
The Role of Physiotherapists in the Care of the Burned Patient

F. Okhovatian,¹ S. B. Shaybani,²

Summary

Aim: Burn injuries must be treated with considerable care by the rehabilitation team to prevent potential contractures that may occur. Physiotherapy is vital in the rehabilitation of burn-injured patients. Therefore, the aim of this paper is to find out the problems of burn-injured patients from the point of physiotherapist's view.

Materials and Method: This study carried out in a General Hospital in Tehran from February since June 2005. The hospital files of subjects were consulted for medical history; cause of injury, classified of depth of burn and the extent of injury. Our treatment protocols have been considered the important points based on the patient's situation.

Results: We treated 23 burn patients who were injured due to electrical (57%) and other accidents (43%) i.e., car, domestic and house firing accidents. There was a significant difference between their gender. All of them classified for depth of burn about 2nd and 3rd degree, their extent of injuries were above 40% in more than 48% of patients and their age were 36 ± 12 years old (mean $\pm$ standard deviation). The results show about 50% of patients, in the time of accident, were above 40 years old. In addition, 22% of them amputated (i.e., AK, AE, BE and finger). These results show that the most area of injury is hand (especially right hand). Our main problem was the contracture of elbow and fingers joints in 13% of patients. It should also be mentioned that more than 70% of burned patients have been grafted.

Conclusion: The final word is to start the physiotherapy treatment from day 1st of injury and group therapy could be considered in chronic phase of treatment.

Keywords: Physiotherapy, Burn-injured patient.

Introduction

Physiotherapy is vital in the rehabilitation of burn-injured patients. The ultimate objective of physiotherapy is for patients to return to full independence and also, managing their former occupations (1). Burn injuries (especially to the face and neck) present a unique challenge to the burn team and must be treated with considerable care and vigilance by the rehabilitation team to prevent potential contractures that may occur (2). Because, caring for patients who are recovering from severe burns is not common in most inpatient rehabilitation settings (3), therefore, standard guidelines for treatment of burn patient have not been established (2). The aim of this paper is to find out the problems of burn-injured patients from the point of physiotherapist's view.

Materials and methods

This study carried out in a General Hospital in Tehran from February since June 2005. Their clinical details are summarised in table 1. The hospital files of subjects were consulted for medical history; cause of injury, classified of depth of burn and the extent of injury.

¹Shaheed Beheshti University of Medical Sciences & a member of multidisciplinary team in Mehr General Hospital. ² Mehr General Hospital

Table 1: Clinical Details of burn injured patients

Subjects	Sex	Age	Cause of injury		Burn areas						Depth of Burn	Extent of Injuries %	Graft	Amputation
			Elect	Firing	Rt Hand	Lt Hand	Rt Leg	Lt Leg	Trunk	Face				
1	M	37	*		*	*			*	*	III	62	*	AK
2	M	43	*		*	*	*	*	*		III	50	*	
3	M	42	*			*			*	*	III & II	30	*	
4	M	45	*			*		*	*	*	III & II	60	*	AE
5	M	17		*	*	*	*	*	*	*	III & II	67	*	Finger
6	F	34		*	*					*	III & II	35	*	
7	M	34	*		*						II	15		
8	M	24		*	*	*	*	*	*		III & II	60	*	
9	M	50	*		*	*				*	II	15		
10	M	50	*							*	II	10	*	
11	M	50		*	*	*	*	*	*	*	III & II	75	*	
12	F	17		*	*	*	*	*			III & II	48	*	
13	F	16		*	*		*	*			III	35	*	
14	M	19		*	*	*	*	*	*	*	III & II	65	*	
15	M	29		*	*	*	*	*	*	*	II	85		
16	M	37	*				*				II	20	*	
17	M	41	*		*						II	20	*	
18	M	40		*	*	*	*	*	*	*	III & II	80		
19	M	38	*		*					*	III & II	15		
20	M	43	*		*	*					III & II	35	*	AE
21	M	36		*	*	*	*			*	III & II	45	*	AE
22	M	45	*		*	*					III & II	10	*	
23	M	50	*			*					III & II	5		
Mean ±SD		36±12												

AE: Above elbow amputation, AK: Above Knee amputation

Our treatment protocols have been considered the following points based on the patient's situation.

- 1) Our physiotherapy treatment took 30 to 45 minutes each time and three times per day.
- 2) Each time, we have emphasized on chest physiotherapy "especially in the early phase of treatment".
- 3) To prevent joint contracture with exercise therapy "emphasized on stretching exercise".
- 4) Three times per day, we had ankle pump exercise protocol.
- 5) To prevent muscular atrophy with emphasize on exercise therapy (especial active exercise) by electrical stimulation with and without load.
- 6) Emphasize on ambulation of patients as soon as possible.
- 7) To educate the patient's family for

helping our staff. 8) To consider the secondary complication i.e., frozen shoulder, scoliosis, etc. 9) To use splinting and modalities (e.g., ultrasound, laser) based on patient's need. 10) Emphasized on fine movements, joint mobilization and activity daily living.

