

Burns Mortality During 2009 and 2010 in Al-Yarmuk Burn Centre

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Abstract: Background: The Yarmouk Burn Center is a significant facility in Baghdad, admitting 25 to 30 patients per month from the city and surrounding areas. Objective: This study aims to investigate the mortality rate of patients admitted to the center and the factors that contribute to these incidents. Methodology and Results: This cross-sectional study analysed data from the police case department files for the years 2009-2010, focusing on 505 patients admitted to the burn centre. Of these patients, 136 died. The average age of the patients was 27 years, with 61% being female and 32% male. Notably, there were high suicide rates among women. Factors that contribute to an increase in deaths include age over ten years, burn areas greater than 50%, burns with suicidal intent, and the presence of gas inhalation injuries. The study concludes with recommendations, such as increasing research and studies in this area and promoting full cooperation between responsible authorities to develop treatment and preventive programs

Keywords: mtDNA, m.3243A>G, epilepsy, status epilepticus, phenotype.

INTRODUCTION

Introduction: Burn injuries are among the most devastating of all injuries and an important global public health crisis (Forjuoh, S, 2006; Peck, M. *et al.*, 2008). Burns constitute a major role in mortality and morbidity in the whole world, whether accidental, suicidal, or homicidal (Sowemimo, G.O.A, 1984; Vaghela, P. *et al.*, 2011). Burns are the fourth most common type of trauma worldwide, following traffic accidents, falls, and interpersonal violence, and burn injuries remain an important cause of morbidity and mortality in low and middle-income countries (WHO, 2008). The problem of burns in developing countries like Iraq is more due to various socio-cultural factors present in the country. Some of these factors may be poor housing conditions, poor maintenance of electric appliances with the using of unsafe electrical power generation models, illiteracy, low socio-economic status, poor standards of safety at home and at industry, and corruption, but the most important factors political conflicts and terrorism (Othman, N, 2010). Burns mortality remains a major concern for health authorities in Iraq, where published data and detailed studies about burn trauma are scarce, and the burden of the problem cannot be estimated. During the past decades, the Iraqi population has been struggling to cope with the impact of wars, sanctions, terrorism, and internal conflicts with poor public services and deteriorating living standards. While health statistics are generally lacking in the country, published data about burn injuries are scarce in Iraq (WHO, 2004). Globally,

burns are a serious public health problem. The WHO estimates that 195000 deaths occur each year from fires alone, with more deaths from scalds, electrical burns, and other forms of burns, for which global data are not available. Fire-related deaths alone rank among the 15 leading causes of death among children and young adults 5-29 years. Over 95% of fatal fire-related burns occur in low- and middle-income countries (Nathens, A. *et al.*, 2008); in Southeast Asia alone accounts for just over one-half of the total number of fire-related deaths worldwide, and females in this region have the highest fire-related burn mortality rates globally. Among the various age groups, children under five years and the elderly (i.e., those aged over 70 years) have the highest fire-related burn mortality rates. The suffering caused by burns is even more tragic as burns are so eminently preventable. High-income countries have made considerable progress in lowering rates of burn deaths through a combination of proven prevention strategies and through improvements in the care of burn victims. Most of these advances in prevention and care have been incompletely applied in low- and middle-income countries. Increased efforts to do so would likely lead to significant reductions in rates of burn-related death and disability (WHO, 2013). The WHO estimated that there were 3 390 fire-related deaths in 2004 in Iraq, which was equivalent to a death rate of 12.3 per 100,000 per year, which is higher than the global rate {The death rate in low-income and middle-income countries is eleven times higher

than that in high-income countries – 4.3 per 100 000 as against 0.4 per 100 000} (WHO, 2004). In a study carried out in Kurdistan of Iraq in 2010, the mortality rate was 9.1 (males 2.5, females 15.6) per 100,000 per year (Othman, N. et al., 2010). Therefore investigating the epidemiological characteristics of burns is essential to provide a better understanding of the problem and to plan preventive services. In many high-income countries, burn death rates have been decreasing, and the rate of child deaths from burns is currently over seven times higher in low- and middle-income countries than in high-income countries (WHO, 2013). Non-fatal burns are a leading cause of morbidity, including prolonged hospitalization, disfigurement, and disability, often with resulting stigma and rejection. Burns are among the leading causes of disability-adjusted life-years (DALYs) lost in low- and middle-income countries (WHO, 2013).

MATERIALS AND METHODS

A cross-sectional study with a retrospective approach based on patient records was conducted in the AL-Yarmuk teaching hospital- burn centre to study the epidemiological characteristics of death outcomes and related factors.

Official approvals

After taking the agreement on the study protocol by the medical college council after the researcher was provided with a mission facilitation book then, the researcher took the official agreement of the Al-Yarmuk hospital manager, who referred the researcher to the burn centre manager who gave the researcher full access for patients’ files in police cases archives department.

Data was collected from file records of all in-hospital dead burns patients in the burns centre 1 st January 2009 till 31st December 2010. All files were obtained from the hospital police case archives section. Collected raw data had been coded and entered by the researcher into available Statistical Packages for social Sciences program version 16 (SPSS INC., Chicago, IL, USA). The program was used to calculate frequency, mean, median, and standard deviation. Pearson-Chi square was used to assess the statistical association among different qualitative variables, while Fisher’s Exact Test was used for two by two tables in certain cases. Association was considered statistically significant when the probability value (p-value) was equal to or less than (0.05).

