



(RESEARCH ARTICLE)



Duration of stay and outcome in different types of burn cases in paediatric age group

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Abstract

The incidence of burns, their treatment and rehabilitation have considerably marked effect on children both physically and psychologically. The hospital stay and the outcome also important in the cases of burns patients because the socio economic status and chances of life long disability. Aim of the study is to analyze the duration of stay and outcome in different types of burn cases in paediatric age group. The Data was collected from 83 paediatric patients less than 15 years admitted in GMC, Miraj, Maharashtra during the period from September 2014 to September 2016. The overall length of stay at hospital, factors influencing length of stay and outcome of patients were analyzed. Out of 83 patients 50 percent was cured over the period of time. The death rate was 10.8%. Lower the percentage of burns had good outcome and higher percentage of burns had poor outcome (66.7% had mortality when burns was >60%). In the study 30% patients were cured with duration of stay 6 to 10 days. Out of subjects who died 44.4% stayed for less than 5 days in hospital, as they were having more % of burn area. Also 72.7% patients who improved was stayed < 5 days. Subjects cured in scald and flame burn were 60.66% and 59.1% respectively with no significant difference, while subjects died in scald and flame burn 6.56% and 22.72% respectively more in flame burn. In our study 8.4% of subjects underwent Escharotomy. It is concluded that surgical intervention increases the hospital stay and outcome of the mean duration of stay was high among subjects who deteriorated, followed by cured subjects. Lowest duration of hospital stay was observed among improved subjects, as they were having lower percent total body surface area (TBSA) burn. More hospital stay increase the chance of infections and vice versa.

Keywords: Burn injury; Pediatric Age; Total body surface area (TBSA)

1. Introduction

Burn injury is the frequent problem in clinical practice of general surgery. Burns are serious health problems and are frequent injury among paediatric patients. [1] The incidence of burns, their treatment and rehabilitation process have a considerably marked effect on children in both physical and psychological terms. Patients who suffer from burns often will have difficulties due to contractures, deformities and functional limitations caused by Scar tissue. Scar tissue treatment requires a prolonged period and also constitutes a heavy economic burden on families and the government. Burn injuries are a major problem in the low-income and middle-income countries. Paediatric burns may not only cause life-long disability, but also affect the mental health and quality of life of their families, imposing a socioeconomic burden. The hospital stay and the outcome are also important in the cases of burns patients because of the socio economic status and chances of life long disability.

Aims and objectives

Aim of the study was to analyze the duration of stay and outcome in different types of burn cases in paediatric age group.

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2. Material and Method

The Data was collected from 83 paediatric patients less than 15 years getting admitted in our tertiary health care centre (GMC, Miraj, Maharashtra) during the period from September 2014 to September 2016. After obtaining ethical clearance from hospital and dully explained informed consent from parents or guardians of the burn patients from paediatric age group were enrolled for study. A detailed history of each patient was taken with history of present illness, past history personal history, family history and socio economic status was enquired. A special emphasis was given to mode of burn. A detailed general examination and systemic examination was done to know any associated disease to rule out any predisposing factor to aggravate complication in later stage. A local examination was done to calculate the percentage of total body surface area that is affected by burn injury. A detailed proforma was filled explaining the different affected body parts. The % TBSA (total body surface area) was assessed by using a Lund Browder Chart. The burn depth was assessed clinically by observation of the burn wound. Burn injury management protocol was followed, surgical treatment like debridement (fasciotomy and escharotomy) are done as and if needed. Preventive measures like slab to prevent contracture were taken. The overall length of stay, factors influencing length of stay and the outcome of the patients were analyzed.

3. Results

Out of 83 patients 50 percent was cured over the period of time. The death rate was 10.8% during the period of time.

Table 1 Outcome among subjects with burns

		Count (n)	Percentage (%)
Outcome	Cured	50	60.2%
	Improved	22	26.5%
	Deteriorated (DAMA)	1	1.2%
	Died	9	10.8%
	Absconded	1	1.2%
	Total	83	100.0%

In the study significant association was observed between percentage of burns and outcome. Lower the percentage of burns had good outcome and higher percentage of burns had poorer outcome (66.7% had mortality when burns was >60%).

