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Original Article

Burn injuries in Enugu, Nigeria

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Abstract

BACKGROUND Burn injury has been observed as a world wide problem.. The knowledge of the epidemiology is important for planning of management and preventive programmes and every community is encouraged to study the epidemiology of burns since this important problem varies from community to community.
METHOD This is a retrospective review of all our burn patients who presented with acute burn injuries between January 1993 and December 1997. Admission registers and patients' folders were the sources of information. The information obtained include age, sex, place of injury, month of injury, cause of injury, management and outcome.
RESULTS A total of 285 patients with acute burn injuries were studied. Males were 180 [63.2%] while females were 101 [35.4%]. Flame was the single most common cause of burn injury [147 or 49.1%] while electrical burns was less frequent [4 or 1.4%]. Majority of burn injuries occurred in the months of December and January. The mortality rate was 23.2%, .
CONCLUSION The incidence and mortality of burn injury has remained high in this environment. We suggest a well targeted prevention campaign program to reduce this high incidence and high mortality in this environment.
Key words;Burn Injuries, Epidemiology, Flame Mortality, December/ January

Introduction

Burn injuries is a world wide problem.[6] It ranks high among injuries suffered by man. Improvement in technology in the developed world has seen improvement in burn management with a remarkable reduction in morbidity and mortality. However in developing countries like Nigeria, these technological advances have not made the desired impact on the citizens in burns management. [4 – 8]. This has been attributed to the persistence of three problems : ignorance, poverty and disease, in developing countries.

Epidemiological studies in each environment is a prerequisite to effective planning and optimisation of burn injury preventive measures to minimise the devastating effects of burn in all age groups. A prior documented epidemiological study from this centre on thermal injuries was limited to children covered a ten year period preceding this study.[1] This study aims to review both adults and children with acute burns managed in our unit over 5 year period.

Materials And Methods

The plastic surgery department at the National Hospital for orthopeadic and plastic surgery is well established and runs a small (5 bedded) ill equipped burns unit. It is the main referral centre for burn injuries in the Eastern part of Nigeria.
This is a retrospective study of patients with acute burn injuries who presented to our unit between the period of January 1993 and December, 1997 . The unit is well established with consultants and qualified and dedicated nurses. It is also a training unit for residents in training Plastic surgery. The unit has a dedicated theatre and receives support from all other supportive hospital services like the medical rehabilitation and laboratory services. Admission registers and patients folders were the sources of information which included patient's

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age and sex, the month and place of injury, aetiology, parts of the body affected, percentage body surface area burnt and mortality. Data has been analysed.

Results

Only patients that were admitted with early burn injuries were studied. A total of 285 had early burns. 184 were male and 101 female (M: F-1.8:1). The ages of the patients ranged from 22 days to 76 years with a mean of 20.7 years. One hundred and twenty eight (44.9%) of the patients were children with age range between 22 days – 14 years Two hundred and six (72.3%) of them suffered burns in their homes while 64 (22.4%) were burned in their work places such as factories, artisans workshops and markets stalls. Fifteen (5.3%) occurred in vehicles following road traffic accidents. Flame constituted the largest source of burn in 147 (49.1%) patients while scald burn from hot fluids(water, soup, hot tea, pap{custard})constituted the next large group of 108 (37,9%). Twenty patients (7.0%) were due to chemical burns while electrical burns occurred in 4 (1.4%) patients.[Fig.1].

Burn injury was at the peak in the months of December/January with incidence of 40/36 patients respectively, while November experienced the least incidence.[Fig.2]. Management of burn patients in our centre is either on out patient or in patient basis. Criteria for admission were burns involving special areas (Head and Neck, perineum , Hands, Feet). burns covering at least10% total Body surface area (TBSA) in children and 15% TBSA in adults. Also admitted were patients with associated injuries or underlying medical problems. The number of days spent on admission ranged from one to 269 days, with a mean of 14.3 days.

The main cause of flame burn included kerosene, stove and lantern explosion as well as explosion of stored petrol, which accounted for escalation of flame burn during fuel scarcity.

Seven of the patients were epileptics who fell into fire during epileptic fits while they were cooking.

