



Four-year epidemiological characterization of large burn patients at Celia Sánchez Manduley Surgical Hospital, 2015–2018

Caracterização epidemiológica de 4 anos dos pacientes grandes queimados no Hospital “Celia Sánchez Manduley”, 2015 – 2018

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■ ABSTRACT

Introduction: A “large burn” patient is defined as a patient who suffers a burn of such magnitude that it carries a major risk of life, defined by different parameters. Burns are a national and worldwide public health problem due to the morbidity and mortality they cause. The objective of this study is to describe the epidemiological and clinical characteristics of hospitalized patients with large burns. **Methods:** A descriptive, retrospective and longitudinal study was carried out at the Plastic Surgery and Burn Service of the Celia Sánchez Manduley Surgical Hospital, Manzanillo - Granma, from January 2015 to December 2018, to understand the epidemiological characteristics of hospitalized large burn patients. **Results:** The largest number of hospitalizations (45 patients [35.16%]) occurred in 2018. There was a predominance of females (74 patients [57.81%]). Accidents were the most frequent cause of burns (71 patients [55.47%]). Severe large burn patients were the most frequently treated (48 [37.50%]). The highest number of cases occurred in the municipalities of Bayamo (40 cases [31.25%]) and Manzanillo (21 cases [16.41%]). **Conclusion:** The highest number of cases occurred in 2018, with a predominance of females between the age of 30–59 years. Accidents were the primary cause for burns, and the survival rate exceeded expectations. The municipalities with the most cases were Bayamo and Manzanillo. **Keywords:** Burns; Epidemiology; Severity; Survival; Burn Unit.

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■ RESUMO

Introdução: O paciente “grande queimado” é definido como um paciente que sofre uma queimadura de tal magnitude que carrega um importante risco vital, definido por diferentes parâmetros. As queimaduras são um problema de saúde pública mundial e nacional, devido à morbidade e mortalidade que produzem. O objetivo é descrever as características epidemiológicas e clínicas relacionadas ao paciente grande queimado hospitalizado.

Métodos: Estudo descritivo, retrospectivo e longitudinal realizado no Serviço de Cirurgia Plástica e Queimadura do Hospital Estadual Clínico Cirúrgico “Celia Sánchez Manduley”, Manzanillo – Granma, no período de janeiro de 2015 a dezembro de 2018, a fim de conhecer as características epidemiológicas do paciente grande queimado hospitalizado. **Resultados:** O maior número de internações foi em 2018 com 45 pacientes (35,16%). Houve predomínio do sexo feminino com 74 pacientes (57,81%). Os acidentes como modo de produção de queimaduras foram os mais frequentes com 71 pacientes (55,47%). Grandes pacientes queimados relatados graves foram os mais frequentes com 48 (37,50%). O maior número de casos correspondeu aos municípios de Bayamo com 40 (31,25%) e Manzanillo 21 casos (16,41%).

Conclusão: O ano de 2018 foi o que apresentou maior número de casos, predominantemente o sexo feminino e entre eles os grupos de idade entre 30 e 59 anos. Os acidentes foram o principal modo de produção, a sobrevivência foi acima das expectativas. Os municípios com mais casos foram Bayamo e Manzanillo.

Descritores: Queimaduras; Epidemiologia; Gravidade do paciente; Sobrevida; Unidades de queimados.

INTRODUCTION

Burns are traumatic injuries that cause variable degree of tissue necrosis due to different physical, chemical, or biological agents that cause cell-mediated and humoral changes that can lead to death or leave debilitating or deforming sequelae¹⁻³.

Injuries caused by burns constitute a health problem that globally affects all age groups, not only in terms of the frequency with which they occur but also their severity; burns can be incapacitating with a high mortality rate, and have an unfavorable nationwide economic impact⁴.

Extensive burns involve hospitalization and are usually associated with social, aesthetic, and economic losses^{5,6}. A “large burn” patient is defined as a patient who suffers a burn that poses an important risk to life defined by different parameters. Burns are a national and global public health problem due to the morbidity and mortality they entail. According to the World Health Organization, an estimated 265,000 deaths worldwide are annually associated with burns⁷.

Globally, the morbidity and mortality rates associated with burns have decreased, with 90% of deaths occurring in low- and middle-income countries, where prevention programs are scarce; when they occur

in high-income countries, they mainly affect the socially marginalized classes⁸.

