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Original Research Article

Pain assessment and clinical profile of burn patients

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ABSTRACT

Background: Burn injuries are a major global public health concern with up to 52% of burn patients suffering from chronic pain. The aim of the study was to asses clinical profile and management of pain in burn patients.
Methods: The study was a prospective hospital-based study on a total of 300 patients admitted in burn unit of the department of surgery over a period of two years. BSA burns was determined by Wallace's rule of nine in adults and in children by Lund and Browder chart. Pain was assessed using Wong-Baker FACES pain rating scale. Statistical analysis was done using SPSS program.
Results: In the present study, most of the burns i.e., 46.7% were seen in <20 years age group, and more in male (58.7%) subjects. Accidental burns and superficial burns were the most common. There were 113 (53.3%) patients with pain score of 2 followed by 160 (53.3%) with pain score 3, 22 (7.3%) pain score 4 and 5 (1.7%) with pain score of 1. For pain management, 171 (57%) patients were given NSAIDS, 78 (26%) needed opioid and NSAIDs and 51 (17%) needed opioid only. Complications in our studied patients on follow up revealed 29 (9.7%) had PTSD, 22 (7.3%) had post burn contracture, 16 (5.3%) had post burn pain, 15 (5.0%) were having anxiety.
Conclusions: Pain in burn victims is present throughout the rehabilitation and so should be dealt with multimodal specialties.

Keywords: Burn injury, Pain management, Burn wound

INTRODUCTION

Burn injuries are the most disabling injuries and a major global public health concern. Following road traffic accidents, falls, and violence, burns are the fourth most common causes of trauma worldwide. Patients suffering from extensive burn injuries may not survive while others suffer from morbidity in terms of long-term hospitalization, multiple surgeries, and rehabilitations. Approximately 90 percent of burns occur in low to middle income countries.[1] One of the aspects of management of burns is the associated burn pain which is very likely the most difficult form of acute pain to treat. The pain is due to the release of inflammatory mediators which cause the stimulation of the pain receptors present in the skin. The pain is further transmitted by A-delta and C fibres leading to the spinal cord dorsal horn. It is estimated that up to 52% of burn patients are suffering from chronic pain.[2] Drug administration involves simple analgesics, non-steroidal anti-inflammatory drugs, opioids, anticonvulsants like pregabalin, gabapentin and antidepressants like amitriptyline for the management of burn pain.[3] non-pharmacological modalities such as relaxation and· cognitive-behavioural therapy is beneficial for pain rehabilitation.[4] Previous epidemiological studies have revealed that burn cases are prevalent all over the country but there is a limited data on the pain management in these patients.[5] The present study was undertaken in the burn unit of the department of surgery with the aim to determine epidemiological,

clinical variables, common risk factors in patients of burn injuries and the management of pain in these patients.

METHODS

The study was a prospective hospital-based study on a total of 300 patients admitted in burn unit of the department of surgery, in a tertiary centre. The study was carried over a period of two years from January 2015 to November 2016. All acute burn patients requiring hospital admission were included in the study. Moribund patients and patients not giving consent were excluded. Demographic data, any associated medical, surgical or drug history, causative agents of burn (flame, hot liquids, kangri, electrical, chemical, etc), mechanism of burn (accidental, suicidal, homicidal, etc) was recorded on history given and substantiated by police investigations in every case.

Clinical assessment of burn wound

Burns were assessed by Wallace's rule of nine in adults and in children by Lund and Browder chart. Severity of burns categorized into first, second- and third-degree burns.[6,7]

Clinical assessment of pain

Pain was assessed using Wong-Baker FACES pain rating scale, which scores the pain from 0 to 5.[8] Pain was assessed on admission and thereafter before every dressing change after every 24 hours. Patients with pain score 0 were not given any analgesics; those with score 1/5 received only oral paracetamol; at scores 2/5 and 3/5, oral paracetamol and oral NSAIDS were given to the patients and patients with pain scores 4 or higher were managed with intravenous analgesics including NSAIDS and opiates. Statistical analysis was done using SPSS program for Windows, version 17.0.

RESULTS

Demographic data

Out of a total of 300 patients, majority of patients 98 (32.7%) were aged <10 years and the least number of patients 10 (3.3%) belonged to age group of >60 years. Gender distribution revealed 176 (58.7%) were males and 124 (41.3%) were females. There were 85 (28.3%) students in our study population followed by 72 (24.0%) patients with no occupation, 62 (20.7%) houses wives, 34 (11.3%) labourers, 27(9.0%) business men, 11 (3.7%) employees and 9 (3.0%) farmers.

