Assessment of Erectile Dysfunction Following Burn Injury

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OBJECTIVE To determine the prevalence of erectile dysfunction (ED) following burn injury.

MATERIALS AND METHODS A cross-sectional study was conducted in 2013, recruiting 125 male patients with thermal and electrical burn injury. Using the simplified and validated Persian translation of the abridged, 5-item version of the International Index of Erectile Function (IIEF-5) questionnaire, the patients were evaluated for the presence and severity of the ED following burn injury.

RESULTS ED was detected in 66 patients (53%). There was a significant association between the total body surface area (TBSA) and severity of ED, in which by increase in the TBSA, the severity of ED increased. There was a significant negative correlation between IIEF-5 score and age ($r = -0.247$, $P = .005$) and TBSA ($r = -0.481$, $P < .001$). The logistic regression analysis revealed that TBSA was significantly associated with ED ($P < .001$).

CONCLUSION Our study estimated the prevalence of ED among burn survivors to be higher than the general population. We found that TBSA is a significant risk factor of ED. UROLOGY 93: 112–116, 2016.

With increasing advances in burn care and decreased mortality rate among burn patients, attention has been paid to improving the quality of life and functionality.[1] Quality of care can be improved by concise attention to several sequels of the burn injury and proper attempt to resolve patients' burden. Sexual dysfunction following burn injury develops by interaction of physical and psychological stresses. This condition may emerge as a result of erectile dysfunction (ED) in burn survivors.

In spite of advanced burn care and rehabilitation, ED following burn injury is commonly neglected among this population.[2-4] ED refers to the inability of achieving or maintaining an erection throughout the sexual intercourse,[5,6] which can be caused by physical and psychological conditions.[7] Burn injuries often co-occur with depression and posttraumatic stress disorder (PTSD), which are known to negatively impact sexual functioning.[8,9] Although ED can compromise the quality of life of these patients,[4,10] it has been poorly investigated by studies in this field and evidence regarding its prevalence and association with burn types is insufficient.[11,12]

Due to cultural and religious barriers, sexual function and satisfaction are barely discussed with burn patients in developing countries.[4,11-13] In a study, Kim et al[3] reported that 53% of their patients with electrical injury had ED. However, there are very few studies evaluating the prevalence of ED in burn patients. Hence, the aim of the present study was to determine the prevalence of ED among burn patients using the Simplified International Index of Erectile Function (IIEF-5) questionnaire[14,15] and its association with the types and severity of the injury.

MATERIALS AND METHODS

Study Design

A cross-sectional study was performed in 2013 on male patients with burn injuries attending Motahhari Burn Hospital as the referral burns care center in Iran. This study is in adherence to the tenets of the Declaration of Helsinki and the institutional review board, and the ethics committee of our hospital approved the study protocol and all patients signed an informed consent after disclosure of study objectives and assuring the confidentiality of patient's data.

Patients

Consecutive patients with thermal or electrical injury were included in the study. On the admission in the emergency ward, primary evaluation, history taking, estimation of the total body surface area (TBSA), and evaluation of the burn depth were performed by expert burn surgeons. Demographics and clinical data of the patients as well as ED characteristics were recorded in the

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study database. The inclusion criteria were married men aged 20 to 60 years old, and with thermal burn injury of at least 20% of the TBSA or electrical injury with any extent or severity being admitted to the hospital within the last 2 years and having elapsed over 6 months since their incident. Patients with documented history of sexual dysfunction or ED prior to the burn injury; involvement of the genitalia by burning; chronic medical conditions such as cardiovascular diseases, hypertension, diabetes, genital diseases, and mood disorders; or those consuming medications with proven sexual dysfunction as an adverse effect were excluded from this study.

