

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.elsevier.com/locate/burns](http://www.elsevier.com/locate/burns)

## Why burn patients are referred?

Noor-Ahmad Latifi, Hamid Karimi\*

Faculty of Medicine, Motahary Burn Hospital, School of Medicine, Burn Research Center, Iran University of Medical Sciences, Yasemi Alley, Vali Asr Ave., Tehran 19637, Iran

### ARTICLE INFO

#### Article history:

Accepted 12 September 2016

#### Keywords:

Burns  
Referral  
Telemedicine  
Tertiary burn center  
TBSA

### ABSTRACT

**Background:** Many burn patients are needed to be referred to a tertiary burn hospital according to the American Burn Association (ABA) criteria. The purpose of this study was to verify the reasons for referring of the burn patients to the hospital.

**Materials and methods:** For 2 years, we prospectively surveyed the burn patients referred to a tertiary teaching burn hospital. Data for the following variables were collected and analyzed with SPSS software V21.0: causes of burn; age; gender; total body surface area (TBSA) measured at the referring center; TBSA measured at the receiving center; concomitant diseases and traumas; the reason for referral; condition of patients before and during the transportation; transportation time; presence of infection; presence of inhalation injury, electrical injury, and chemical injury; child abuse; insurance coverage; and results and outcomes of patients.

**Results:** A total of 578 burn patients (33.6% of the total admissions) were referred in the study period. Among these patients, 70.9% were females. The mean (SD) age of the patients was 35.3 (19.69) years.

The mean (SD) of TBSA was 45.2 (26.3).

Of the 578 patients, 45% were referred by request of the family or patients; 9% were referred because lack of diagnostic facility, approximately 43% were referred because of the need to be admitted in a tertiary burn center, 0.7% were referred because of a lack of capacity at other hospitals, and 0.5% were referred because of an error in the estimation of TBSA.

**Conclusions:** A total of 45% of the referrals were by request of the family and patients. Telemedicine may help to establish a direct contact between expert burn physicians and the patients and thus reduce unnecessary transfers.

Approximately 9% of the referrals were because of lack of some diagnostic facilities.

© 2016 Elsevier Ltd and ISBI. All rights reserved.

### 1. Introduction

Burns are one of the frequent traumas among major traumas observed in Iran. Some of the burn victims have small, minor, or even moderate burns, and they can be treated in a local and small general hospital. Furthermore, a general surgeon trained in a burn unit or center can manage the treatment of these patients.

Classically, minor burns are those that are less than 2% of full-thickness total body surface area (TBSA) and are not in the important and specific areas such as face, hand, or foot [1,2].

Moderate burns are those between 2–25% second degree burns or less than 10% third degree burns, without burn in special areas and without concomitant diseases or traumas to the other part of body. Recently, we encountered patients with minor or moderate burns who wanted to visit major burn

\* Corresponding author. P.O. Box 19395-4949, Tehran, Iran. Fax: +98 21 88770048.

E-mail address: [hamidkarimi1381@yahoo.com](mailto:hamidkarimi1381@yahoo.com) (H. Karimi).

<http://dx.doi.org/10.1016/j.burns.2016.09.007>

0305-4179/© 2016 Elsevier Ltd and ISBI. All rights reserved.

centers in Iran or insisted on being referred to the major burn centers located in the country's capital [2].

In this study, we describe the referred burn patients and their cause and situation after stabilization and the reasons for their referral to a major central burn hospital.

## 2. Materials and methods

We conducted this prospective study for 2 years, from March 2013 to March 2015, by using data of our national burn registry program.