RESULTS

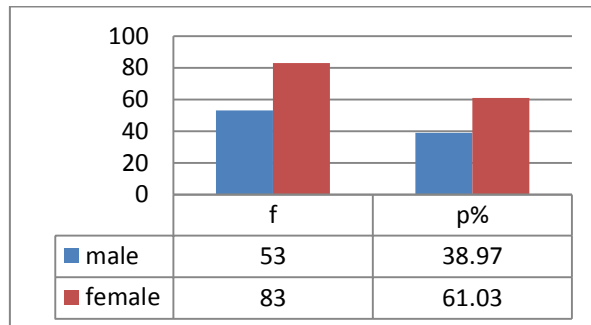


Figure 1: Distribution of dead patients according to gender.

Table 1: Distribution of dead patients according to some burn characteristics

Burn characteristics	Frequency	%
Mechanisms of burn:		
-Direct flame	91	66.9%
-Scalds	32	23.5%
-Others	13	9.6%
Intent of burn:		
-accidental	79	58.1%
-homicidal	15	11.0%
-suicidal	42	30.9%
Area affected:		
-head &neck	3	2.2%
-upper limb	2	1.5%
-lower limb	2	1.5%
-multiple area	108	79.4%
-trunk&genitalia	21	15.4%

Continue Table (1)

Degree of burn:		
-first	0	0%
-second	9	6.6%
-third	18	13.3%
-mixed	109	80.1%
Inhalation injury:		
-yes	32	23.5%
-no	104	76.5%
Surgical treatment:		
-yes	13	9.6%
-no	123	90.4%
Total	136	100

Table (2) shows the adjusted odds ratios for some of the death risk factors; regarding gender, the odds ratio for death in patients with female gender was 1.813(95% CI 1.22-2.71, P=0.003), which means that females had nearly two folds risk for death than males, The odds ratio for death in patients with TBSA ≤ 50% compared to those with TBSA> 50% was 0.028 (95% CI 0.016-0.049, P=0.000). Age (over40) was also a significant risk for death with an odds ratio of 0.454 (95% CI 0.27-0.76, P<0.002)

compared to patients aged ≤ 40 years, also patients with suicidal intent of burn were riskier for death than patients of other intents with an odds ratio of 0.075 (95% CI 0.038-0.15, p=0.000). Finally, Patients with inhalation injury were significantly more likely to die than those without inhalation injury, with an odds ratio of 37.5(95% CI 11.27-125.05, P<0.000). This means patients with inhalation injury had more than 37 times the risk to die than burn patients with no inhalation injury.

Table 2: The adjusted odds ratios for death in admitted burn patients

Age	No.	%	No.	%		X2=9.27	0.454
	106	77.90%	327	88.60%	433	df=1	(0.27-0.76)
	30	22.10%	42	11.40%	72	P=0.002	
Gender						X2=8.576	1.813
	83	61%	171	46.30%	254	df=1	(1.22-2.71)
	53	39%	198	53.70%	251		
						P=0.003	
Intent of burn						X2=79.44	0.075
	94	69.10%	357	96.70%	451	df=1	(0.038-0.15)
	42	30.90%	12	3.30%	54		
						P=0.000	
TBSA						X2=228.5	0.028
	40	29.40%	346	93.80%	386	df=1	(0.016-0.049)
	96	70.60%	23	6.20%	119		
						P=0.000	
Inhalation injury						X2=79.5	37.5
	32	23.50%	3	0.80%	35	df=1	(11.27-125.05)
	104	76.50%	366	99.20%	470		
						P=0.000	

DISCUSSION

Mortality was 27% of admitted patients outcomes, which was consistent with the Kurdistan study, which was 28%. These results are still high when compared with mortality results in the region, which are mainly over 20% (Othman, N. *et al.*, 2010).

Mortality rate is considered very high when compared with studies from developed countries in Europe. Mortality ranged between (1.4%-18%) and decreasing with time due to well-developed preventive and therapeutic systems in these countries (Brusselaers, N. *et al.*, 2010).

In the current study, females comprised 68% of mortality; these findings were consistent with the Othman study but inconsistent with other studies that had male predominance (Brusselaers, N. *et al.*, 2010).

Mortality was significantly associated with higher TBSA 50% and more thus was consistent with the majority of studies in the region (Othman, N. *et al.*, 2010).

Intentional self-harm (suicidal intents) reporting 10.7% of all admissions in this study compared with 22% in the Othman study with female gender predilection. This was a high rate of suicide by burn compared to 3% in Egypt (17) and 1% in the United States of America (18) but not as high in some Iranian studies 40% (Ahmadi, A, 2007).

About one-third (31%) of mortality in this study was due to suicidal intent. This high percentage is because more than 90% of suicidal burned patients died this is consistent with Othman's study and can be explained by their seriousness of willing to die and terminate their lives.

Many risk factors were statistically significant and carried potential risk for mortality, like female gender, the odds ratio for death in those patients was 1.813(95% CI 1.22-2.71, P=0.003), means that females had nearly two-fold risk for death than males, The odds ratio for death in patients with TBSA \leq 50% compared to those with TBSA $>$ 50% was 0.028 (95% CI 0.016-0.049, P=0.000). Age (over40) was also a significant risk for death with an odds ratio of 0.454 (95% CI 0.27-0.76, P<0.002) compared to patients aged \leq 40 years, also patients with suicidal intent of burn were more risky for death than patients of other intents with an odds ratio of 0.075 (95% CI 0.038-0.15, p=0.000), Finally Patients with inhalation injury were significantly more likely to die than

those without inhalation injury with odds ratio of 37.5(95% CI 11.27-125.05, P<0.000) this means patients with inhalation injury had more than 37 times risk to die than burn patients with no inhalation injury.

Finally, risk factors like TBSA>50%, age $>$ 40 years, suicidal intent, and presence of inhalation injury which were also approved to be significant by many other studies (16,6).

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