ORIGINAL ARTICLE

Epidemiologic Profile and Outcome of Hospitalized Burn Patients: 5 Year Experience at Burns Centre, Civil Hospital, Karachi

Ehmer-Al-Ibran,[1] Masood Hussain Rao,[2] Syed Arsalan Ali[3] and Anum Saleem[3]

ABSTRACT

Objectives: To evaluate the epidemiological pattern and outcome of the admitted burns patients at Burns Center, Civil Hospital, Karachi.
Methodology: A retrospective chart review was conducted on all the 3972 records available at Burns Center, Civil hospital, Karachi. The variables like age, sex, types of burn, mode of burn and outcome of the patients were recorded and evaluated.
Results: Out of 3972 records of the patients, majority of the patients (n=3139; 79.0%) had fire burns followed by electric burn (n=304; 7.7%), scalds (n=207; 5.2%) and chemical burns (n=119; 3.0%). Majority (n=2958; 74.5%) of the patients were between 16-40 years of age. Majority of the cases reported as accidental, however suicidal and homidicidal cases increased during the last five years. 64.2% were discharged home after successful recovery. The overall mortality rate was 31.2% in last 5 years. However mortality rate was reduced from 35.3% in 2009 to 28.1% in 2010 due to better treatment procedures and better recovery conditions in the hospital.
Conclusion: Majority of the hospitalized burn victims were adult males. Most of the burns were accidently sustained whereas intentional burns constituted only a small percentage. Fire burns was the predominant mode of injury. The mortality was 31.2%.

Key words: Mortality in burn patients, cause of burn, type of burn.

INTRODUCTION

Burn is a type of injury caused by heat, electricity, chemicals, light, radiation or friction.[1-3] Burns continue to be one of the major public health issues in developing countries.[4-5] Burn injuries are most devastating of all injuries and some times may become a major global public health crisis.[6-7] Approximately 90 percent of burns occur in under developed countries, which generally lack the necessary infrastructure to reduce the incidence and severity of burns.[8] Fatality of burn and its outcome is mostly related to the type of burn and age.[9] If burn injuries are not addressed properly in time in terms of management, the results may be disastrous or life threatening or if the victim survives, he may develop physical deformities and disfigurement.

Mortality from burn injury was found high in developing countries like Nigeria.[10-11] This is quite different from what obtains in the developed world where mortality in burns has reduced significantly due to better and timely management.[12-14]

To reduce the risk of accidental burn injuries, we need to determine certain epidemiological variables like age, sex, type of burn and mode of injury to figure out the population at risk. Through this we can make a proper plan and create awareness among people in order to reduce risk factors. For that we planned to conduct a study at Burns Centre, Civil Hospital, Karachi to evaluate the epidemiology and outcome of the patients during the last five years.

MATERIAL AND METHODS

The study was conducted at Burns Centre, Civil Hospital, Karachi and included all the hospitalized burns patients managed during the period 2006 to 2010.

The convenience sampling based retrospective chart review was conducted to evaluate the epidemiological aspects of the admitted burns patients at Burns centre, Civil Hospital, Karachi and to the determine outcome (discharge and mortality) of the patients.

The records of all admissions (n=3972) in Burns Centre, Civil Hospital, Karachi for the last five years i.e. 2006-2010 were selected for this study. The epidemiological variables like age, sex types of burn, mode of burn, and outcome of the patients were recorded and the data

1 Burns Unit, Civil Hospital and Dow University of Health Sciences Karachi, Pakistan.

2 PMRC Research Center, Dow Medical College, Dow University of Health Sciences Karachi, Pakistan.

3 Student, 4th Year MBBS, Dow Medical College, Dow University of Health Sciences Karachi, Pakistan.

Correspondence: Dr. Ehmer-Al-Ibran, Assistant Professor, Burns Unit, Civil Hospital and Dow University of Health Sciences Karachi, Pakistan.

Email: dr.ehmer@yahoo.com

were analyzed through computer using SPSS version 16.0. Frequencies and percentages were developed for variables according to the methodology.

RESULTS

During five years (2006-2010) overall 3972 patients were admitted in burns ward of Civil Hospital Karachi. Out of these 2232 (56.2%), were males and 1740 (43.8%) were females. Male to female ratio was 1: 0.8. According to the age group of the patients, 0-15 years patients (i.e. children) were 544 (13.6%). Majority (n=2958; 74.5%) of the patients were between 16-40 years of age. The frequency of burns in female which was increasing gradually from 2006 to 2009 (37.7% to 49.3%), slightly dropped in 2010. (Table I)

According to the cause of burns, majority of the patients (n=3139; 79.0%) had fire burn followed by electric burns (n=304; 7.7%), scalds (n=207; 5.2%) and chemical burns (n=119; 3.0%). The number of fire burns which was 494 in 2006 gradually increased to 754 in 2009 but dropped to 651 in 2010. However, the number of scalds and electric burns cases continued increasing from 2006-2010. (Table II).