The incidence of burns in Germany is 10,000–15,000 hospitalizations per year and 700,000–800,000 new cases in India⁹. In the United States, burns represent a mean 1,230 visits per day at the emergency services. Although many of these lesions heal spontaneously, almost 1 in 10 is severe enough to require hospitalization or transfer to a burn unit¹⁰. In Brazil, an estimated 1 million burn accidents occur per year; among them, 100,000 patients seek treatment at a hospital, while approximately 2,500 die directly or indirectly due to the injuries¹¹.

In Cuba, according to the 2013 Statistical Health Yearbook, burns were the seventh leading cause of accidental death with an estimated mortality rate of 0.4 per 100,000 inhabitants^{12,13}.

Due to economic constraints, different countries display differences in access to health care; therefore, access to specialized care units for burn patients varies widely^{14,15}.

OBJECTIVE

The objective of this study is to understand the epidemiological characteristics of large burns and to develop preventive measures against these injuries.

METHODS

This descriptive, retrospective, and longitudinal study was performed at the Plastic Surgery and Burns Service of the Celia Sánchez Manduley Surgical Hospital, Manzanillo – Granma between January 2015 and December 2018 and aimed to understand the epidemiological characteristics of large burn patients who required hospitalization. The total sample was composed of all hospitalized patients with extensive large burns.

The following variables were determined: year of burn, age (age groups, with 15 year intervals), sex (female and male), cause of the burn injury (accident, attempted suicide, attempted murder), life expectancy (in accordance with the Cuban classification: severe, very severe, extremely critical), survival, and municipality of origin.

A patient's life prognosis was determined by the burn severity index:¹ mild, 0.1 to 1.49; less severe, 1.5 to 4.99; severe, 5 to 9.99; very severe, 10 to 19.99; critical, 20 to 39.99; and extreme critical, 40 or more.

To calculate the severity index, the total percentage of burns by depth was multiplied by a constant K and then added. This result was indicated as the severity index: for dermal A, the constant is 0.34; for dermal AB, 0.5; and for hypodermic B, 1. In the end, we added these results and obtained the severity index¹.

A form was prepared for data collection after review of the medical records of all patients hospitalized for major burns.

This study data were analyzed on a computer using descriptive statistics in Microsoft Excel 2007, and absolute numbers, percentages, and rates were expressed in tables created for this purpose.

RESULTS

There were a total of 128 hospitalized large burned patients (Table 1), an incidence that has increased since 2017, with the highest number occurring in 2018.

Analysis of the hospitalized large burn patients by age and sex (Table 2) revealed a predominance of females (74 [57.81%]); most patients were 45–59 years of age (15.63%), followed by 30–44 years of age (12.50%).

Accidents were the most frequent cause of burns (Table 3; 55.47%), followed by suicide attempts (40.63%).

A severe large burn (Table 4) was the most frequent (48 cases [37.50%]), followed by extreme critical (36 [28.12%]). Regarding threat to life, the survival rate after severe burn was 100%, that after a very severe burn was 92.30%, after critical burn was 77.78%, and after extreme critical burn was 13.89%.

The majority of patients with large burns (40 cases [31.25%]) were injured in Bayamo, followed by Manzanillo (21 cases [16.41%]) and Bartolomé Masó

Table 1. Distribution of hospitalized large burn patients by year.

Year	No.	%
2015	26	20.31
2016	22	17.19
2017	35	27.34
2018	45	35.16
Total	128	100

Table 2. Distribution of large burn patients according to age and sex.

Age range	Sex					
	Female		Male		Total	
	No.	%	No.	%	No.	%
Less than 15 years	5	3.90	12	9.38	17	13.28
15-29 years	15	11.72	13	10.16	28	21.88
30-44 years	16	12.50	7	5.47	23	17.97
45-59 years	20	15.63	14	10.94	34	26.57
60-74 years	15	11.72	4	3.12	19	14.84
75 years and above	3	2.34	4	3.12	7	5.46
Total	74	57.81	54	42.19	128	100

Table 3. Distribution of hospitalized large burn patients in accordance with the cause of burns.

