



Epidemiological analysis over 2 years at the Burn Unit of the Urgency Hospital Governor Otávio Lage de Siqueira, Goiânia, Brazil

Análise epidemiológica de 2 anos na Unidade de Queimados do Hospital de Urgências Governador Otávio Lage de Siqueira, Goiânia, Brasil

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■ ABSTRACT

Introduction: Burns are a type of injury that is among the leading causes of mortality. The use of epidemiology helps in providing subsidies for evaluation and organization of treatment and prevention, aiming at the improvement of public health. The objective is to describe the epidemiological profile of the patients treated at the Queimados Nelson Picollo unit of the Governador Otávio Lages de Siqueira Emergency Hospital (HUGOL). **Method:** This study analyzed the epidemiological profile of patients, aged more than 12 years, treated by plastic surgery at the burn treatment unit, Nelson Picollo, from July 2015 to June 2017. The patients who were not admitted to the burn unit were excluded from the study. Data were collected from the MVSoul R. program. **Results:** A total of 375 patients visited the hospital; of these, 50% of the patients needed intensive care unit treatments. The mean duration of hospital stay was 23.08 days. The majority of the patients were males, with a mean age of 39.17 years, and the main etiological agents were inflammable liquids, mainly alcohol and gasoline. The mean burned body surface area was 24.67%. A total of 1490 surgical interventions were performed, with an average of 3.97 surgeries per patient. Forty patients died; of these, 29 had airway burns. The total number of patients with airway burns was 73. **Conclusion:** This study provides a profile of burns and hospitalizations in the HUGOL burns unit, which corresponds with those from other centers specialized for this type of treatment.

Keywords: Burns; Burn units; Transplants; Surgical flaps; Epidemiology.

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■ RESUMO

Introdução: Queimadura é um tipo de lesão que está entre as principais causas de mortalidade. A utilização da epidemiologia ajuda no fornecimento de subsídios para avaliação e organização de tratamento e prevenção, visando à melhora da saúde pública. O objetivo é descrever o perfil epidemiológico dos pacientes atendidos no Hospital de Urgências Governador Otávio Lages de Siqueira (HUGOL) na unidade de Queimados Nelson Picollo. **Método:** Este estudo analisou o perfil epidemiológico dos pacientes atendidos pela equipe de cirurgia plástica da unidade de tratamento de queimados Nelson Picollo, no período de julho 2015 até junho 2017, com idade superior a 12 anos. Critérios de exclusão: pacientes que não foram internados na unidade de queimados. Os dados foram colhidos do programa MVSoul R. **Resultados:** O total de atendimentos foi de 375 pacientes, dos quais 50% necessitaram de tratamentos unidade de terapia intensiva. O tempo médio de internação foi de 23,08 dias. A maioria do sexo masculino, com média de idade de 39,17 anos, com agente etiológico principal as chamas por álcool + gasolina. A média de superfície corporal queimada foi de 24,67%. Foram realizados 1490 intervenções cirúrgicas, média de 3,97 cirurgias por paciente. O total de óbitos foi de 40 pacientes, dos quais 29 apresentaram queimadura de via aérea. O total de pacientes com queimadura de via aérea foi de 73 casos. **Conclusão:** Este estudo demonstrou um perfil de queimaduras e internações na unidade de Queimados do HUGOL compatível com outros centros especializados neste tipo de tratamento.

Descritores: Queimaduras; Unidades de queimados; Transplantes; Retalhos cirúrgicos; Epidemiologia.

INTRODUCTION

Burns constitute injury of the organic tissue caused by external agent. Burns may result from trauma caused by heat, chemicals, electricity, friction, or radiation, leading to partial or total destruction of the skin and adjacent tissues¹. The severity and prognosis of burns are directly related to the burned body surface area and the depth of the burn, while the factors that indirectly influence the prognosis are the anatomical location of the burn, the age of the patient, the etiological agent, and preexisting diseases and associated lesions. These factors are important indicators of the need for hospitalization for the treatment of burns^{2,3}.