Regarding the acquisition of burn injury, majority of the cases were accidental. However suicidal and homidicidal cases increased during the five year corresponding period.

According to the outcome of the patient, 2550(64.2%) were recovered and discharged from hospital satisfactorily. However 170 cases were LAMA (leave against the medical advice) whereas 11 cases (0.4%) were referred to other departments of the Civil Hospital after adequate treatment. The 170 cases which were reported as LAMA might have been shifted to other hospitals. The overall mortality rate was 31.2% in last 5 years. However mortality was reduced from 35.3% in 2009 to 28.1% in 2010.

DISCUSSION

Like other under developed countries, incidence of burn injuries in Pakistan is also very high. In Karachi, the largest and most thickly populated city of the country, burn is the leading cause of death. At least 8 to 10 burn patients are brought to Civil Hospital Burns Ward every day and majority are 3rd degree high body surface burns. Most common causes of burn injuries are related to the wide use of Liquefied Petroleum Gas (LPG) for cooking, house electricity, the use of chemicals in homes, geysers and large families with many children with habit of preparing food at ground level. It is also because of lack of awareness and ill defined preventive measures.

Burns is one of the major problems threatening public health in developing countries and burn injuries are among the most devastating of all injuries and a major global public health crisis. Approximately 90 percent of burns occur in low to middle income countries, regions that generally lack the necessary infrastructure to reduce the incidence and severity of burns.

In our study also 79% of the cases were due to fire burn. A similar study conducted in India in 2001

Table 1: Age and gender distribution of the patients (n=3972)

Age groups	2006	2007	2008	2009	2010	Total	%
0-15 years	40	40	98	169	197	544	13.6%
16-20 years	128	150	158	196	189	821	20.7%
21-30 years	231	285	301	336	327	1480	37.3%
31-40 years	101	121	124	155	154	655	16.5%
41-50 years	30	34	49	68	71	252	6.3%
51-60 years	22	29	37	23	27	138	3.6%
61 +	5	17	28	24	8	82	2.1%
Total	557	675	795	970	975	3972	100.0%
Gender							
Male	347	371	444	492	578	2232	56.2%
Female	210	304	351	478	397	1740	43.8%
Total	557	675	795	970	975	3972	100.0%

Table 2: Year wise Types of burn distribution among patients (n=3972)

Types of burn	2006	2007	2008	2009	2010	Total	%
Fire burns	494	595	645	754	651	3139	79.0%
Electrical burns	36	46	48	68	104	304	7.7%
Scald	9	13	42	52	91	207	5.2
Chemical burns	17	16	25	20	41	119	3.0
Others	1	3	35	76	26	203	5.1%
Total	557	675	795	970	975	3972	100.0%

Table 3: Year wise Major cause of burn (n=3972)

Cause of burn	2006	2007	2008	2009	2010	Total	%
Accidental	533	671	784	944	929	3861	97.2%
Suicidal	17	4	10	22	42	95	2.4%
Homicidal	7	0	1	4	4	16	0.4%
Total	557	675	795	970	975	3972	100.0%

Table 4: Year wise outcome of the patient (n=3972)

Out come of the patient	2006	2007	2008	2009	2010	Total
Discharge	348 (62.7%)	461 (68.3%)	498 (62.6%)	609 (62.8%)	634 (65.0%)	2550 (64.2%)
Left Against Medical Advice	27 (4.7%)	13 (1.9%)	31 (3.9%)	38 (3.9%)	61 (6.3%)	170 (4.3%)
Expired	182 (32.6%)	201 (29.8%)	266 (33.5%)	318 (32.8%)	274 (28.1%)	1241 (31.2%)
Referred to other wards	0	0	0	5 (0.5%)	6 (0.6%)	11 (0.3%)
Total	557 (100.0%)	675 (100.0%)	795 (100.0%)	970 (100.0%)	975 (100.0%)	3972 (100.0%)

reported over 163 000 fire-related deaths, which is about 2% of all deaths.[15]

In our study, majority of the patients belonged to younger age group. According to a study conducted at Aligarh, India, most of the patients admitted at JNMC Hospital, AMU Aligarh were in 13-25 age groups followed by 26-39 age group. Twenty one percent of the patients were children and 79% were adults.[16] In a teaching hospital of South India in 2008, a study was conducted on 150 patients which revealed that most of the affected individuals belonged to the age group of 25 to 34 years. There were 62 males (41.3%) and 88 females (58.7%). Their ages ranged from 3 to 59 years in males and 4 to 75 years in females.[17]

