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Epidemiological profile of minor and moderate burn victims at the University Hospital San José, Popayán, Colombia, 2000–2010

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ABSTRACT

Objectives: To describe the epidemiological profile of minor and moderate burn victims at the University Hospital San José, Popayán, Colombia, 2000–2010.
Methods: This study was retrospective description of minor and moderate burn victims admitted between 2000 and 2010 at the Burn Unit of University Hospital San José (UHSJ). The following variables were recorded and analyzed: age, gender, origin, social security, depth and extent of burn, days of hospitalization, causal agent and mortality. SPSS 19.0 was used. The level of significance was $p < 0.05$.
Results: During 2000–2010, 845 patients were included. 61.7% were men. The average age was 17.9 years. Most of patients were from rural areas (80.4%). Most people belonged to the Subsidized Health Colombian System (85.3%). The most common causal agent was scalding liquids (49.7%). The most frequent depth was second degree burns (57.8%) and the average burned body surface was 20%. The average hospital stay was 20.4 days, and the median hospitalization time was 14 days. Mortality was 1.4%.
Conclusions: The findings of this study are the first to define the characteristics of burns in Popayán. This study is the basis for identifying preventative measures in the local health care system.

1. Introduction

Burns are a global public health problem. In 2004, the overall incidence was 11 million affected people [1]. Each year, more than 300,000 people die from these injuries. Over 90% of deaths whose burns are caused by fire occur in countries of middle and low income. Millions more, mostly among people of low socioeconomic status, suffer disability and disfigurement with psychological, social and economic consequences on the survivors and their families. Burns lead to costly, lengthy hospitalization stay and rehabilitation programs [2].

A systematic review of the literature on the epidemiology of burns conducted in Europe between 1985 and 2009 revealed that most of the victims were men and children. The most common causal agents were scalding liquids, fire, and contact with hot objects [3]. In South America, epidemiological investigations show that most cases involved domestic incidents, industrial or workplace [4–10]. In Colombia there are few studies that have determined the epidemiological profile of burns [6,9,10]. One was held in the city of Medellin, in a similar period to the present study, showing that the causal agents were scalding liquids, fire and electricity [6].

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Locally in Popayán, a city in the southwestern region of Colombia, it is necessary to generate evidence in order to establish a strategy based on actual data to plan appropriate care for burn patients and to design preventive interventions. Some Latin-American studies have identified risk factors: low socioeconomic status, low level of education of mothers or caregivers responsible for the child at the time of the accident and small or precarious houses or kitchen equipment [8]. Some of these factors can be modified for preventive or educational policies for municipalities or States in the medium and long term. Additionally, prevention efforts based on local epidemiological profile are needed to reduce the number of burn victims and should be developed on a local level [5].

The Burn Unit of University Hospital San José (UHSJ) from the city of Popayán, is the main and the only referral center for burn patients in the department of Cauca, southwestern Colombia. The aim of this study was to describe the epidemiological profile of patients with minor and moderate burns admitted to this unit during 2000–2010.

2. Methods and materials

This was a retrospective study of minor and moderate burn victims admitted between 2000 and 2010 at the Burn Unit of UHSJ of Popayán, which had in 2010 an estimated population of 237,000 inhabitants [11]. In 2005, 95.9% of households in Popayán had electrical service and 94.8% had water service [12].

The UHSJ, is a public departmental hospital. This medical center treats patients of three sections of the Colombian Health System: the linked scheme is composed by people of low socioeconomic class, who do not have any kind of medical insurance but the State guarantees their health care. The subsidized scheme is composed by people of medium socioeconomic class and the state guarantees health care too. Finally, contributive scheme is composed by people who make financial contributions to ensure their own health.

The data was collected from the admissions book of the Burn Unit, during the time period studied. The variables collected were demographic data (age, gender and origin), the causal agent, percentage of burned body area, depth degree of the burn, length of hospital stay and mortality rate. Not included in the study were patients from the Burn Unit that entered the intensive care unit (ICU). The reason for not including patients from the ICU with severe burns was that it was closed from 2001 to 2004, due to financial problems at UHSJ. Therefore the patients with severe burns were transferred to a center of greater complexity in the Colombian city of Cali. The information about these patients could not be obtained. Another reason was that the book of registry of patients admitted to the ICU does not have all the variables that were included for analysis in this study.

The data was processed in SPSS 19.0. The significance level used was $p < 0.05$. To describe the categorical variables proportions were obtained. For continuous variables we used means and standard deviations (SD). To examine the association between categorical variables (categories of age, gender, origin, CSSSH strata, degrees of depth of the burn, causative agent) Chi-square and Fisher exact tests were used given the small number of participants in each cell. For continuous variables (percentage of burned body surface) we used non parametric test Mann–Whitney test or Kruskal–Wallis depending on the variable of comparison. To analyze length of stay we used survival analysis and log rank test. We present results as median times and 95% confidence intervals.

The approval and acceptance for using the database of patients only for study purposes was carried out along with the research and ethics committee of UHSJ.

3. Results: data analysis

3.1. *Population*

During the study period 2000–2010, 845 of 921 (91.7%) patients treated at the Burn Unit of UHSJ that had complete data were included for analysis. Sixty-one point seven percent (61.7%, 521 patients) were males and 38.3% (324 patients) were female, with a ratio 1.6:1. The average age was 17.9 years, ranging from 0 to 89 years. Two hundred ninety seven cases were children under 5 years, accounting for 35.1% of all patients admitted. The age group most affected was 15–59 years (34.9%), followed by the 1–4 years age group (32.5%). The burns were more frequent in males and the main causal agents were electricity (87.7%) and fire (64.1%). Among females, the most frequent causes were scalding liquids (46.0%) and hot objects (35.3%).

The origins of the patients were predominantly rural areas in 80.4% (679 patients). Most patients belonged to the Colombian subsidized Health System (85.2%). Six point five percent (6.5%) of patients were members of the contributory schemes.

The distribution according to the year the patients were admitted to the Burn Unit shows a similar frequency. There was significant association between year of admission and the average of burned body surface area (t-test, $p < 0.05$).

3.2. *Causal agent of burn*

Table 1 shows the distribution by causal agent and age group. A significant association was found (Fisher test, $p < 0.05$) between the causal agent of the burn and the age groups. The most frequent agent corresponded to scalding liquids (49.3%), followed by fire (34.3%) and electricity (7.7%).

In children under 1 year, the most common causal agents were fire (59.1%) and scalding liquids (36.4%). In group 1–4 years scalding liquids dominated (85.8%). In the 5–14 years the most frequent agents were fire (45.4%) and scalding liquids (42.0%). In people from 15 to 59 years and over 60 years, fire was the main cause of the burns (41.4% and 62.5%, respectively).

A significant association (Kruskal–Wallis test, $p < 0.05$) was found between the causal agent of the burn and the percentage of burned body surface. The average area was higher in firework burns, fire, and scalding liquids (Table 2).

The different agents produced varying degrees of depth of the burn. In general, all the causal agents caused burns of second superficial degree (57.8%). Electricity caused third degree burns more often. Fireworks caused second degree.