

J Comm. Med. Iraq - 1990, Vol.3, No. (1)
AN EPIDEMIOLOGICAL STUDY OF THE HOSPITALIZED BURN CASES AMONG CIVILIANS ADMITTED IN THE NAJAF HOSPITAL 1981-1985

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Key words: Burn, Epidemiology, Hospital cases.

(دراسة وبائية للمصابين بحروق في مستشفى النجف للطوارئ للفترة ٨١ - ١٩٨٥)

الخلاصة:

أظهرت الدراسة الارتجاعية (١٠٤١) حالة للفترة المذكورة، بينما شملت الدراسة المستقبلية (٥٠) حالة للفترة (تشرين الثاني ١٩٨٥ - كانون الثاني ١٩٨٦) وقد تبين من الدراستين أن ٥٠٪ من الراقدين تقل أعمارهم عن ٩ سنوات ومعدل الوفيات ١٠,٧٪، ١٤٪ على التوالي. كما تشير نتائج الدراسة المستقبلية أن ٦٦٪ من الراقدين حرقهم من الدرجة الثانية، ومعدل المكوث في المستشفى (٥,٥) يوم، ومجموع الوفيات (٧) نقط ستة منها كانت خلال تسعة أيام من الرقود. وأظهرت الدراسة وجود علاقة معنوية بين عدد الإصابات واختلاف فصول السنة.

SUMMARY:

A retrospective study among Najaf Hospital records of the cases of burns admitted between Jan, 1981 to Dec, 1985 were analysed (1041 cases).

A follow up of the cases of burns admitted to the same hospital for three months period (Nov. 1985 to Jan. 1986) was carried out and the results were also analysed (50 cases). In the two studies more than 50% of the cases admitted to hospital were below nine years of age, and the case fatality rate was 10.7% and 14% respectively. However, the follow up study shows that 66% of the cases were of second degree burn and the average duration of stay in the hospital was 5.5 days; six out of seven cases died within nine days of admission to the hospital. There was a significant difference in the admission rate of burn cases in different seasons.

INTRODUCTION:

Burn is the leading cause of non-motor vehicle deaths in children one to four years old, and is the second most common cause in children one to 14 years old¹. It is estimated that in the United States two million persons suffer burns annually, of which 130 000 requiring hospitalization, and 10 000 die². The majority of burns are caused by heat³. The magnitude of the problem of burns all over the world could be assessed from the fact that most of the general hospitals have established separate burn wards, because care of burns is a multi-disciplinary function⁴. It was planned to study the epidemiological pattern of burn cases admitted to Najaf Hospital (N. H.) in order to put plans for prevention, as there were no previous studies in such cases in Iraq.

MATERIALS AND METHODS:

We planned to carry out two studies:

1. A review of data from the records of cases of burns admitted to the N. H. during a five year period (Jan. 1981 to Dec. 1985).
2. A follow up study for the cases of burns which were admitted to the N. H. from 1st Nov. 1985 to 31st Jan. 1986.

NOTE:

- a- No detailed information on the burn cases in the hospital records were available.
- b- A special form was designed for the follow up study.
- c- Analysis of data on both studies were carried out manually, and the Chi-square statistical test was used on assumption that there was no difference in the number of cases admitted to hospital in relation to seasonal variation.

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RESULTS:

The result of the first study shows that 93 991 cases were admitted to N. H. during 1981-1985, out of these 1 041 were burn cases (Table 1), a percentage of 1.1%. 53.3% of the 1 041 burn cases admitted to N. H. during the study period 1981-1985 were below nine years of age, with a male to female ratio of 1.3:1.0 (Table 2). 46.9% (488 cases) of the total

Table 1. Cases admitted to Najaf hospital during 1981- 1985.

Year		Total admission	Burn admission	Year		Total admission	Burn admission
1981	M	10 500	137	1984	M	8 320	96
	F	11 963	89		F	11 145	91
1982	M	9 309	136	*1985	M	2 920	118
	F	12 300	93		F	1 880	90
1983	M	11 152	105	Total	M	42 201	592
	F	14 502	86		F	51 790	449
					T	93 991	1 041

* New hospitals were open in the Najaf governorate, M= Male, F= Female, T= Total

Table 2. Age and sex distribution of the cases of burns admitted during 1981- 1985.

Age in years	1981		1982		1983		1984		1985		Total		Grand total	
	M	F	M	F	M	F	M	F	M	F	M	F	No.	%
- 9	77	48	80	53	55	42	56	39	61	44	329	226	555	53.3
10-19	23	16	24	12	23	12	13	26	22	14	105	80	185	17.7
20-29	17	13	10	12	12	19	8	12	12	13	59	69	128	12.3
30-39	8	7	10	6	8	9	9	6	13	9	48	37	85	8.2
40-49	4	1	7	1	7	3	4	3	4	4	26	12	38	3.7
50-59	2	2	3	4	-	-	4	3	4	3	13	12	25	2.4
60+	6	2	2	5	-	1	2	2	2	3	12	13	25	2.4
Total	137	69	136	93	105	86	96	91	118	90	592	449	1041	100

cases (1041) were discharged after recovery, while 38.6% (402 cases) left the hospital on their own responsibility, 3.7% (39 cases) were referred to other hospitals for special treatment, however, the rest 10.6% (112 cases) died in the hospital.

