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AN EPIDEMIOLOGICAL SURVEY OF THERMAL BURNS IN ADULT FEMALES IN A BURNS UNIT OF MUMBAI

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Summary

This is a prospective study of 238 adult females of thermal burns admitted in the burns ward of KEM Hospital, Mumbai over a period of 16 months (from August 1997 to November 1998). Mean age was 25 years with a range of 12 to 70 years. Paediatric burns (below the age of of 12 years) were not included in the study. Flame burns accounted for 94.5% and scalds 5.4%. Majority were accidental (77.7%) followed by suicidal (21%) and homicidal (1.3%) burns. Over all mortality was 61.76%. TBSA of burns was the main factor influencing the survival.

Keywords: Burns, Epidemiology

Introduction

Burns is a challenging problem in developing countries because of prolonged morbidity and high mortality. It has serious physical, psychological and financial impact on the individual, patient's family and society. In India with it's vast population, every state has an average incidence of 0.6% burn injury every year, of these 0.4% are major burns requiring hospitalization.

The present study of various epidemiological aspects of thermal burns was conducted to know the extent and cause among adult females with an aim to develop strategy for prophylaxis

Methods

This is a prospective study of 238 consecutive adult female patients of thermal burns admitted in the female burns ward of KEM Hospital, Mumbai, over a period of 16 months (from August 1997 to November 1998). Most of the patients were from the city of Mumbai, patients also came from neighbouring districts like Thane, Raighad, Ratnagiri and Satara.

Results

1. Age of the patients

In our study of 238 patients 50% of patients were between the age group of 21-30 years (119 cases), 21.84% (52 cases) being adolescents between the age group of 12 to 20 years followed by 16.38% of patients who belonged to the age group of 31-40 years and beyond the age of 50 years the incidence was 5.46% (Table 1).

Table 1. Age Distribution (Total 238 adult females)

Age in years	No. of patients	Percentage
12-20	52	21.84
21-30	119	50
31-40	39	16.38
41-50	15	6.3
51-60	8	3.36
<60	5	2.1

2. Marital status and years after marriage

Married females constituted 84.8% (201) and 15% (37) were unmarried. 20.39% (41) had married life more than 10 years, 16% were within 2 years after marriage and 37% were between 2-4 years after marriage.

3. Occupation

Majority of our patients were housewives i.e. 72% (172), 18% (43) were students and working women and 10% (23) were unmarried, non-working women.

4. Economic status

Thirty-six percent were from middle class families, remaining 64% were from lower and lower middle class families.

5. Educational status

Forty-five percent of our patients were illiterates, 50.67% had school education and less than 5% were graduates.

6. Seasonal variations

Least incidence were found in the months of March, June, September and December.

Maximum cases were admitted in January, April, May and August. (Table 2)

Table 2. Seasonal Variation

Months	Year - 97	Year - 98
Jan		23
Feb.		13
Mar.		9
Apr		20
May		20
June		11
July	12	12
Aug.	24	19
Sept.	9	8
Oct.	19	14
Nov.	13	16
Dec.	8	

7. Type and cause of Burns

Accidental burn constituted 77.7% (185) of our series, followed by suicidal which was 21% (50) and less than 2% were homicidal, 94.53% were flame burns and 5.46% were scald burns.

8. Extent (percentage in terms of BSA) of burns

A total of 117 (48.85%) were admitted with extensive burns of more than 50% of BSA, out of which 38 patients (15.96%) had burns of more than 90% of BSA. Twenty eight patients (11.76%) had burns of 41-50% of BSA, 22.65% of cases had burns of moderate extent i.e. 20-40% BSA and only 16.38% had burns of less than 20% BSA. (Table 3)

Table 3. Extent of Burns

% of burns	No.of cases	% of cases
0-10	18	7.56
11-30	21	8.82
21-30	28	11.76
31-40	26	10.92
41-50	28	11.76
51-60	27	11.34
61-70	15	6.3
71-80	20	8.11
81-90	17	7.14
91-100	38	15.96

9. Treatment undertaken

Total of 52 patients underwent surgical excision of the burn wounds with skin grafting, of which 31 patients were operated more than once. Twenty one patients had only superficial burns which healed over a period of 2-3 weeks and no operation was performed in them. Of these operated cases 3 patients expired following operation.

10. Survival statistics

Out of 238 cases admitted 61.76% (147) cases expired, 70 (29.41%) servived and 21 patients left against medical advice.

