

## Epidemiological Analysis of Burn Patients in Morocco: About 160 Cases.

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**Summary:** A retrospective study was conducted of burn patients admitted to the military hospital in Rabat, Morocco, in the 4 years period from 2015 to 2018. The epidemiological data from the 160 patients hospitalized were collected and studied. The type of burn was indicated in 158 of the patients: 93.1% of the injuries were thermal burns, 3.1% were electrical burns, and 1.3% chemical burns. The male/female sex ratio was 1.37. The mean duration of hospitalization stay was 45 days. The mean body surface area burned was  $21 \pm 17\%$ . Total mortality was 3.75%; 50% of deaths were due to septic shock. Our results were similar to data from other studies in the literature, with certain characteristics in our series, especially the age bracket most affected, the body surface area burned, and the mechanisms of injury.

**Keywords:** epidemiology, burn, age, sex, surface area burned.

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### I. Introduction

Considered one of the leading causes of injury throughout the world, burns are a frequent cause of hospitalization. It is estimated that 1% of the worldwide population will suffer from a serious burn sometime during their life [1,2].

In the developing world, the incidence and mortality of burn injuries are both higher, and because of their morbidity, post-burn sequelae, and mortality, burn injuries constitute an important public health problem [3-5]. The present report is a retrospective study conducted in the Burn Unit in the Department of Plastic and Reconstructive Surgery of the Military Hospital of Rabat, Morocco.

The epidemiological profile is thus based on the records of burn patients admitted to the Department between 2015 and 2018. This profile is comparable to that of European countries or North America on the circumstances, age, sex, burned body surface area, and total mortality.

### II. Patients And Methods

This retrospective analysis was conducted in the burn unit of the Department of Plastic and Reconstructive Surgery of the Military Hospital of Morocco. The epidemiological analysis is based on data collected from the medical records and operative reports of 160 burn patients, hospitalized between 2015 and 2018. The analysis focused on various aspects: the circumstances, age, sex, burned body surface area, and analysis of total mortality. The data collected were analysed using the SPSS program.

### III. Results

During the period 2015-2018, the Department of Plastic and Reconstructive Surgery treated 160 cases of burns (Fig:1) shows that an average number of 40 cases were admitted per year.

The patients' sex was reported in 159 cases. Burns were common in males, with 92 cases, compared to females 67 cases. The male/female sex ratio was 1.37.

The patients' age was given in 94 cases (Fig.2) shows that the age groups most affected were [20-30[ years, [30-40[ years, and [40-60[ years, with respectively 20%, 18.1%, and 21.3%, and an average age of  $31 \pm 17$  years.

This study shows that 93.1% of the burns were thermal burns, Over 45.6% of the burns were due to flames and 34.4% to hot liquids. Chemical and electrical burns were relatively rare (Fig:3).

Overall, the mean total body surface area of burns was  $21 \pm 17\%$ . The distribution of burns by depth (Fig. 4) shows that 66.3% of the burns were second degree and 15.6% were mosaic burns (second and third degree), while deep burns (third degree) represented only 4.4% of the cases.

The final outcome of the burn was reported in 160 cases. This was favourable in 96.3% of the cases (Fig: 5).

With regard to the 6 deaths, 3 died of septic shock and 3 as the result of a pulmonary embolism. Our patients automatically receive antiembolic prophylaxis, and a thoracic scan is requested for the onset of clinical signs.

#### **IV. Discussion**

Our department is Morocco's first specialized centre for the treatment of burns and is currently the only centre for burn patients in Moroccan military hospitals, which treat both the military and civilians.

The results show a male/female sex ratio of 1.37, which is significantly reduced compared to previous studies [6, 7] but still with a male predominance [6-8]. This study is limited to the recruitment of the military hospital in Rabat.

The most affected age group in our study was that of 40 to 60 years - the series reported by Frans1 described a younger age group. There was also a relatively high percentage of burned children aged between 0 and 14 years compared to other studies [6,7] but this may have been secondary to the predominance of domestic accidents and parental negligence and to differences in socioeconomic levels between countries [9-11]. Our patients' mean was age similar to that reported in the literature [6-8,12].