As far as marital status is concerned, 139 (46.3%) of our patients were married while as 161 (53.7%) patients were unmarried. In our study, 208 (69.3%) were from rural areas while 92 (30.7%) patients belonged to urban areas. As per socioeconomic status, 145 (48.3%) belonged to lower middle class, 108 (36%) were upper middle class, 28 (9.3%) lower class, 10 (3.3%) from upper class and 9 (3%) patients from upper lower class. There were 7 (2.3%) patients with seizure disorders, 2 (0.7%) diabetic patients, and 1 (0.3%) each patient with psychiatric diseases and hypertension (Table 1).

Table 1: Demographic characteristics of burn patients (n=300).

Variables		Frequency (%)
Age (years)	<10	98 (32.7)
	10-19	42 (14)
	20-29	53 (17.7)
	30-39	46 (15.3)
	40-49	32 (10.7)
	50-59	19 (6.3)
	>60	10 (3.3)
Gender	Male	176 (58.7)
	Female	124 (41.3)
Marital status	Married	139 (46.3)
	Unmarried	161 (537)
Area of living	Rural	208 (69.3)
	Urban	92 (30.7)
Occupation	Housewife	62 (20.7)
	Businessmen	27 (9.0)
	Labourer	34 (11.3)
	Student	85 (28.3)
	Farmer	9 (3.0)
	Employee	11 (3.7)
	Nil	72 (24.0)
Socio economic status	Upper	10 (3.3)
	Upper middle	108 (36)
	Lower middle	145 (48.3)
	Upper lower	9 (3.0)
	Lower	28 (9.3)

Burn characteristics

As far as type of burn is concerned,151 (50.3%) patients had flame burns followed by scald burns in 69 (23%), electric burns were seen in 47 (15.7%) patients, 17(5.7%) patients had kangri burns while as 16 (5.3%) were observed to have chemical burns. We observed 297 (99%) accidental burn patients, 2 (0.7%) homicidal burns and only 1 (0.3%) suicidal burn case.

Out of 300 total cases, 241 (80.3%) patients had <20% total body surface area affected, followed by 51 (17.0%) with 21-40% burn area, 7 (2.3%) patients had 41-60% area with burns, but only 1 (0.3%) patient with >60% total body surface area burns. A total of 195 (65%) patients came with superficial burns, followed by 95 (31.7%) patients with deep burns and 10 (3.3%) patients with mixed burns (Table 2).

Table 2: Assessment and management of burn patients (n=300).

Variable		Frequency (%)
Type of burns	Electric	47 (15.7)
	Flame	151 (50.3)
	Scald	69 (23.0)
	Kangri	16 (5.3)
	Chemical	17 (5.7)
Nature of burn	Accidental	297 (99.0)
	Suicidal	1 (0.3)
	Homicidal	2 (0.7)
Depth of burn	Superficial	195 (65.0)
	Deep	95(31.7)
	Mixed	10 (3.3)
Percentage of total body surface area burnt	≤20	241(80.3)
	21-40	51 (17.0)
	41-60	7 (2.3)
	>60	1 (0.3)
Number of days in hospital	<1	6 (2.0)
	1-7	149 (49.7)
	>7	145 (48.3)
Management	Conservati	190 (63.3)
	Surgical	110 (36.7)

Pain management

One hundred thirteen (53.3%) of our patients had pain score of 2, followed by 160 (53.3%) with pain score 3, 22 (7.3%) pain score 4 and 5 (1.7%) with pain score 1 (Figure 1). As far as requirement of analgesia is concerned, 171 (57%) patients were given NSAIDS, 78 (26%) needed opioid and NSAIDs and 51 (17%) needed Opioid only (Figure 2).

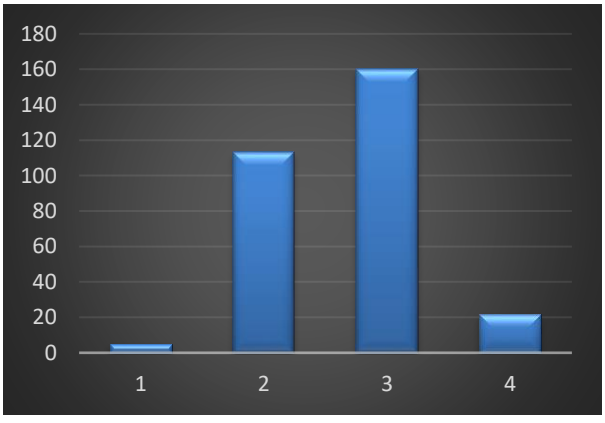

Figure 1: Pain assessment in burn patients.