11. Mortality related to the type of burns

In the suicidal burns the mortality was 96%, where as in accidental category the mortality was 96.3%, where the extent of burns was more than 50% BSA, followed 88.46% in burns of 41-50% BSA and 28.57% mortality with 31-40% BSA burns. In patients between 21-30% BSA burns group the mortality was 7.8%, and with burns of less than 20% BSA, the mortality was 5%.

Table 4. Relation with age percentage of burns and mortality (figures within brackets indicate the number of deaths)

Age	% BSA										
	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	Total
11-20	3 (0)	6 (0)	6 (0)	4 (2)	7 (5)	9 (9)	3 (3)	7 (5)	2 (2)	7 (7)	54 (33)
21-30	8 (0)	7 (0)	14 (1)	15 (4)	13 (11)	11 (10)	7 (7)	10 (10)	11 (11)	21 (21)	117 (75)
31-40	2 (0)	4 (1)	5 (0)	4 (0)	6 (5)	5 (5)	1 (1)	3 (3)	3 (3)	5 (5)	38 (23)
41-50	3 (1)	1 (0)	2 (0)	2 (1)	2 (2)	1 (1)	3 (3)	0 (0)	0 (0)	2 (2)	16 (10)
51-60	2 (0)	2 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	1 (0)	2 (2)	8 (3)
>61	1 (0)	0 (0)	2 (1)	1 (1)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	5 (3)
Total	19 (1)	20 (1)	29 (2)	26 (8)	28 (23)	28 (27)	14 (14)	20 (18)	17 (16)	37 (37)	238 (147)

12. Mortality related to the extent of Burns

In patients with more than 50% burns, mortality was 96.3% i.e. 112 patients died out of 116 patients. In the group of 41-50% BSA burns the mortality was 80%. Mortality was 28.57% in patients with extent of 31-40% BSA. (Table 4)

Discussion

The problem of burn injury in the Indian subcontinent is becoming more obvious with each published report. The typical Indian burns patient is a young woman in twenties whose saree catches fire while cooking with a floor level kerosene stove.

In the present study an attempt has been made to analyse and compare the observations with some of the published reports [2-11].

The present study shows a high incidence of thermal burns in the age group of 21-30 years i.e. 50% (119 cases out of 238). Similar observations were made in the other Indian studies [2,3,4,5]. High incidence of burns in the age group of 21-30 years is probably because the patients in this age group are the main working hands and are exposed to the hazards of fire, especially in kitchen.

Incidence of burns in elderly i.e. beyond the age of 40 years was only 9.7% in our series, which is similar to those published by Subramanyam [5], Jayaram etal[4], Gupta[3], and Davies[2]. The observations of Tejarina etal[7] and

Soltani etal[11] was that the incidence of thermal burns in elderly, i.e. beyond the age of 40 was 18% which is much higher than the published reports. In our series 84.45% of the patients were married. This high figure can be attributed to the exclusion of paediatric burns in our series [3,5].

Majority of patients (63.85%) belonged to low socioeconomic status. This is similar to the other published reports from India [2-5]. Significant percentage of our patients were illiterates and the remaining had only school level education. Only 3.78% of our patients were graduates.

Housewives constituted 72% of our patients and 14.7% were working women. Majority of them were maid servants and labourers.

Regarding the type of burns, accidental burns constituted 77.73% (185) of our cases, 21% (50) were suicidal and there were only 3 cases (1.3%) of homicidal burns. The incidence of suicidal burns was relatively more in our study compared to other reports [2,3,4,5].

Flame burns was the leading cause of injury accounting for 94.53% of cases, remaining 13 cases (5.46%) were scald burns, which is identical to the report of Davies[2] and Subramnyam[5]. The incidence of scald burns in Gupta's series [3] and that of Kumar[6] was much higher (paediatric cases were included).

In about 50% of cases in our series the burn injury was extensive as these patients had burns of more than 50% BSA. In only about 27% of our cases the extent of burns was less than 30% BSA.

A total of 52 patients underwent surgical excision of the burn wound and grafting, of which 31 patients were operated more than once. In some of the cases the surgery was either delayed or could not be performed due to the associated medical conditions.

Overall mortality in our series was 61.76% which is much higher than other published reports [2,3,7,12]. The high mortality in our series was probably due to factors like:

a. Extensive nature of burn in our series (75 patients had burns of more than 70% BSA.)

b. Delay in arrival to the hospital, as only 5 patients got admitted in less than 1 hour

c. High incidence of inhalation burns, 98 patients (41%) had inhalation burns

Overall mortality was 53% in accidental burns, 96% in suicidal burns and 33.3% in homicidal burns. This high mortality in suicidal burns was due to more extensive nature of the injury.

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