According to the World Health Organization, burns are the fourth most common type of trauma in the world, after interpersonal violence, falls, and traffic accidents⁴. The number of people with burns is large, and burns constitute a serious public health problem. It is estimated that six million victims per year seek medical care for some degree of burns worldwide; however, it is difficult to determine the specific distribution of cases

for each country due to the scarcity of epidemiological data and national reporting systems.

In some countries, the available data allow us to estimate the annual incidence of burns, for example, the incidence is around 500,000 in the United States of America; 10,000-15,000 hospital admissions per year have been reported in Germany; and 700,000 to 800,000 new cases are reported in India. According to the Brazilian Society of Burns (SBQ), it is estimated that there are approximately 1,000,000 burn injuries per year in Brazil. Of these, about 100,000 require hospital care and 2,500 evolve to death due to burns or the associated complications⁵.

Burn Treatment Units (BTUs) first appeared in the United States and England in the 1950s to improve and strengthen the specific treatment of burn victims and to improve the epidemiological indices of these treatments. Currently, the US has 137 BTUs located across the country. In Brazil, there are 57 registered BTUs throughout the national territory, as reported by the Brazilian Society of Burns (SBQ).

These units are reference centers for hospitalization and treatment of patients with severe complex second and third degree burns and important comorbidities. They function as multiprofessional treatment centers, with several professionals that provide care to these patients. In addition to clinical care, these units should function as centers for knowledge-building, training professionals, and disseminating burn data⁶⁻⁸.

The epidemiological pattern of burns varies widely in different parts of the world⁹. They represent a public health problem in several developing countries, and the lack of public education campaigns is one of the main factors associated with a high incidence of accidental burns¹⁰.

Epidemiology is considered the basic science for preventive medicine and a source of information for the formulation of public health policies. Currently, patients who are victims of burns should be evaluated and monitored periodically by interdisciplinary professionals in specialized centers, who have the physical plant, facilities, and adequate equipment to perform the treatment¹¹.

OBJECTIVE

The study involved the evaluation and analysis of the epidemiological profile of patients hospitalized for treatment at the Burn Unit of the Governor Otávio Lage de Siqueira (HUGOL) Emergency Hospital in Goiânia, GO.

METHODS

Data from the electronic medical records of 376 patients who were treated for burns at the HUGOL Emergency Hospital in Goiânia, GO, between July 2015 and June 2017 was collected and analyzed.

Inclusion criteria

Patients, who visited the Emergency and outpatient clinic at HUGOL but were not hospitalized for treatment, patients who were admitted to the Pediatrics unit, either in the ICU or a clinical or surgical ward due to some kind of burns were excluded.

Statistical analysis

During the analysis of the variables of this study, we considered as inclusion criteria: age, gender, etiological agent, burned body surface area, burn depth, body regions affected by burn, debridements, grafts, flaps, infections, evolution to death, burns of inhaled routes, time of hospitalization in intensive care unit of burns and time of hospitalization.

The data was plotted in excel table and analyzed by the SPSS 24 program.

RESULTS

A total of 375 patients were admitted from July 2015 to June 2017; of these, 50% of the patients needed treatment and follow-up in an intensive care unit (Table 1). The average hospitalization duration for these patients in the ICU was 14.73 days.

Table 1. Need for support in an intensive care unit.

Yes	188
No	187

The overall mean duration of hospitalization in the burns unit was 23.08 days. The patients were mostly males (61%) (Figure 1). The mean age of the patients was 39.17 years. The main etiological agent in the patients admitted to the service was alcohol in combination with gasoline (41.06%), followed by direct flame (16.26%), scalding (8.53%), trauma (7.73%), hot oil or (7.46% for each), gas explosion (6.4%), and chemicals (2.93%) (Figure 2).