We found that most admissions were secondary to domestic accidents, while studies by other authors found more accidents to professional workers [6].

The average hospital stay of 45 days was similar to findings from other studies [1,3,6] which in our opinion poses a major management problem because of the scarcity of specialized burn centres in Morocco. This underlines the need for other specialized centres and for more care and attention in order to prevent such accidents, starting with the education of the population.

In our study the commonest cause of burns was hot liquids or flame, as in other studies [6,7] plus a particular aspect, typical of our country and secondary to the explosion of the small gas bottle invariably used in Moroccan kitchens. This gas cylinder is a veritable time bomb in every house all over the Kingdom of Morocco.

The study shows a large predominance of second degree burns, as in other studies [1,3,6,7].

Sex of our patients died, the remainder (96%) having been pronounced as having a favourable evolution.

The leading causes of death were pulmonary embolism and septic shock, while deaths from inhalation injury, as quoted in the study by Chong [6], were rarer in our series because of the availability of our hyperbaric room and the rarity of the occurrence of burn injuries in closed localities.

Hyperbaric treatment was used every time the patient was transportable, it has no contra-indications and could be beneficial for wound healing.

#### **V. Conclusion**

Burns are a major public health problem, requiring protracted hospitalization in intensive care units and general wards. The objectives of epidemiological studies are to identify risk factors for burn injuries and to provide a starting point for the establishment of an effective prevention plan.

Some risk factors were identified in our study, such as the use of small, unsafe gas bottles, the general public's lack of education with regard to the risk of burns, and the associations of other factors that exacerbate burn patients' general state (history of diabetes, cardiovascular risk factors, extreme age). Our study may be regarded as a preliminary study that opens up the way to other further analysis.