ED Assessment

Patients who fulfilled the inclusion criteria were contacted and after explaining the study purpose, were invited to the hospital without their wife (direct interview). Again, patients were evaluated and those who had the exclusion criteria were excluded from the study. Then the simplified Persian translation of the IIEF-5 questionnaire was administered to each participant. The simplified Persian translation of IIEF-5 has been validated for self-report of ED in the general population, according to our cultural and language characteristics.[16] IIEF-5 is a diagnostic tool that has been used in large scale for determining ED prevalence and severity.[14,15,17] The simplified IIEF-5 consists of 5 questions, each of which is rated from 0 (least agreed) to 5 (most agreed). According to obtained scores by IIEF-5 (Supplementary Appendix S1), patients were categorized to normal (22-25), mild (17-21), mild to moderate (12-16), moderate (8-11), and severe (1-7).[17,18]

Statistical Analysis

Data were analyzed using IBM SPSS Statistics (Version 19, IBM Inc., Armonk, NY). The normality of the data was rejected using Kolmogorov-Smirnov test. The Mann-Whitney *U* test and Kruskal-Wallis H test for continuous variables, and chi-square and Fisher's exact test for categorical variables were used. The logistic regression model was used to analyze the relationship between age and type of burns with overall ED (IIEF-5 score ≤ 21). The correlation between TBSA and IIEF-5 score was also assessed by Pearson correlation test. Data are presented as number (%) and mean ± SD. A *P* value <.05 was considered statistically significant.

RESULTS

A total of 125 patients with a mean age of 39.5 ± 8.5 years were included in this study. There were 97 patients (78%) with thermal burn injury and 28 patients (22%) with electrical burn injury. Overall, 66 patients (53%) presented some levels of ED. The prevalence of ED was 56% in thermal burn patients (54 out of 97 patients) and 43% in electrical burn patients (12 out of 28 patients), and the difference was not statistically significant (*P* = .163). Demographics and baseline characteristics of all patients and according to the electrical and thermal burn are shown in Table 1. No significant difference was observed between the age of the patients and thermal and electrical burns. Patients with thermal burn had a higher mean of TBSA than patients with electrical burn. On the other hand, IIEF-5 score did not reveal a statistically significant difference between the two groups.

The distribution of the IIEF-5 scores according to age groups is demonstrated in Table 2. No significant differences were found between the IIEF-5 scores of the thermal and electrical burns in each age group. On the other hand, by increasing the age of the patients with thermal burn injury, IIEF-5 scores significantly decreased (*P* = .022), but the difference was not significant in the electrical burn group (*P* = .927). The distribution of the erectile function and dysfunction between thermal and electrical burn injury is shown in Figure 1. More than half of the patients with electrical burn injury (57%) had normal erectile function. No patients with electrical burn injury had severe ED. In contrast, all patients with severe ED were burned by thermal injury. No significant difference was observed regarding the ED categories between thermal and electrical burn injury (*P* = .117).

Table 1. Demographics and baseline characteristics according to electrical and thermal burn

Overall	Overall (N = 125)	Thermal Burn (N = 97)	Electrical Burn (N = 28)	*P* Value*
Age (years)	39.5 ± 8.5	40.2 ± 8.5	37.2 ± 8.5	.084
TBSA (%) (mean ± SD)	25.02 ± 12.40	28.75 ± 10.55	12.07 ± 9.79	<.001
IIEF-5 Score (mean ± SD)	20.01 ± 4.60	20.03 ± 4.66	20.36 ± 4.44	.642

IIEF-5, 5-item version of the International Index of Erectile Function questionnaire; SD, standard deviation; TBSA, total body surface area.
* Mann-Whitney *U* test.

Table 2. Distribution of the IIEF-5 scores according to age groups

	IIEF-5 Score			
Age Group (Years)	Overall	Thermal Burn	Electrical Burn	*P* Value*
20-29	21.20 ± 3.01	21.83 ± 1.72	20.25 ± 4.50	.610
30-39	20.74 ± 4.63	20.93 ± 4.53	20.19 ± 5.02	.680
40-49	19.97 ± 4.19	20.04 ± 4.15	19.50 ± 5.06	.934
50-60	18.05 ± 5.25	17.17 ± 5.42	22.00 ± 0.81	.053
P value†	.053	.022	.927	—

Abbreviation as in Table 1.
* Mann-Whitney *U* test.
† Kruskal-Wallis H test.