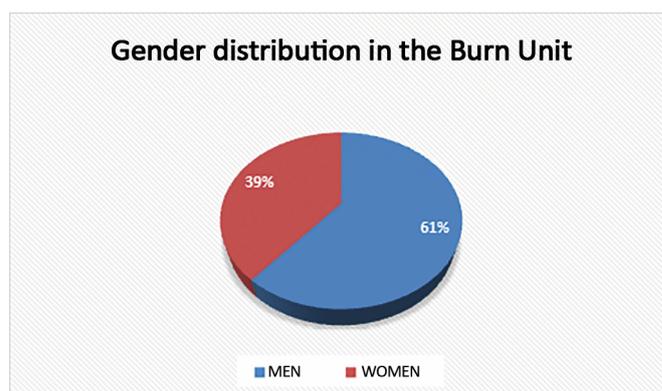


Figure 1. Gender distribution of adult patients with burns.

In cases of chemical burns, sulfuric acid was the major etiological agent, accounting for 37% of the cases (Table 2). The mean SCQ was 24.67%. The 2nd degree burns were the most prevalent type, reported in 51% of the cases, followed by a combination of 2nd and 3rd degree burns, in 47%, while 3rd degree burns were reported in only 2% of the cases (Table 3).

A total of 1490 surgical procedures were performed, with an average of 3.97 surgeries per patient. Of these, 268 were grafting; 24, flap placement; 1117, debridement; and 81, other procedures, among them tracheostomies (Figure 3). Forty patients died; of them, 29 presented airway burns (72.5%; Figure 4). The total number of patients with airway burns was 73.

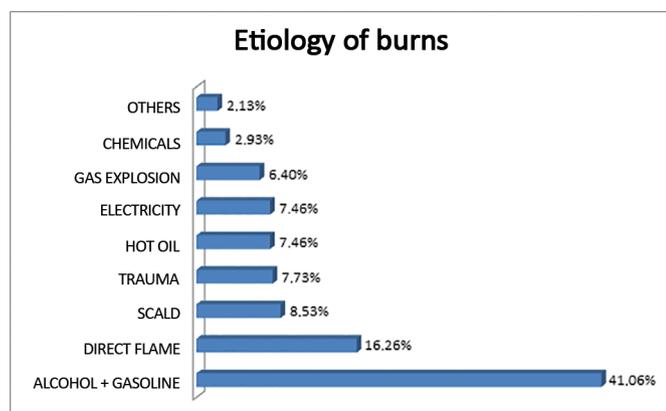


Figure 2. Etiology of burns.

Table 2. Distribution based on the burn agents.

Cicatricure®	1
Caustic soda	4
Sulfuric acid	2
Acid detergent	2
Tar	1
Fig leaf	1
Total	11

Table 3. Distribution based on the degree of burns.

Second degree	189
Second + third degree	178
Third degree	8

DISCUSSION

Burns are a serious public health problem in Brazil. Knowledge of epidemiological data is of great importance in supporting programs for the prevention and treatment of burns, and for defining a parallel between national and international experiences. The data obtained in this study were, in general, compatible with those reported in other national and international studies.

In the period studied, we observed a prevalence of accidents in males (61%), corresponding to the national and international epidemiological profile¹²⁻¹⁶.

The burning agent was the open flame (57.32%), particularly on contact with flammable liquids, mainly alcohol and gasoline (41.06%), followed by heated liquids (15.99%), similar to that data reported by Macedo and Rosa¹⁶ and data from other countries¹³. The use of flammable liquids to light a fire is very common in Brazil, and the use of alcohol in the gel form is an effective method for reducing the incidence of burns by this agent.

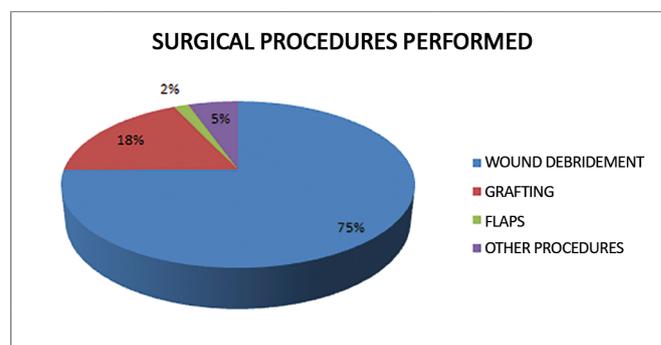


Figure 3. Surgical procedures performed.