**Conflict of interest:** *No conflict of interest*

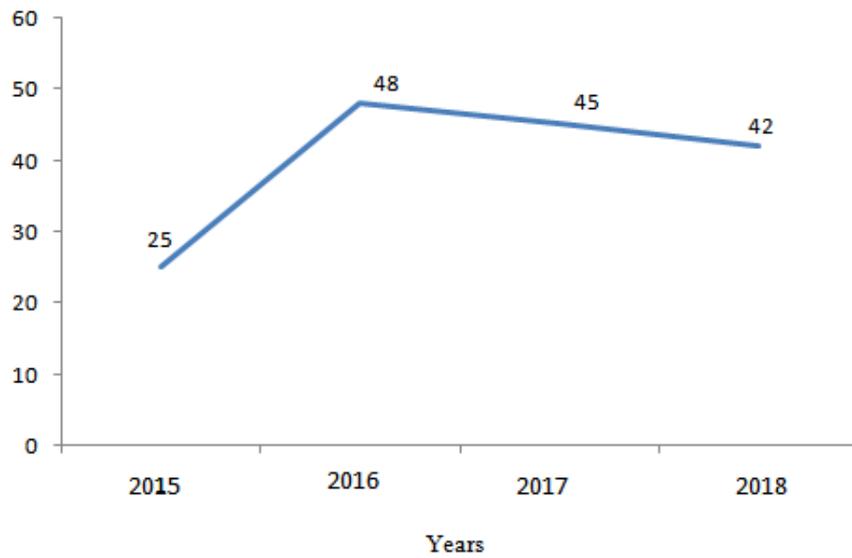


Fig. 1 - Distribution of patients | Years

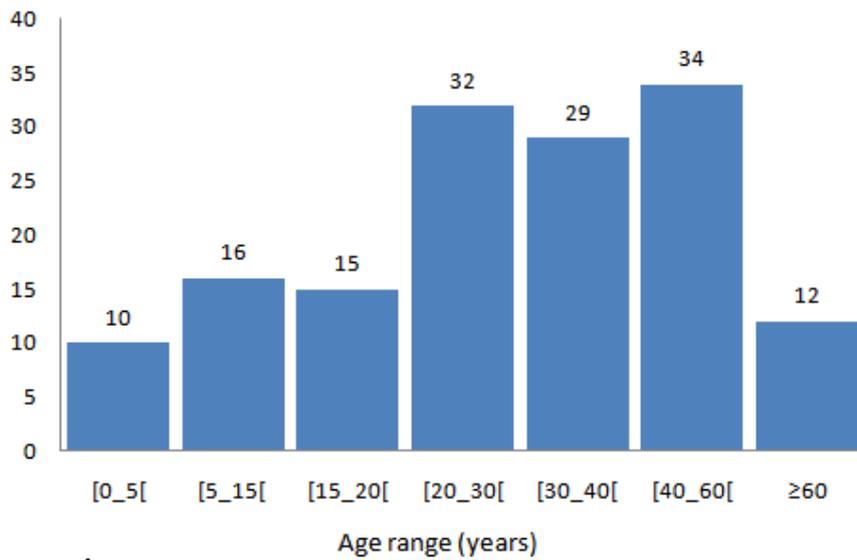


Fig. 2- Distribution of patients by age (yr).

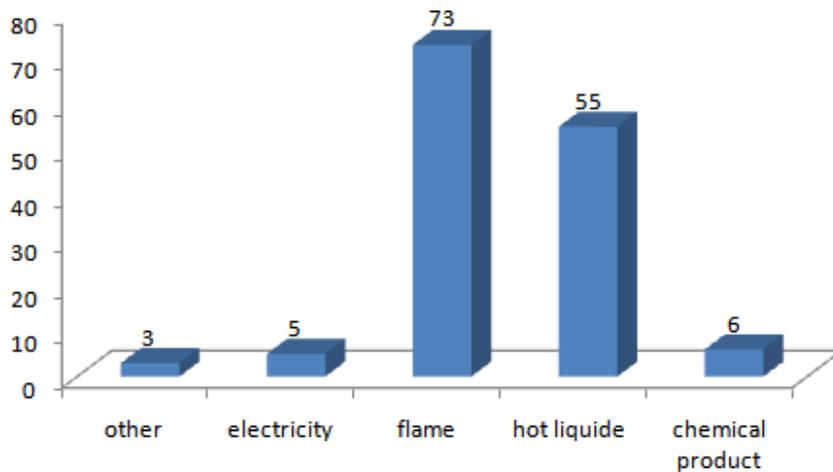
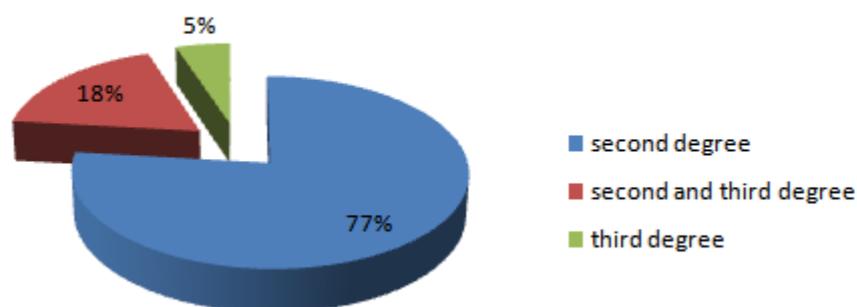
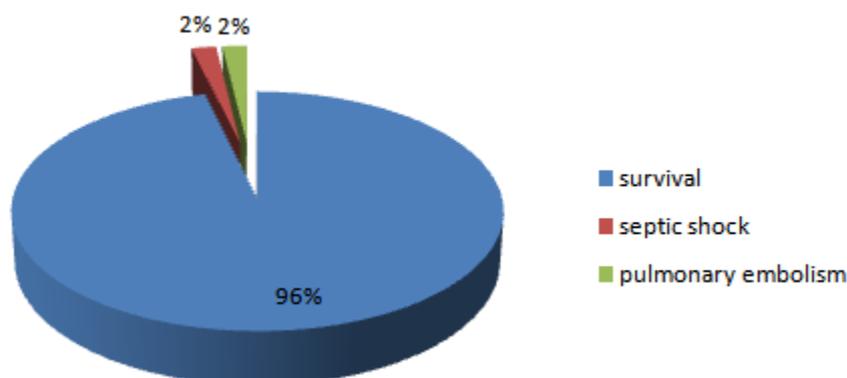


Fig. 3- Distribution of cases in relation to cause of burn.



**Fig. 4-** Extent and depth of burns.



**Fig. 7 -** Final outcome.

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