e-CliniC 2023; Vol. 11, No. 2: 255-259
DOI: https://doi.org/10.35790/ecl.v11i2.46370
URL Homepage: https://ejournal.unsrat.ac.id/index.php/eclinic

Burn Hypertrophic Scar Profile Based on POSAS Score at Prof. Dr. R. D. Kandou Hospital Manado

Mendy Hatibie,[1] Maximillian C. Oley,[2] Eko S. Sinaga[3]

[1]Plastic Reconstructive & Aesthetic Division, Departement of Surgery, Faculty of Medicine Universitas Sam Ratulangi - Prof. Dr. R. D. Kandou General Hospital, Manado, Indonesia
[2]Neurosurgery Division, Departement of Surgery, Faculty of Medicine Universitas Sam Ratulangi - Prof. Dr. R. D. Kandou General Hospital, Manado, Indonesia
[3]Departement of Surgery, Faculty of Medicine Universitas Sam Ratulangi, Manado, Indonesia
Email: mendy.hatibie@unsrat.ac.id
Received: February 2, 2023; Accepted: April 27, 2023; Published online: April 30, 2023

Abstract: Burn injury is skin damage due to extreme temperature resulting in hypertrophic scar if impaired of wound healing occurs that can impact on the quality of life. Evaluation of hypertrophic scar objectively and subjectively including scar quality and quality of life patient could performed with POSAS score. This study aimed to evaluate burn hypertrophic scar profile based on POSAS core at Prof. Dr. R. D. Kandou Hospital Manado. This was a retrospective study using medical records of burn patients from 2018 to 2020 at Prof. Dr. R. D. Kandou Hospital. The results obtained 64 samples. Most of the patients were male (75.0%). The most dominant age of patients was over the age of 21 years (79.7%). The most frequent cause of burns was exposure to hot water (71.9%) followed by fire (21.9%). The undergraduate education level was the most affected by burns (79.7%). The type of work most affected was the professional group (62.5%) followed by housewives (18.8%). Most of the wounds were superficial-middermal degree (71%) followed by superficial degree (15,6%) and deep dermal full thickness (12,5%). Assessment of hypertrophic scars using the POSAS score showed almost the same results between observers and patients. In conclusion, hypertrophic scar evaluation with POSAS score is very useful because it can evaluate the scar quality and the quality of life. POSAS score evaluation is depended on wound treatment, duration of wound healing, grading and wound burn area, and length of stay.
Keywords: burn hypertrophic scar; POSAS score; quality of life

INTRODUCTION

Burn is skin damage caused by extreme temperatures that can result in hypertrophic scar if there is a disruption in the wound healing process and can have an impact on quality of life.[1] The prevalence of burns in the United States is estimated at 1.2 million, while the prevalence of burns in Indonesia is 0.7%, with the age group most affected being 1-4 years old at 1.5%.[2,3] Hypertrophic scars due to burns can have an impact on functional and aesthetic disorders in the patients which have an impact on the quality of life with clinical symptoms; pain, itching, and impaired function of the body part affected by the burn. Hypertrophic scars are most common in second-degree burns, especially in deep dermal and third-degree burns (full thickness).[4] Several modalities have been used to assess scar tissue in order to assess response to treatment. Both objective and subjective POSAS (Patient and Observer Scar Assessment Scales) is a subjective scar tissue assessment instrument, consisting of a scar tissue rating scale from patients which includes pain, itching, color, flexibility, thickness and surface relief of scar tissue, and a scar tissue rating scale from the observer. which includes vascularity, pigmentation, thickness, flexibility and surface relief and surface area of scar tissue. The POSAS is the only rating scale that considers subjective symptoms such as pain and itching.[5]

METHODS

This was a retrospective study using medical records of during 2018-2020. The number of samples was then classified based on the exclusion and inclusion criteria and was assessed based on the POSAS score and then analyzed descriptively.

