ORIGINAL ARTICLE

Presentation and outcome of burn injuries among female patients in Khyber Pukhtonkhawa

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Abstract

Objective: To assess the frequency and etiology, co morbidity and mortality of burn injuries among female patients in the province of Khyber pukhtunkhwa, Pakistan.

Study design: Prospective Descriptive Study.

Setting and duration: Department of Burns and Plastic Surgery, Khyber Teaching Hospital, Peshawar, Pakistan from March 2009 and June 2011.

Methodology: A prospective descriptive evaluation of all female burn victims seen in the Department of Burns and Plastic Surgery, Khyber Teaching Hospital, Peshawar, Pakistan was conducted between March 2009 and June 2011. All relative information was collected through a detailed proforma and patient's treatment files. Patients of any age, any degree of burns and only females were included. Patients presenting after more than one week post burn or patients referred from other hospitals were excluded. The place of acquiring burns, the causes and mechanisms of burns and overall management outcome was studied and results expressed as means and percentages.

Results: Between March 2009 and June 2011, 368 female patients were admitted with burn injuries. Mean age was 32 years with range of 1-56 years. 88% of female patients sustained burn injury accidently while 12% were suicidal. Causes were flame burns (79.0%), chemical burns (8.0%), steam burns (7.0%) and scald (6.0%). The total body surface area (TBSA) burn ranged from 8- 70%, with a mean of 37% TBSA burn. The majority of the injuries were mixed (60%), 2nd degree (30%) and 3rd degree (10%). The commonest co morbid condition observed was epilepsy in 15%. Mortality was 24.45% while 75.54% patients were cured and discharged safely. The mean length of hospital stay was 12 days (ranging from 24 hours to 170 days). Most of the patients were admitted in the winter months (41.8%), followed by spring (24.2%), autumn (20.5%) and summer (11.5%).

Conclusion: In our opinion, social factors are the main drive leading to an unacceptably high rate of burn injuries in our societies. Most of the burn injuries were caused by domestic accidents and were, therefore, preventable; educational programs might reduce the incidence of burn injuries.

Keywords: Burn injuries, Etiology, Mortality, Hospital stay.

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Introduction:

Burns injury is a major health problem, often associated with significant pain, emotional stress, prolonged hospitalization, permanent disfigurement and family stress[1]. Burns, one of the major injuries, account for over 1% of the global burden of the disease[2]. Burns account for 5% or more of the total hospital inpatients at any time[3]. Burn injuries in females have considerable physical, psychological and economic effects on the patients, their families and society[4]. Burn injuries cause significant morbidity and mortality, both in developing and developed countries[5]. It has been proved from multiple studies that cardiovascular/renal failure, pulmonary failure, extent of burn, age and female sex are the major

determinants in mortality[6].

Most burns occur at home in winter and carry considerable mortality[7]. The majority of burns are less than 20% of total body surface area[8]. The mortality from burns is falling as a result of massive early excision and grafting of severe burns patients[9]. Self inflicted burns represent a major social and medical problem[10]. Burn can be caused by a variety of agents including flame, chemicals, scalding and hot steams[5]. An injury of firework handling is a common problem and despite being illegal, fireworks are easily and cheaply available[11]. Chemical burns are also very common in females at home and workplaces[12]. Often females and children less than five years are the main victims of burn injuries[13]. Scalding from hot beverages is an important public health issue and carries significant morbidity[14]. Domestic violence against women resulting in burns is another common problem. Suicidal intentions resulting in burns, makes a large proportion of female burns, the major motive being marital conflicts[15]. There is a strong correlation between epileptic seizures and burn injury, as the injury starts with a fall and loss of consciousness, followed by convulsions. The relationship between epilepsy and burn trauma is quite obvious, especially in circumstances where epileptic seizures are started in the surrounding area of burn accident[16].

The management of a burn patient needs special intensive care, equipment and well trained educated personnel[17]. In terms of lifestyle the effects of a severe burn injury could perhaps the described as irreparable in all areas of the patient's life[18]. Since most burn injuries are accidental, the best way to reduce the incidence of burn injury is prevention by minimizing the risk factors and public awareness[19, 20].