The case fatality rate (%) during the period of study ranged between 6.7% in the 1985 and 14.0% in 1982, the mean was 10.6% (Table 3). There was a statistically significant difference ($P < 0.01$) in the admission of burn cases according to the season (Winter shows the highest).

The results of the follow up (2nd) study show that 58.0% of 50 cases admitted to N.H. during the three months period were below nine years of age with a male to female ratio of 1.2:1.0 (Table 4). According to Wallace's estimation³ (Rule of Nine), 30 cases had a burnt area of less than 30% of the total body area. On the other hand, among the 20 cases with more than 30% of the total body area affected, only 7 cases died (Table 5). Classified by the degree of the burn, 46 cases (92%) had suffered from second degree burns while the others were either of the third (four cases) or fourth degree burns (two cases), the case fatality rate was 14% (7/50). 27 cases (52%) stayed in hospital for less than 9 days. Forty three burn cases (86%) were discharged after they had recovered. The rest (7 cases) died in the hospital (6 died within the first nine days after admission). In our study, 32 burn cases (64%) come from urban areas and 18 cases (36%) from rural area. Thirty eight burn cases (76%) live in their own houses while

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Table 3. Number of deaths and case fatality rate for the years 1981-1985.

Year	No. admitted			No. of deaths			Case fatality rate (%)		
	M	F	T	M	F	T	M	F	T
1981	137	89	226	15	6	22	11.7	6.7	9.7
1982	136	93	229	19	13	32	14.0	14.0	14.0
1983	105	86	191	13	9	22	12.4	10.5	11.5
1984	96	91	187	6	16	22	6.4	17.6	11.8
1985	118	90	208	8	6	14	6.8	6.7	6.7
Total	592	440	1041	62	50	112	10.5	11.1	10.8

Table 4. Age and sex distribution of the cases of burns admitted during Nov. 1985 to Jan. 1986 (Follow-up Study).

Age (Years)	Males		Females		Total	
	No.	%	No.	%	No.	%
9	19	58	10	20	29	58
10-19	5	20	5	20	10	20
20-29	0	0	3	6	3	6
30-39	2	10	3	10	5	10
40+	1	4	2	8	3	6
Total	27	54	23	46	50	100

Table 5. Case fatality of burns in follow-up study.

% of burn	MALES		FEMALES		TOTAL	
	Case	Death	Case	Death	Case	Death
<30	19	-	11	-	30	-
30+	8	2	12	5	20	7
Total	27	2	23	5	50	7

Table 6. Causes of burn according to sex (follow-up study).

Cause of burn	Males	Females	Total	
			No.	%
Gas	2	5	7	14
Kerosine	4	8	12	24
Wood	2	1	3	6
Boiling Water	16	8	24	48
Other	3	1	4	8
Total	27	23	50	100

re as the rest were living in rented houses. Forty burn cases (80%) had separate kitchens in their houses.

The cause of burns was in 25 cases (50%) boiling water, the others were due to fire of different sources (Table 6).

DISCUSSION:

A total of 1 041 cases of burns were admitted during the five-year period, males to females ratio was 1.3: 1.0, the occurrence of burns among males remained high as compared to females throughout the five years (Table 2). Preponderance of males cases seems to be related to the basic male behaviour of being more active than females. The number of burns decreased as age increased, the highest number was in the age group below nine years (Table 3). This might be explained on the bases that the children spend most of their time at home playing on different things so they are exposed to different types of accidents. The case fatality rate (Table 3) showed

variation year-wise, such fluctuation could be expected in a hospital study, because, a hospital draws its patients from an undefined population and catchment areas. Nonetheless the average case fatality rate of 10.8%, seems to be quite high and should draw the attention of the authorities towards the problems and treatment of cases of burns.

The seasonal variation seems to be related to the seasons of Summer and Winter. Winter draws the people nearer to the source of heat and thus exposes them to more risk of burns. All the deaths due to burns were observed to be among those having more than 30% burns (Table 5). It has been observed that the survival of cases of burns might not depend only on the percentage of burns, but also on the recognition of burn shock and fluid and electrolyte replacement. 92% (46 cases) of patients had suffered from second degree burns. Fourth degree burn cases also seems to be rare as only one case was admitted during the three months study and he died after one day

of stay in hospital. Florence et al study⁵ showed 14.8 days as average stay in the hospital whereas Durtschi study¹ showed a mean hospitalization time for those patients with fatal injuries of 15 days with a range of 1-42 days. Our finding of 5.5 days of average stay is comparatively low which may be due to the fact that in our study 90% of the cases had second degree burns. Seven deaths out of the total 50 cases gave case fatality rate of 14% which is similar to other studies⁶.

The major cause of burn was found to be boiling water which occurred in 50% of the cases studied (Table 6). The use of Kerosine resulting in burns accounted for 24% (12 cases) of the total. Gas as a source of burn was observed in 14% (7 cases). Among the males, the commonest cause of burns was spilling of hot boiling water. Scalding by hot fluids as the most common cause of burn has been reported by Durtschi¹, who found it to be the cause among 70% of the burns, and the flame burns were less common.

Our suggestion is to plan to reduce the burn cases by implicating better preventive measures and the introduction of better facilities for treatment.

ACKNOWLEDGEMENTS:

The authors wish to thank Prof. A. Doudani for the useful comments, and to Director of Najaf Hospital for his help.

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