RESULTS

The total sample that met the inclusion criteria was 64 samples consisting of 48 males and 16 females (Table 1). The age criteria in this study was dominant over the age of 21 years as many as 51 samples (Table 2). The type of work most affected was the professional group with 40 samples followed by housewives with 12 samples (Table 3).

Table 1. Distribution of samples based on sex

Sex	Frequency	Percent
Male	48	75.0
Female	16	25.0
Total	64	100.0

Table 2. Distribution of samples based on age

Age (years)	Frequency	Percent
1-10	3	4.7
11-20	10	15.6
>21	51	79.7
Total	64	100.0

Table 3. Distribution of samples based on occupation

Occupation	Frequency	Percent
Profesional	40	62.5
Housewife	12	18.8
Helper	8	12.5
Unemployment	4	6.3
Total	64	100.0

Based on level of education, the most affected group was bachelor with 51 samples, followed by junior high school with six samples (Table 4). The most common causes of the burns were scald (hot water exposure) as many as 46 samples followed by fire as many as 14 samples (Table 3). There were 46 samples who had superficial-mid dermal degree of burns, folllowed by 10 samples with superficial degree, and eight samples with deep dermal-full thickness degree (Table 6). Assessment of hypertrophic scars using the POSAS score showed almost the same results between observers and patients.

Table 4. Distribution of samples based on level of education

Level of education	Frequency	Percent
Bachelor	51	79.7
Senior High School	4	6.3
Junior High School	6	9.4
Elementery	1	1.6
Preschool	2	3.1
Total	64	100.0

Table 5. Distribution of samples based on causes of burns

Causes of burns	Frequency	Percent
Scald	46	71.9
Fire	14	21.9
Electric	4	6.3
Total	64	100.0

Table 6. Distribution of samples based on grading of burns

Grading of burns	Frequency	Percent
Superficial	10	15.6
Superficial-Middermal	46	71.9
Deep dermal-Full thickness	8	12.5
Total	64	100.0

DISCUSSION

Burns can occur in all gender and age groups. In this study, men were more affected than women (75.0% versus 25.0%). This condition might happen because more men work outside, although not a few women had careers outside or burns at home. This is reinforced by the research conducted by Lam et al[6] who reported that women were less exposed to burns and with a milder degree of burns than men. On the contrary, Ramli et al[7] stated that men were more affected with a percentage of 77%.

Study of Kobayashi et al[8] reported that only 37% of the samples studied suffered from burns. In our study based on age group most burns occurred in adult patients with age above 21 years by 79.7% (n=51). This may be related to the occupation of the samples in this study which was mostly as professional work group, where burn injuries were more common in the workplace. However, research conducted by Ramli et al[7] showed the reversed result where the age group under 18 years old was the most affected by burns, namely as much as 48%. Several other studies even assessed that the age group of children under 5 years was more susceptible to being affected because of ignorance of things that were at risk of burns.

The causes of burns differ from children to adults. The cause of burns in adults is most often fire, while in children it is generally hot water exposure. This study actually showed the opposite

with the most common cause of burns was hot water exposure at 71.9% (n=46). This is related to the samples that were mostly affected by the adult group and occupation as professionals in certain fields as many as 62.5% (n=40). Burns due to exposed to hot water exposure occurred either when working as workers in alcohol beverage distilleries or when exposed to hot water at home for adult samples who worked as household assistants or housewives. The results of this study were inversely proportional to the research conducted by Wardhana et al[9] explaining that as many as 70.8% was caused by fire followed by hot water exposure as many as 20.5%.

The level of education was also measured in this study where the bachelor level was the most dominant at 79.7% (n=51). This affected the samples' knowledge about the dangers of burns and early treatment if burns occurred. Research by Schulz et al[10] stated that a person's education level was related to the impact of burns and post-burn recovery, where respondents whose education was below high school had lower knowledge as measured by the Life Impact Burn Recovery Evaluation (LIBRE).