The Burns centre of Khyber Teaching Hospital (KTH) Peshawar is the only burns centre in the whole of Khyber Pukhtunkhwa which receives an average of 40-50 burns cases each month. We receive patients from the whole of KPK as well as from tribal areas and Afghanistan. The present study was aimed to assess the causes and presentation of burns injuries in females and their overall management outcome at KTH Hospital Peshawar.

Materials and methods:

A prospective descriptive evaluation of all female burns patients presented to the Department of Burns and Plastic Surgery, Khyber Teaching Hospital, Peshawar, Pakistan between March 2009 and June 2011 were carried out. All relative information was collected through a detailed proforma and patient's treatment files. Inclusion criteria were females of any age with second and third degree burns. Exclusion criteria were presentation of patients after one week and patients referred from other hospitals. Patients were admitted through casualty and detailed history and thorough examination were carried out. Cause and place of burns, the mechanisms and management of burns was assessed and the results expressed as percentages and means. Total Body Surface area (TBSA) burnt was calculated using Lund and Browder Chart. The degree of burns was also established. Routine investigations like complete blood count, random blood sugar, serum urea, creatinine and electrolytes and serum albumin were carried out. Fluid requirements were calculated using Parkland formula. Patients treated with intravenous fluids, antibiotics, H2 blockers, analgesics and antihistamines. In some patients, blood transfusions and human albumin were also given as required. Early tangential excision and skin grafting was done in those patients having TBSA less than 50%. Daily clinical progress of the patient was recorded and patient's outcome noted, either as expired or cured and discharged for follow up in ward.

Results:

Between March 2009 and June 2011, 368 female patients were admitted with burn injuries. Mean age of the patients was 32 years with range of 1-56 years. Majority of female patients (88%) sustained burn injury accidently while burns due to suicidal attempts occur in 12% of females. Most common causes were flame burns (79.0%) followed by chemical burns (8.0%), steam burns (7.0%) and scald (6.0%) (Figure 1). The total body surface area (TBSA) burn ranged from 8-

70%, with a mean of 37% TBSA burn. Assessment of the depth of burn was done clinically. The majority of the injuries were mixed 2nd and 3rd degree (60%) while isolated 2nd degree burns occur in 30% and 3rd degree burns occur in 10%. The commonest co morbid condition observed was epilepsy occurring in 55 (15%) females. The mean length of hospital stay was 12 days (ranging from 24 hours to 170 days). The relation between TBSA and mortality was statistically significant. There was no survival in patients having burns of more than 50% TBSA. The total mortality rate was 24.25% (90/368) and 278 patients (75.54%) were cured and discharged safely. Septicemia and multi-organ failure were the main causes of mortality. Majority of admissions (45%) took place in winter while admissions in spring, autumn and summer seasons were 24 %, 17% and 11 % respectively. (Figure 2).

Discussion:

Burn injuries are the major health hazards leading to prolonged hospitalization and hence increased expense for the patients, their families and society[21]. An average burn patient is 24.4 years old with a mean burn size of 19% of the total body surface area (TBSA)[22]. Most common sites of injury are the face and hands followed by respiratory damage, with eye damage being the least common injury[23]. Men are comparatively more prone to burn injury than women[24]. Hot or corrosive agents constitutes about two-thirds of all burns while fire and flame accounting for one-fourth[25]. Majority of females (58%) in our study were younger than 30 years showing greater exposure to burn agents in these age groups a finding that has observed by other studies as well[4, 26, 27].