Burn cause	No.	%
Accidents	71	55.47
Suicide attempt	52	40.63
Homicide attempt	5	3.90
Total	128	100

Table 4. Distribution of hospitalized large burn patients by life expectancy and survival.

Life expectancy	Hospitalized		Alive (N = 128)	
	No.	%	No.	%
Severe	48	37.50	48	100.00
Very severe	26	20.32	24	92.30
Critical	18	14.06	14	77.78
Extreme critical	36	28.12	5	13.89
Total	128	100	91	71.09

(11 [8.59%]) (Table 5); however, with regard to the incidence per 10,000 people, most were from the municipality of Buey Arriba with 2.20, followed by Bartolomé Masó and Media Luna at 2.19 and 2.07, respectively.

DISCUSSION

Burns represent one of the most devastating forms of trauma globally¹⁶, being an important public

Tabela 5. Distribuição dos pacientes grandes queimados hospitalizados segundo seu município de origem.

Municipality of origin	No.	%	Population	Incidence per 10,000 population
Manzanillo	21	16.41	130 262	1.61
Niquero	2	1.57	42 870	0.46
Pilón	6	4.69	29 927	2
Media Luna	7	5.47	33 698	2.07
Campechuela	4	3.12	44 568	0.89
Yara	10	7.81	56 880	1.75
Bartolomé Masó	11	8.59	50 110	2.19
Bayamo	40	31.25	238 118	1.67
Rio Cauto	4	3.12	47 381	0.84
Buey Arriba	7	5.47	31 863	2.20
Cauto Cristo	2	1.57	20 664	0.97
Jiguaní	9	7.03	60 751	1.48
Guisa	5	3.90	47 777	1.04
Total	128	100	834 869	1.53

health problem in terms of morbidity and long-term consequences, especially in developing countries¹¹.

Here we found that the incidence of extensive burns has increased in recent years. Exposure to and the use of combustible liquids in adulthood, especially by women, make it more likely for young women to suffer burns that require hospitalization. This was reflected in our study data and coincides with other authors who obtained similar results¹⁷; other studies reported a higher frequency of burn injuries in male patients^{11,18}, and described differences in the exposure of individuals of either sex to the possible cause of burn injuries.

Accidents were the main cause of burns, although many suicide attempts were reported, and these two causes represent almost all patients hospitalized with extensive burns. The accidents were related to occurrences in the household as reported by other studies performed in developing countries^{19,20}.

In our study we observed that severe burn patients had a higher survival than expected based on the Cuban life prediction classification¹. This is due to medical advances, the individual dedication of doctors and nurses who care for these patients, and their high level of professionalism, which enables the survival of patients with extensive burns and a high mortality risk. Other studies⁷ also reported higher rates of survival when applying other measures for mortality, such as the Garcés index, in agreement with our results.

The majority of extensive burns occurred in the municipalities of Bayamo and Manzanillo, but when

the incidence rate per population was determined, higher values occurred in the municipalities of Buey Arriba, Bartolomé Masó, and Media Luna, mainly in rural areas. These results may be related to sociocultural differences among different population groups and the possible causes of burns as reported by some authors⁹.

CONCLUSION

In 2018, a significant increase in the number of large burn patients was noted with a predominance of patients of female sex, aged 30–59 years. Accidents were the primary cause, and severe and critical burns were the most frequent in the reports describing survival prognosis and a higher than expected survival rate. The greatest number of cases occurred in the Bayamo and Manzanillo municipalities. As a recommendation we suggest improve the interrelationship between primary care and secondary care, determining the behavior of large burn patients is important to contribute to health promotion and burn prevention actions.

COLLABORATIONS

CMCH	Analysis and/or data interpretation, Conception and design study, Conceptualization, Data Curation, Final manuscript approval, Formal Analysis, Investigation, Methodology, Project Administration, Resources, Supervision, Validation, Visualization, Writing - Original Draft Preparation, Writing - Review & Editing
VPN	Analysis and/or data interpretation, Conception and design study, Final manuscript approval, Investigation, Project Administration, Supervision, Visualization, Writing - Original Draft Preparation, Writing - Review & Editing
RFB	Analysis and/or data interpretation, Data Curation
SRLG	Analysis and/or data interpretation, Data Curation
FAPS	Analysis and/or data interpretation, Data Curation
MSG	Analysis and/or data interpretation, Data Curation

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