Analysis of variance was used to investigate the significant differences between measured variables.

Results

We treated 23 burn patients who were injured due to electrical (57%) and other accidents (43%) i.e., car, domestic and house firing accidents (figure 1). There was a significant difference between their gender (figure 2). All of them classified for depth of burn about 2nd and 3rd degree, their extent of injuries were above 40% in more than 48% of patients (figure 3) and their age were 36 ± 12 years old (mean $\pm$ standard deviation). As figure 3 shows about 50% of patients, in the time of accident, were above 40 years old. In addition, figure 5 shows 22% of them amputated (i.e., AK, AE, BE and finger). These results show (figure 6) that the most area of injury is hand (especially right hand). Our main problem was the contracture of elbow and fingers joints in 13% of patients. It should also be mentioned that more than 70% of burned patients have been grafted (table 1).

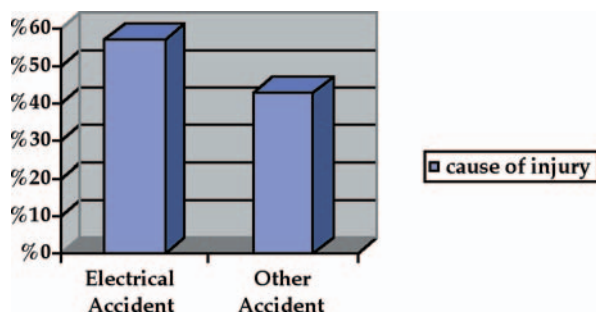


Figure 1: The cause of injury in burn patients

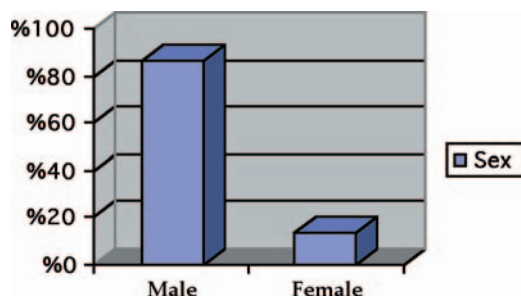


Figure 2: There was a significant difference between gender.

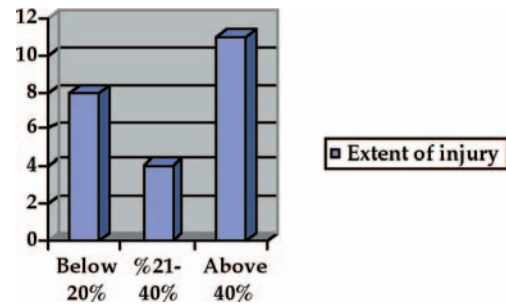


Figure 3: There was a significant difference between three groups.

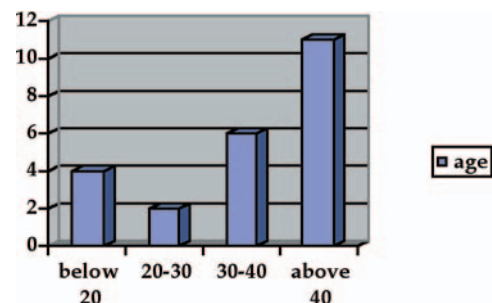


Figure 4: There was a significant difference between four groups of ages.

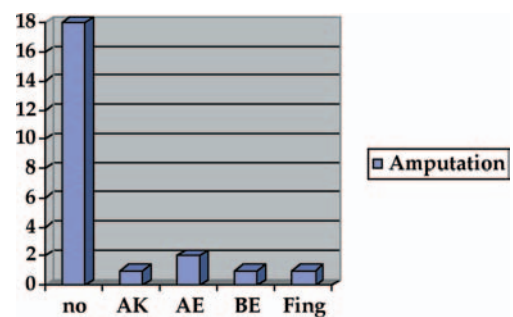


Figure 5: The amputate situation of 23 patients. No: no amputation, AK: above knee amputation, AE: above elbow amputation, BE: below elbow amputation, Fing: finger amputation.