Table 1: *Outcome with respect to TBSA Burnt*

TBSA Burnt	Cured & Discharged	Expired
1-20%	147 (53.06%)	0
21-30%	87 (31.29%)	0
31-40%	31 (11.15%)	0
41-50%	11 (3.95%)	5 (5.55%)
51-70%	2 (0.71%)	21 (23.33%)
71-100%	0	64 (71.11%)

In our study, self-inflicted burn injuries (Homicidal) occurred in 12% of females, which is lower than the results of the studies of Panjeshahin[28] and Saadat[29]. These were suicide attempts due to family disturbances, marriage problems, social conflicts and most of them used oil and gasoline because of their ready availability at home and the cultural climate. In our study, 79% of burns in females were caused by flame with oil or gasoline and gas heaters most frequently involved as reported by others as well[4, 26, 30]. Tarim et al also showed comparable results to our study[31]. Our results of burns occurring at workplace are similar to the studies of Song and Chua[9].

We got 100% mortality in those patients having more than 60% TBSA burnt. The death rate in our study was 24.25% which is comparable to the death rate of 19.6% reported in the Tohid burn centre in Tehran[32]. Mortality rate in our hospital was comparable to similar studies[4, 28, 32]. Our mean TBSA burnt (37%) was also parallel to those of the Tohid burns centre 32 (30.6%) and Wurtz et al[33] (30.7%). Flame, being the most common cause of burn in our study (79%)

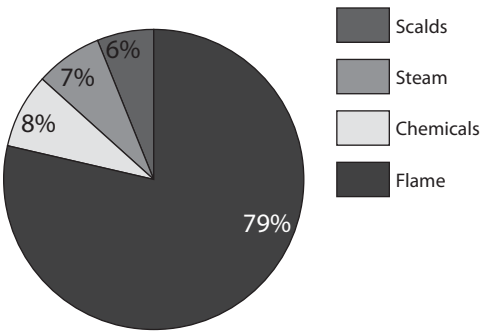

Figure 1: *Causes of Burns*

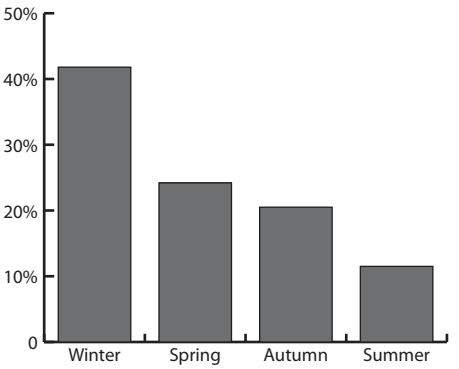

Figure 2: *Seasonal admission of burn patients*

Figure 3: *9 years old girl mixed 2nd &3rd degree burns sustained by flame*

Figure 4: *27 years old lady mixed burns (suicidal attempt)*

Figure 5: *21 years old lady with isolated 2nd degree burns by gas heater*

Figure 6: *Mixed 2nd &3rd degree burns in a 30 years old epileptic lady by flame*

is associated with more severe destruction of tissues and also accompanied by considerable immunosuppression making the patient prone to infection leading to high mortality[34]. The other major reason for the greater mortality in our patients is the lack of an intensive burns care unit. The lack of specialized intensive care unit leads to a delay in early tangential excision and skin grafting contributing to greater mortality[35, 36].

Epileptics are at risk of sustaining a burn injury, especially epileptic females working in kitchen [37].The relationship between epilepsy and burn trauma is quite obvious, especially in circumstances where epileptic seizures are started in the surrounding area of burn accident[16]. We came across 55 cases of epileptics females who sustained severe burn injuries while doing their routine home work (Fig.6). This is of great significance as most of our females at home are uneducated and they do not adopt preventive and safety measures. It has been observed that burns trauma in epileptic patients who are reporting to Burn wards are mostly domestic having third degree facial burn involving vital facial structure[38]. Majority of our patients (45%) got burn injury in winter season due to greater use of heating gas devices as reported by other as well[28, 32, 39].

Conclusion:

Since most burns are related to household fires, generally in the domain of women in rural areas, women's groups may be the most appropriate setting for education on burn prevention and first aid. Burn prevention and first aid education should also be recognized as a priority in schools and in the training of community health workers. In our opinion, social factors are the main drive leading to an unacceptably high rate of burn injuries in our societies. Most of the burn injuries were caused by domestic accidents and were, therefore, preventable; educational programs might reduce the incidence of burn injuries.

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