The primary burn centers are those that have an emergency department and some minor wards. These centers can treat patients with minor burns and cases of outpatients with burns, and in most of these centers, a plastic surgeon or burn-trained surgeons are unavailable. They can admit patients with minor burns for a few days or weeks and treat them as needed. The secondary burn centers are those that have emergency burn facilities and burn wards, and some of them have burn ICU. They house most of the required facilities that are needed to treat a burn patient. These centers have general surgeons and burn-trained surgeons (having fellowship in burn medicine) and plastic surgeons. The tertiary centers have all burn care facilities and a burn research center and normally have facilities for training nurses and doctors from other centers. Iran has two such tertiary burn centers: one in Tehran and one in Shiraz. Our tertiary burn center is the largest burn center in the country with more than 120 burn beds and 12 burn-ICU beds.

All the patients who were referred to our major tertiary burn center were included in the study, and data for the following variables were collected in a special questionnaire and analyzed using SPSS software V21.0: cause of burn; age; gender; total body surface area (TBSA) measured at the referring center; TBSA measured at the receiving center; concomitant diseases and traumas; the reason for referral; condition of patients before and during the transportation; transportation time; presence of infection; presence of inhalation injury, electrical injury, and chemical injury; child abuse; insurance coverage; and results and outcomes of patients. A *p* value of less than 0.05 was considered significant.

The classification of risk groups of burns according to The American Burn Association (ABA) is as below:

Major burns:

- Any burns in infants or the elderly
- Any burns involving the hands, face, feet, or perineum
- Burns complicated by fractures or other trauma
- Burns complicated by inhalation injury
- Burns affecting major joints
- Burns extending completely around the circumference of a limb
- Electrical burns
- Full-thickness burns of greater than 10% body surface area in any risk group
- Partial-thickness burns of more than 20% body surface area in the high-risk group
- Partial-thickness burns of more than 25% of the body surface area in the low-risk group

Moderate burns:

- Partial-thickness burns of 15–25% body surface area in the low-risk group
- Partial-thickness burns of 10–20% body surface area in the high-risk group
- Full-thickness burns of at least 10% body surface area or less in other groups

Minor burns:

- Less than 15% body surface area in the low-risk group
- Less than 10% body surface area in the high-risk group
- Full-thickness burns that are less than 2% body surface area in other groups.

## 3. Results

In the 2-year study period, we had more than 26,684 burn patients, of whom 1721 patients were admitted according to the admission criteria of ABA. Of these, 33.6% (578 patients) were referred from other hospitals and centers (primary and secondary burn care centers).

Among these 578 referral burn patients, 410 patients (70.9%) were females and 168 patients (29.1%) were males. The female to male ratio was 2.44:1. The mean (SD) age of the patients was 35.3 (19.69) years, the mean (SD) TBSA was 45.2 (26.3), and the mean hospital stay was  $22.5 \pm 19$  days (range 12–64 days).

A total of 36.2% patients (209) had no insurance coverage, but the remaining patients had some form of insurance from governmental companies or charity insurance companies.

The cause of burn were scalds and hot fluid in 20.9% patients (121), flame burn in 64% (370 patients), electrical burns in 13% patients (75), and chemical burns in 2% patients (12).

Table 1 shows the frequency and percentages of causes of flame burns.

A total of 5.1% patients (29) had inhalation injury and 21% patients (121) had concomitant diseases. Also, 36% patients (208) had burn wound infection during the transport. Two patients had respiratory infection. Urinary infection, respiratory infection, and sepsis were not present during the transfer.

Table 2 shows the reasons for patient referral. As shown in the table, the most frequent reason for referral was the patient himself/herself and his/her family or guardians who desired to transfer the patient to a major burn center in Tehran.

**Table 1 – Frequency and percentage of different causes of flame burns in referral burn patients.**

Causes of flame burn	Frequency	Percentage
Alcohol	36	6.22%
Tiner	17	2.94%
Gasoline	114	19.72%
Kerosene	76	13.14%
Propane gas	324	56.05
Others	11	1.90%
Total	578	100%

Download English Version:

<https://daneshyari.com/en/article/5636291>

Download Persian Version:

<https://daneshyari.com/article/5636291>

[Daneshyari.com](https://daneshyari.com)