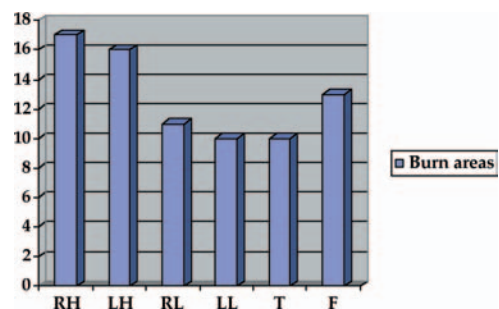


Figure 6: The burned areas in 23 injured subjects. RH: right hand, LH: left hand, RL: right leg, LL: left leg, T: trunk, F: face.

Discussion

This study carried out in 23 burn patients who treated in a general hospital from February since June 2005. The patients were 87% male and 13% female. Harvey Kemble and Lamb reported that 75% of burn injuries resulted from domestic accidents (4). However, in this study, 57% of burned patients caused due to electrical accident and 43% of subjects injured due to other accidents i.e., car, domestic and house firing accidents. Despite of developments in health and safety legislation, greater awareness of potential hazards and education on first aid, accidents continue to happen.

This research shows that the most area of injury is hand (figure 6), because its use as a functional tool brings it into contact with potentially hazardous activities. In addition, hands are used to protect the rest of the body from injury or assault.

22% of our subjects amputated due to burn injuries in this study and we find the psychological implications that can result from an amputation. In this situation, most of the physiotherapy intervention was based on regaining the patient's trust in order to educate them and to provide the support that they need to facilitate recovery. It should be mentioned that the physical exercises which were employed, were relatively simple and had they been commenced immediately after the injury, some of the complications could have been avoided.

On the other hand, burn-injured patients require physiotherapy from the earliest stage of wound management (Kealey and Jensen, 1988), because finger and thumb joints are very sensitive and range of motion can be lost quickly (5). This research also emphasizes on the previous studies (1). Our main problem was the contracture of elbow and fingers joints in 13% of patients, which might be due to the proid of immobilization (because of skin graft). Effective healing relies upon a balance of rest and mobility (6). There has been (7) debate over whether to rest or mobilize injuries. Recently, early motion has been strongly advocated but it is important to recognize the stages of wound healing and to arrange a balance between rest and exercise.

Finally, the results of this study have suggested the following factors that could help to decrease the burn-injured complications:

- 1) To consider the joint position during immobilization phase after graft
- 2) To decrease the immobilization phase after graft
- 3) To increase the interval of physiotherapy treatment per day and also to organized the aim of physiotherapy based on the patient's needs
- 4) To have a team activity with emphasize on psychological and nutritional supports.
- 5) To consider the continuation of physiotherapy treatment after releasing the patient from hospital at least for 18 months.
- 6) To use pressure garment before starting the keloid
- 7) To pay extra attention to some areas e.g., shoulder, neck, fingers and face.
- 8) To use a suitable cream for itching

To achieve these, everone, including patients, must have a clear understanding of the aims of physiotherapy.

Conclusion

The final word is to start the physiotherapy treatment from day 1st of injury and group therapy could be considered in chronic phase of treatment.

Acknowledgement:

In Mehr General Hospital, a private hospital with 300 beds, there is a multidisciplinary team which consists of surgeons, Anaesthetists, Physiotherapists, Nurses, Dieticians, Psychologists, Prosthetists, Pathologists, Microbiologists, Social workers and other specialists who help us on a temporary basis. Our members work to gether and respect each others' expertise and opinions. Therefore, the authors (especial Dr. Shaybani, the head of team) should like to mention the invaluable help of the members of team. We are grateful to all of them. This situation (i.e., the treatment of burn injured patient in a general hospital), offers great benefits to patients as well as clinicians as their experience and knowledge is not lost and will be more effective.

References

1. Harden NG, Luster SH Rehabilitation considerations in the care of the acute burn patient. *Critical Care Nursing Clinics of North America* 1991, 3(2): 245-253 .
2. Serghiou MA, Holmes CL, McCauley RL. A survey of current rehabilitation trends for burn injuries to the head and neck, *J Burn Care Rehabil.* 2004, 25(6):513,
3. Hall B. Wound care for burn patients in acute rehabilitation settings, *Rehabi Nurs*, 2005. 30(3): 114-119.
4. Kamble H, Lamb, BE. *Practical burns management*. London: hodder & Stoughton, 1987 .
5. Glassey N., *Physiotherapy for burns and plastic reconstruction of the hand*, Whurr publishers, London and Philadelphia, 2004 .
6. Ranelli S. Forsythe S. & Nanchahal J. Principles of rehabilitation in reconstructive surgery in the upper limb. *British Journal of Hand Therapy* 2000. 5(1):5-9.
7. Salter M, Bexon C. *Hand therapy: principle and practice*, Oxford, Butterworth-Heinemann, (2000) .