Table 2 Association between percentage of burns and outcome

TBSA Percentage burns	Outcome									
	Cured		Improved		Deteriorated (DAMA)		Died		Absconded	
	Count (n)	Percentage (%)	Count (n)	Percentage (%)	Count (n)	Percentage (%)	Count (n)	Percentage (%)	Count (n)	Percentage (%)
<10 %	12	24.0%	5	22.7%	0	0.0%	0	0.0%	1	100.0%
11 to 20%	16	32.0%	8	36.4%	0	0.0%	0	0.0%	0	0.0%
21 to 30%	10	20.0%	6	27.3%	0	0.0%	0	0.0%	0	0.0%
31 to 40%	6	12.0%	1	4.5%	0	0.0%	1	11.1%	0	0.0%
41 to 60%	5	10.0%	2	9.1%	0	0.0%	2	22.2%	0	0.0%
>60%	1	2.0%	0	0.0%	1	100.0%	6	66.7%	0	0.0%

$\chi^2 = 58.32$, $df = 20$, $p < 0.001^*$ ($\chi^2 =$ chi-square test, $df =$ degree of freedom, $p =$ p-value)

In the study 30% patients was cured with duration of stay 6 to 10 days. Out of 9 subjects who died 44.4% stayed for less than 5 days in hospital, as they were having more % of burn area. Also 16 (72.7%) patients out of 22 who improved was stayed < 5 days.

Table 3 Association between duration of stay and outcome

Duration of stay	Outcome									
	Cured		Improved		Deteriorated(DAMA)		Died		Absconded	
	Count (n)	Percent age (%)	Count (n)	Percent age (%)	Count (n)	Percent age (%)	Count (n)	Percent age (%)	Count (n)	Percent age (%)
<5 days	11	22.0%	16	72.7%	0	0.0%	4	44.4%	1	100.0%
6 to 10 days	15	30.0%	3	13.6%	0	0.0%	2	22.2%	0	0.0%
11 to 15 days	13	26.0%	3	13.6%	0	0.0%	1	11.1%	0	0.0%
15 to 20 days	4	8.0%	0	0.0%	0	0.0%	2	22.2%	0	0.0%
>20 days	7	14.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%

$$\chi^2 = 33.04, df = 16, p = 0.007^* (X^2 = \text{chi-square test, df} = \text{degree of freedom, p} = \text{p-value})$$

In the study Mean duration of stay was high among one subject who deteriorated, followed by cured subjects. Lowest duration of hospital stay was observed among improved subjects, as they were having lower %TBSA burn. This difference in duration of stay with respect to outcome was statistically significant.

Table 4 Association between type of burn and outcome

Outcome	Scaled	Flame
Cured	37 (60.66%)	13 (59.1%)
Improved	19 (31.14%)	3 (13.64%)
Deteriorated (DAMA)	0	1 (4.54%)
Died	4 (6.56%)	5 (22.72%)
Absconded	1 (1.64%)	0

Subjects cured in scald and flame burn are 60.66% and 59.1% respectively with no significant difference, while subjects died in scald and flame burn 6.56% and 22.72% respectively more in flame burn.

4. Discussion

In the current study 60.24% subjects were cured, 26.5% improved with overall mortality rate of 10.84% which is comparable to Chalya PL et al. 2011 study with overall mortality rate was 11.7%. [2]

In the study mean duration of stay was high among one subject who deteriorated (& went DAMA), followed by cured subjects. Lowest duration of hospital stay was observed among improved subjects, as they were having lower %TBSA burn. This difference in duration of stay with respect to outcome was statistically significant. The results corresponds to study done by Milenkovic M et al.2004. [3]

The overall duration of stay in current study ranges from 1 to 35 days with mean 9.5 ± 7.8 days which is comparable to PJR et al study with overall duration of stay ranging from 1 to 86 days with mean 27.12 ± 16.62 days. This result nearly in accordance to the previous studies were done in pediatric burn wards. [4-8]

In Yavuz et al. 2011 study the average duration of stay was 17.67 ± 13.64 days, longest stay in Tandir burn. [9]

In current study 7 (8.4%) subjects were given surgical treatment by eschorotomy and debridement.

These findings are comparable to to Chalya PL et al .2011 study with 44 (12.9%) subjects given surgical treatment. Out of 44 subjects, 29 (45.9%) patients underwent skin grafting, 5(11.4%) patients underwent fasciotomy and escharotomy, and 4 (9.1%) patients underwent wound debridement.

5. Conclusion

Burns are serious health problems and are most frequent injury among pediatric patients. The surgical intervention increases the hospital stay. The idea of the study to show outcome of the mean duration of stay was high among subjects who deteriorated, followed by cured subjects. Lowest duration of hospital stay was observed among improved subjects, as they were having lower %TBSA burn. More hospital stay increase the chance of infections and vice versa.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

None.

Statement of informed consent

Informed consent was obtained from parents of all the participants included in the study.

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