Our study results identified the most affected age group as 16-30; 57% of the total cases. Recently an epidemiological study has been conducted in Taleghani Hospital of Iran from 2003-07 which identified children less than 10 years of age and adults 10-20 years of age are two groups identified to be at high risk of receiving burn injuries.[18]

In our study, the highest ratio was from accidental burn i.e. 97%. However mortality was much higher in our study at 31% which is still alarming and a question for the management of the hospital. In a study conducted at North Trinidad 2003, on 63 patients, 36 were female and 27 were male. Almost 61% of burns were sustained at home, however, occupational burns accounted for as much as 25%. The most common etiology was hot liquid scald. The overall mortality of burn patients in their study was 7.9%.[19] In another study conducted in 1990 in Hong Kong, a 12 month study conducted in 7 major hospitals on around 8479 patients. According to which 70% of the cases fell into the age group of 15-34, with male predominance. Among children 93% cases were of domestic scalds and occupational for 63% of the adults.[20]

Over all outcomes are not up to the standard of developed countries. It is need of the day to develop more burn centers in this thickly populated city, Karachi and more facilities may be provided to the center to reduce the mortality.

CONCLUSION

Majority of the hospitalized burn victims were adult males. Most of the burns were accidently sustained whereas intentional burns constituted only a small percentage. Fire burns was the predominant mode of injury. The mortality was 31.2%.

REFERENCES

1 Medline Plus. Burns. http://www.nlm.nih.gov/ medlineplus/ burns.html. Retrieved 2010-09-22.

2 WebMD (January 7, 2009). Burns-Topic Overview. First aid & emergencies. http://firstaid.webmd.com/tc/burns-topic-overview. Retrieved 2010-09-22.

3 Total Burn Care, 3rd Edition, Edited by David Herndon, Saunders 2007.

4 Gupta M, Gupta OK, Yaduvanshi RK, Upadhyaya J, Burn Epidemiology; The Pink City scene, Burns 1999;19:47-51.

5 Haberal M, Ucar N, Bilgin N, Epidemiological Survey of Burns Treated In Ankara, Turkey and Desirable Burn Prevention Strategies, Burns 1995; 21:601-6.

6 Forjuoh SN. Burns in low and middle income countries: a review of available literature on descriptive epidemiology, risk factors, treatment and prevention Burns 2006; 32:529-37.

7 Peck MD, Kruger GE, Merwe AE, Godakumbura W, Ahuja RB. Burns and fires from non-electric domestic appliances in low and middle income countries Part I. The scope of the problem, Burns 2008; 34:303-11.

8 Murray CJ, Lopez AD. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020 (Global Burden of Disease and Injury Series) World Health Organization, Geneva, Switzerland 1996.

9 Siddiqui NA. Burn-injury is preventable: An analysis of 716 cases in a burns unit. JCPSP 1998; 8:148-52.

10 Jiburum BC, Olaitan PB. Burn injuries in Enugu, Nigeria, Nigerian Journal of Surgical Research 2005; 7:271-3.

11 Adigun IA, Oluwatosin OA, Adeyemo AA, Olumese PE. A study of survival after major burns at Ibadan, Niger Med J 2004; 55:71-4.

12 Chipp E, Walton J, Gorman DF, Moiemen NS. A 1 year study of burn injuries in a British Emergency Department: Burns 2008; 34:516-20.

13 Danilla ES, Pasten RJ, Fasce PG, Diaz TV, Iruretagoyena BM. Mortality trends from burn injuries in Chile 1954-1999, Burns 2004; 30:348-56.

14 Gravante G, Delogu D, Esposito G, Montone A. Analysis of prognostic indexes and other parameters to predict the length of hospitalization in thermally burnt patients. Burns 2007; 33:312-5.

15 Sanghavi P, Bhalla K, Das V. Fire-related deaths in India in 2001: a retrospective analysis of data. Lancet. 2009; 373:1282-8.

16 Mago V, Yaseen M, Bariar LM. Epidemiology and Mortality of Burns in JNMC Hospitlal, AMU Aligarh: A 5 year Study. Ind J Comm 2004; 29:18.

17 Shanmugakrishnan RR, Narayanan V, lundusubramanian PT. Epidemiology of burns in a teaching hospital in south India. Ind J Plast Surg 2008; 41:34-7.

18 Ekrami A, Hemadi A, Latifi M, Kalantar E. Epidemiology of hospitalized burn patients in Taleghani Hospital during 2003-2007, Bratisl Lek Listy 2010; 111:384-8.

19 Ramcharan R, Dass S, Romany S , Mohammed F, Ali T, Ragbir M. Epidemiology of Adult Burns in North Trinidad. The Internet J Third World Med 2003; 1.

20 Ho WS, Ying SY. An Epidemiological Study of 1063 hospitalized Burn patients in a tertiary burn center in Hong Kong, Burns 2001; 27:119-23.