Treatment received

Out of total 300 patients, 190 (63.3%) patients were managed conservatively while as 110 (36.7%) needed surgical management. Grafting and debridement was needed in the majority of the patients i.e. 80 (26.7%), 15 (5%) needed debridement only, amputation was done in 2 (0.7%) patients while 13 (4.3%) needed fasciotomy. One hundred forty-nine (49.7%) patients needed 1to 7 days hospital stay, 145 (48.3%) needed hospital stay of >7 days, and only 6 (2%) patients needed <1 day hospital stay. 34 (11.3%) needed ICU admission; while as 266 (88.7%) were managed in general burn ward (Table 2).

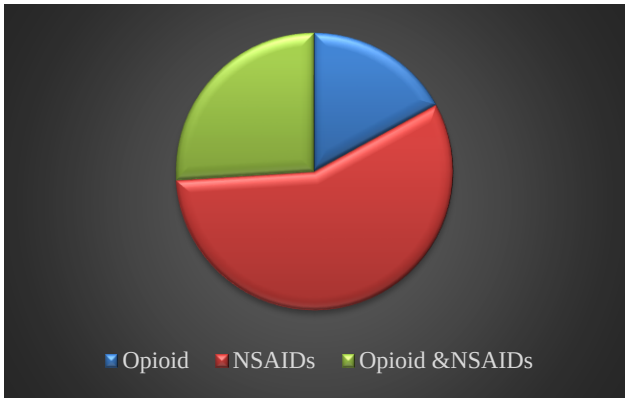

Figure 2: Pain management in burn patients.

Complications

As far as complication on follow up is concerned, 29 (9.7%) of our patients had PTSD, 22 (7.3%) had post burn contracture, 16 (5.3%) had post burn pain, 15 (5.0%) were having anxiety and 9 (3.0%) patients had other complications.

DISCUSSION

In the present study, most of the burns i.e. 46.7% were seen in <20 years age group and was more (28.3%) in students. Burns were more common in male than in female subjects 58.7% and 41.3% respectively, as in reports from Kashmir by Khan et al. where males were comprising of 60% of the burn population with a male to female ratio of 1.5: l.[9] However, females outnumber ed males as burn victims in studies by Jaiswal AK et al.[10] In our study, 69.3% were from the rural areas while as 30.7% patients belonged to urban areas similar to the 80% rural population reported by Khan et al.[9] In our study, as far as marital and socio-economic status is concerned, 161 (53.7%) patients were unmarried and 145 (48.3%) patients belonged to lower middle class. In a study done by Alavi et al., 67% of the patients were married and 88.7% of burn patients were from low- to moderate income families.[11] The most common cause of burn in our study population was flame (50.3%) followed by scalds (mostly boiling water) (23%). Similar results were observed by Shirkhoda et al. where in 75.8% of patients were burned due to flame and in those under 15 years, the most common cause of burn was scalds (44%).[12] We observed 297 (99%) patients with accidental burns, 2 (0.7%) with homicidal burns and only 1 (0.3%)

suicidal burn case similar to the observations reported by Shanmugakrishnan et al.[13] In our study, 241 (80.3%) patients had <20% total body surface area (TBSA) affected. Our results are consistent with the findings of Khan et al., where in majority of patients i.e. 70% had <20% of body surface area burnt.[9] A total of 195 (65%) patients came with superficial burns, followed by 95 (31.7%) patients with deep burns. Similarly, Akhtar et al. in their study observed 45% patients with superficial burns and 38% patients with deep burns.[14] There were 113 (53.3%) patients in our study with pain score of 2, followed by 160 (53.3%) with pain score 3, 22 (7.3%) pain score 4 and 5 (l.7%) with pain score 1. As far as requirement of analgesia is concerned, 171 (S7%) patients were given NSAIDS, 78 (26%) needed Opioid and NSAIDs and 51 (17%) needed Opioid only. Conservative management was done in 190 (63.3%) patients while as 110 (36.7%) needed surgical management. Similar results were in accordance with Ramcharan et al.[15] In current study on follow up, 9.7% patients had post-traumatic stress disorder, 5.7% had post burn pain, 7.3% had post burn contracture and 15% had anxiety. Van et al reported between 13% and 23% of patients developed depression, and 13.45% developing posttraumatic stress disorder (PTSD) after hospital discharge.[16]

Limitations

The major limitation of our study was that being the hospital based study, the study may not be fully representing the whole population so population based studies are recommended for future research.

CONCLUSION

Pain in burn victims is present unrelentingly throughout the acute and chronic phases of the rehabilitation and so should be dealt with all the multimodal specialties.

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