The highest percentage of burns in this study was the superficial-middermal degree namely 71.9% (n=46). This is due to the most common mechanism affected was hot water exposure and was also related to the samples' level of education regarding initial treatment when a burn occurred by washing the burnt area with running water.

Patient and Observer Scar Assessment Scales (POSAS) is a subjective scar tissue assessment instrument, consisting of a scar tissue rating scale from patients which includes pain, itching, color, flexibility, thickness and surface relief of scar tissue, as well as a scar tissue rating scale from the observer which includes vascularity, pigmentation, thickness, flexibility and surface relief and surface area of scar tissue. The assessment of hypertrophic scars in this study used the POSAS score and the results showed that there was a match between the POSAS score according to the observers and to the patients. The POSAS scores of both the observers and the patients showed a fairly good assessment where the patient's quality of life was not significantly impaired by the presence of hypertrophic scars.

CONCLUSION

Burns are common occurrence resulting in hypertrophic scars which can further affect the patient's quality of life. Many factors influence the occurrence of post-burn hypertrophic scar, ranging from the degree of burn, type of work, education level, and the cause of burn that determine the initial treatment and post-burn care which ultimately affect the occurrence of hypertrophic scars.

Conflict of Interest

The authors affirm no conflict of interest in this study.

REFERENCES

1. Brunicardi CF, Hunter JG, Billiar TR, Andersen DK, Matthews JB, Dunn DL, et al. Schwartz's Principles of Surgery (10th ed). New-York: McGraw-Hill Education; 2014. p. 228-9.
2. Kaddoura I, Abu-Sittah G, Ibrahim A, Karamanoukian R, Papazian N. Burn injury: review of pathophysiology and therapeutic modalities in major burns. Ann Burns Fire Disasters. 2017;30(2):95-102.
3. Badan Penelitian dan Pengembangan Kesehatan. Pokok-pokok Hasil Riskesdas Indonesia 2013. Jakarta: Kementerian Kesehatan Republik Indonesia; 2013.
4. Brodie L et al. Emergency Management of Severe Burns EMSB (17th ed). ANZBA Association. 2013; p 39-42.
5. van der Wal MBA, Tuinebreijer WE, Bloemen MCT, Verhaegen PDHM, Middelkoop E, van Zuijlen PPM. Rasch analysis of the patient and observer scar assessment scale (POSAS) in burn scars. Qual Life Res. 2012;21(1):13-23. Doi: 10.1007/s11136-011-9924-5.
6. Lam NN, Hung NT, Duc NM. Influence of gender difference on outcomes of adult burn patients in developing country. Ann Burns Fire Disasters. 2019;32(3):175-8.

7. Ramli RN, Prawoto A, Riasa NP, Saputro ID, Mas'ud AF. Epidemiology and knowledge of first aid treatment related to burn injury in the rural region of Kulon Progo, Indonesia. Open Access Maced J Med Sci [Internet]. 2021;9(E):101-8. [cited 2023 Apr. 26]. Available from: https://oamjms.eu/index.php/mjms/article/view/5649
8. Kobayashi K, Ikeda H, Higuchi R, Nozaki M, Yamamoto Y, Urabe M, et al. Epidemiological and outcome characteristics of major burns in Tokyo. Burns. 2005;31(Suppl 1):S3-11. Doi: 10.1016/j.burns.2004.10.007.
9. Wardhana A, Basuki A, Prameswara ADH, Rizkita DN, Andarie AA, Canintika AF. The epidemiology of burn in Indonesia's national referral burn center from 2013 to 2015. Burn Open. 2017;1(2): 67-73.
10. Schulz JT, Shapiro GD, Acton A, Fidler P, Marino ME, Jette A, et al. The relationship of level of education to social reintegration after burn injury: A LIBRE Study. J Burn Care Res. 2019;40(5):692-702. Doi: 10.1093/jbcr/irz074.