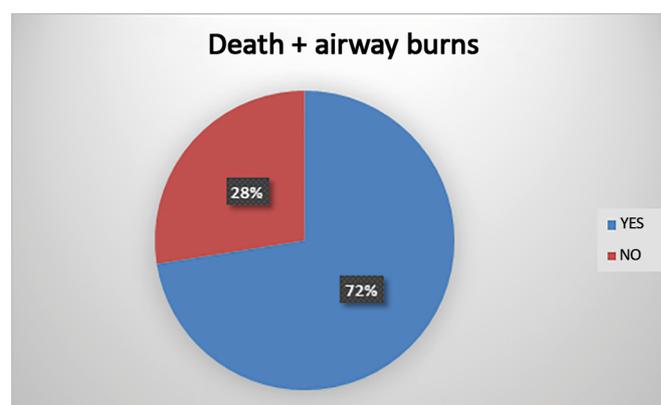


Figure 4. Death and airway burns.

The electrical and chemical burns were the least frequent (7.46% and 2.93%, respectively) with a lower burned body surface area, but a greater burn depth; these data correspond with data from the literature review¹⁶⁻²⁰.

The mean burned body surface area was 24.67%, leading to an average hospital stay of 23.08 days. This duration of hospitalization was similar to that described by Macedo and Rosa¹⁶ and also to the international statistics²¹⁻²³. The severity of the patients, such as the depth and area of the burns, and the presence of airway lesion were related.

The mortality rate in this study was 10.66%, higher than that observed by Macedo and Rosa¹⁶ and in other Brazilian studies¹¹; being compatible with an increase in the mean age of the patients studied, the depth and area of burns, and the presence of airway injury.

Traditionally, the burned body surface, the severity of the lesion, and the age of the patient were important determinants of the mortality rate in patients with burns. With the advancements in studies on this health impairment, other factors, such as inhalation injury, pre-admission shock, sepsis and thrombocytopenia, became important.

The highest mortality rates are among the older patients, especially those aged more than 60 years. We observed this in our study, since the mean age of the patients in our study was 39.17 years, which is about 30% higher than the average age reported by Gimenes et al.¹³ from Sorocaba, SP; the mean age of the patients is usually less than 30 years in national and international studies. This may be because patients under 12 years of age, who are usually victims of a hot liquid (scalding) accident, acquire more superficial lesions, with lower mortality rates in this age group.

Another factor that explains this high mortality rate is the high prevalence of inhalation burns, often not mentioned in other studies due to the difficulty in documenting such burns. We observed a higher mortality rate in patients with evidence of airway burns. Of the 40 deaths, 29 had airway burns (72.5%) (Figure 4). The total number of patients with airway burns was 73, that is, 39.72% of the patients suffered burns in various areas and died, which is consistent with the world literature.

Burns remain the worst injury that can suddenly happen to individuals, marking them for the rest of their life. Burns are responsible for significant morbidity and high mortality rates worldwide, despite advances in the available treatments²⁴.

The study provided a profile of burn injuries and hospitalizations in the Burns unit of HUGOL; this profile corresponds with those from other specialized centers for this type of treatment.

This study contributes to the evidence that epidemiological studies are indispensable tools for acquiring knowledge about the population to be treated, thus, enabling the development of strategies for the prevention of burns and for the progressive decrease of its prevalence. The study also proposes the importance of continuously educating the population to prevent avoidable accidents.

The negligent use of inflammable products also accounts for a large number of these accidents; the incidence of such accidents may decrease if effective social awareness measures are implemented.

COLLABORATIONS

- FCFA** Analysis and/or interpretation of data; statistical analyses; final approval of the manuscript; conception and design of the study; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.
- BCOC** Analysis and/or interpretation of data; conception and design of the study; writing the manuscript or critical review of its contents.

- JFM** Statistical analyses; conception and design of the study; writing the manuscript or critical review of its contents.
- WJVJ** Statistical analyses; conception and design of the study; writing the manuscript or critical review of its contents.
- GMDR** Analysis and/or interpretation of data; statistical analyses; final approval of the manuscript; conception and design of the study; writing the manuscript or critical review of its contents.

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