature. The majority of our patients are male children (%63.53), and their average age is 2.86 years. After 2 years of age, children who enter the process defined as the "oral period" developmentally act with curiosity and reach mobility that can easily escape the attention of their parents, causing an increase in home accidents (6).

It is compatible with the literature for hot water to be seen as the leading cause of burns. Hot water is frequently used at home for reasons such as warming, cooking, bathing and it was seen that there are no mechanisms in place to prevent the contact children under the age of 2 could have with hot water around the house; especially in lower socio-economic households.

The frequent occurrence of burn trauma in these areas indicates that the burn develops after the child tries to reach the burn factor above the head level. Locations of the most common burnt areas are compatible with the literature indicating that the burn occurs following the child's curiosity to reach a burn factor above head level. The absence and/or weakness of mechanisms in place from preventing curiosity-based burns suggests that it, by itself, is a cause as well. Treatment methods of patients hospitalized due

to burns were planned according to the width and depth of the burn area. The most critical treatment factors are warm baths at the time of the first hospitalization, making the child feel that they are in a safe-clean-warm environment, giving medication to reduce pain, and relieving the family's anxiety and the child (6).

Above mentioned method led the way to no gastrointestinal complications. The effort on trying to prevent wound infections in accordance with daily burnt area observations, periodic culture swabs and necessary consultations with pediatric infectious diseases; was successful with an antibiotics-based treatment.

The planned construction of the burn unit from the very beginning, the starting of the staff after in-service training, cooperation with hospital psychologists to avoid problems in relations with patients and their relatives, daily use of wound care products for each patient, the periodic visits of social workers to the unit and the presence of other pediatric subspecialists to be consulted when needed are the reasons for the high success of treatment.

Özer and Vural stated that burn-in childhood is severe trauma, and requires a multidisciplinary approach in order to reduce the risk of complications and have both the child and the parents return to their best functional state possible (7). After the burn, a severe decrease in the quality of life of children was observed (2). The hospitalization of a child and their parents requires them to trust the people who take on the responsibility of their treatment and they need to feel that they are being treated in a suitable environment which affects the quality of life of the child and in retrospect has a positive effect on the success rate of the treatment.

Consequently, child burns are primarily due to hot water in boys around the age of 2. Mostly, 2nd-degree superficial burns are seen on the head and body. Making individualized treatment plans considering the child's quality of life and parents with an approach specific to each child will increase the effectiveness of treatment.

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References

1. Aktaş H, Ünal E, Gülhan NF. Approach to Pain in the Burn Patient. H.Ü. Faculty of Health Sciences Journal 2016; 3 (3): 47-57.
2. Çetin C and Tuna Z. Quality of Life of Burn Patients and Factors Affecting Quality of Life. Faculty of Health Sciences Nursing Journal 2010; 17 (2): 1-12.
3. Çetinkale O. Burn Wound and Treatment. I.Ü. Cerrahpaşa Medical School Sürekli Tıp Eğitimi Etkinlikleri 2001; No: 67 s.107-117.
4. Çıkman M, Çandar M, Kandış M, et al. Retrospective Analysis of Forensic Burns Admitted to Our Clinic: 4 Years of Experience. Düzce Medical School Journal 2011; 13 (3): 29-33.
5. Özkaya NK, Alğan S, Akkaya H. Evaluation and Treatment of the Burned Patient. Ankara Medical Journal 2014; 14 (4): 170 -175.
6. Şahin AH. Burn wound and treatment. Balıkesir. Yakın Kitabevi; 2021. ISBN: 978-975-2493-71-1.
7. Vural F and Özer GÖ. The Effect of Childhood Age Characteristics on Burns and Care Recommendations for Children with Burns. Dokuz Eylül University Nursing Faculty Electronic Journal 2018; 11 (3): 257-260.