Fifty-eight (23.2%) of the patients died ,40 were males and 18 were females. No postmortems were carried out but causes of death as recorded by the attending clinicians were acute renal failure, septicemia, acute respiratory distress syndrome and multiple organ failures. Average total burn surface of patients who died was 63.5% with a range of 30 – 100% body surface area. No patient with 20% burn surface or less died within the study period whereas 100% of those with TBSA of 80% and above died [Table 1]

Absolute mortality was highest in the third and forth decades of life but percentage mortality was highest in the seventh and eight decades and least in the first decade.[Table 2). Wound infection was seen in 78 patients [27.4%].There was septicaemia in 26patients [9.1%], acute renal failure in 23 patients [8.0%], contractures in 16 patients [5.6%] and 2 patients had gangrene of the hand and feet each.

All patients were initially resuscitated with either normal saline or Ringer's lactate . Superficial were covered with silver sulphadiazine until healing occurs by re- epithelisation. While, deep wounds of the head and neck, hands and feet were usually excised and skin grafted early, most wounds of the trunk and extremities were dressed until eschar separates before the skin was grafted.

Table 1 Total burned surface area/ mortality

% Tbsa	Freq	%	Mortal	%
0 < 10	121	42.4	nil	nil
11 –20	53	18.6	nil	Nil
21 - 30	28	9.8	3	5.2
31 - 40	25	8.9	7	12.1
41 -50	12	4.2	8	13.8
51 - 60	10	3.5	7	12.1
61 - 70	12	4.2	11	18.9
71- 80	12	4.2	10	17.2
81 -90	9	3.2	9	15.5
91 -	3	1	3	5.2

Table 2 Age/mortality

Age	Total	Mortality	% y
0 < 10	110	9	8.2
11 –20	40	10	25
21 –30	51	13	25.5
31 –40	40	14	35
41 –50	31	7	23.3
51 –60	8	2	25
61 –70	2	1	50
71 –80	3	2	66
Total	285	58	23.2

Discussion

Burns is a severe form of injury more so in a developing country where patients often present late due to ignorance, poverty and dearth of Support facilities, like ambulance and first aid services. The peak period of burns in Nigeria is December/January and the commonest cause is the flame [3,4]. Our review further reiterates it. Well structured preventive campaigns will be effective if administered in the months preceding this peak periods. Concerns about burns can be seen in numerous writings on burns dating back to Hippocrates (460 –377 BC) who had some misconception and inappropriate advice coined in his aphorism " diseases not cured by medicine are cured by iron, and those not cured by iron are cured by fire and those not cured by fire are incurable"[2] . He suggested inflicting burns to treat some ailments. In this study two hundred and six (72.3%) patients got burnt in the home setting. In his sudy Datubo-Brown reported 91.3% of his patients sustaining burns at home [5]. A targeted prevention campaign in this regard will seek to make the home safer. Epileptics and their guardians should be educated on the dangers of their embarking on certain activities like cooking or getting too confined. Of the 285 patients treated in this study 184 (64.6%) were males a trend noted in other studies in the West African sub- region. [4 –7.] However, a study from East Africa showed a higher female incidence (54.41%) [8] One hundred and twenty eight (44.9%) of the patients were children whose ages ranged between 22 days – 14 years

Children aged 15 years and below made up 46% of the burnt patients in this study. Children in this age group make up 45% of the Nigerian population[9] so they are a group at risk. Flame and scald were the most common cause of burns in children (98.5%). Two children were treated for chemical burns. The two children were siblings in an case where their father attempted killing following the sudden death of his "bread winner" wife . This father needed psychiatric assessment and phsycological rehabilitation and a sustainable means of livelihood.

The mortality in this study was 58 (23.2%) comprising of 40 males and 18 females. This compares with mortality figures reported from Ibadan and PortHarcourt. These are all notably higher than figures from developed countries [10] However, worthy of note is that no patient with 20 BSA or less died in this study but patients with 80% BSA and above all died [table 1]. In this environment this information may be useful in doing triage and in resource allocation during mass burn casualty situations in this environment.

CONCLUSION

The incidence of burn injury and burn mortality has remained high in this environment and children are significantly involved. The problems of poverty, ignorance and dearth of personnel and facilities make management difficult and mortality predictably high. We advocate that a well structured prevention campaign programme will be immensely beneficial if targeted at the right group and time.

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