

Post-traumatic stress disorder in burned patients

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Abstract

The essential feature of post-traumatic stress disorder is the development of characteristic symptoms following exposure to a traumatic stressor involving direct personal experience of an event that involves threat of death or actual or serious injury, or other threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate (DSM IV).

The aim of this work is to assess the prevalence of post-traumatic stress disorder (PTSD) among the burned victims and its predicting factors.

Methods: Patients were recruited at the Burns Department in the Ibn Rushd University Hospital during the period between 1 October 1998 and 1 October 1999. All patients were psychiatrically interviewed and answered a questionnaire. The diagnosis of PTSD was done according to DSM IV criteria. Results were analyzed on Epi info software.

Results: Sixty patients gave their consent to participate in this study. The 23.3% met criteria for PTSD and 55% for major depressive disorder. In short, PTSD was related to age, explosion of gas containers for cooking purposes, depression and low social functioning. Otherwise, no relationship was found between PTSD and gender, length of hospitalization or severity of burn.

Conclusion: Post-traumatic stress disorder remains a poorly known entity by clinicians and under-diagnosed in burned patients. Considering the frequency of this pathology, an anti-depressant treatment and a psychotherapeutic relationship are necessary to improve the health and the quality of life of these patients.

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1. Introduction

In post-traumatic stress disorder (PTSD), the patient develops characteristic symptoms as a result of an event that involves threat of or actual death or serious injury. The patient can be directly involved in the traumatic event, or witness the event or learn about a loved one being involved in the event. Community-based studies reveal lifetime prevalence for PTSD ranging from 1 to 14%, with the variability related to methods of ascertainment and the population sampled. Studies of at-risk individuals (e.g. combat veterans, victims of burns or volcanic eruptions or criminal violence) have yielded prevalence rates ranging from 3 to 58% [1].

The aim of this study is to assess the prevalence of the post-traumatic stress disorder in burned patients and to study the consequences on the social and professional functioning.

In addition, the study sought to identify risk factors for the development of PTSD.

2. Methods

Morocco is a developing country in North West Africa with a population of 25 million people in 1990 [2]. Ethnic differences are primarily language-based, with mother tongue being either colloquial Arabic or Berber dialect [3]. Casablanca is Morocco's largest city (1990 population exceeding 3 million people). Inhabitants of Casablanca come from diverse backgrounds with many individuals recently moving from rural areas. In addition, middle and upper class professionals have also moved to this city because it is the country's main center of trade and industry. Neighborhoods and housing range from slums to villas and high-quality apartments inhabited by the wealthy elite. The majority of people remain low-income, however, and many live in difficult conditions [3,4].

Every patient with seriously burns, who consulted the Burns Department Ibn Rushd during a period between 1

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October 1998 and 1 October 1999, was asked to participate in this study. Sixty patients gave their consent to participate in this survey. The diagnosis of PTSD and depression were made according to DSM IV criteria by a trained psychiatrist using the structured clinical interview for DSM IV (SCID). The 17-item Hamilton rating scale for depression (HDRS) [5] was used to assess the intensity of depression. The HDRS scale represents a simple way to evaluate quantitatively the severity of depression. It is a validated scale. The items are quoted from 0 to 2 or 0 to 4. The total score varies from 0 to 52. The 14-item Hamilton anxiety rating scale (HARS) [6] assessed the intensity of anxiety. Its items are quoted from 0 to 4 with a total score varying between 0 and 60.

The global assessment of functioning scale (GAF) [7] was used to evaluate the social functioning. The GAF is stepped up along a continuum that goes from 1, value representing the sickest individual, to 90, value representing an individual nearly unscathed of symptoms (or presenting some very minimal symptoms) and functioning a satisfactory way in his/her social environment or his/her family. The scale is divided in nine equal intervals going from 1 to 10, 11 to 20, 21 to 30, etc.

2.1. Inclusion criteria

- Age: 10 years and higher at the inclusion in the study (which might be different from the actual age of burn).
- Seriously burned patient.
- Consent of the patient.

2.2. Exclusion criteria

- Personal psychiatric history.
- Acute phase of the burn.
- Psychiatric consultation refusal.

2.3. Statistical analyses

The analysis of results was done on Epi-Info software (sixth version). The results are expressed as mean \pm S.D. All statistical tests were two-tailed, with a level of significance of $\alpha = 0.05$. *t*-test and χ^2 analyses were used.

The mean age of the sample was 23.9 ± 9.2 years (11–45 years). The female gender represented 65%. Forty-four patients (73.3%) were single and 18.3% were married. A primary or secondary school level was found in 78.3 and 18.3% were illiterate. Among the 60 patients, 48.3 were unemployed and 78.3% have no mutual insurance. A low socio-economic level was found in 76.7% (<150 US\$ per month). Thirteen patients (21.7%) came from rural areas. A family psychiatric history was reported by 6.7% of burned patients and 15% had a past history of toxic consumption (Table 1).

Table 1
Demographic profile of the sample

Variable	No. of patients	% of patients
Gender		
Male	21	35.0
Female	39	65.0
Marital status		
Married	11	18.3
Single	44	73.3
Divorced	3	5.0
Widowed	2	3.3
Educational level		
Illiterate	11	18.3
Primary level	21	35.0
Secondary level	26	43.3
College	2	3.3
Rural origin	13	21.7
Substance use		
Tobacco	12	20.0
Alcohol	9	15.0
Cannabis	4	6.7
Psychotropics	2	3.3

3. Results

The mean age at the time of the burn was 15.8 ± 12.1 years. The total body surface area (TBSA) burned was $35.5 \pm 21.5\%$. Among the 65 burned patients, 75% were hospitalized and the mean length of hospital stay was 83.3 ± 92.0 days (Table 2). The most common location for burns was face (68.3%), followed by hands (65%) and feet (21.7%). Burns were third degree in 76.7% (Table 3). Flames were the main causal agent, found in 75% of cases from which the

Table 2
Sample characteristics

Variable	Mean	S.D.	Extremes
Age at the moment of burn (years)	15.8	12.1	1–40
Interval burn per interview (years)	8.0	7.5	1–29
TBSA (%)	35.5	21.5	9–80
Length of hospitalisation (days)	83.3	92.0	0–420

Table 3
Degree and location of burns

Variable	No. of patients	% of patients
Degree of burn		
First	4	6.7
Second	60	100
Third	46	76.7
Location of burns		
Face	41	68.3
Hands	39	65.0
Feet	13	21.7
Genitals	1	1.7

explosion of butane container (for cooking purposes) represented 55%. Secondary infection was found in 56.7% and three cases (5%) of amputation were found. Pain was reported by all patients, and reported as intolerable in 58.3%.

Post-traumatic stress disorder was diagnosed in 23.3% of burned patients. Depression was diagnosed in 55% of the sample. The mean scores of HDRS was 15 ± 8.3 and of HARS was 16.5 ± 7.5 . The mean GAF score was 60.8 ± 10.2 varying from 42 to 78.

The analysis of these results showed that there was a significant relationship between PTSD and age. The mean age in patients with PTSD was 18.8 ± 8.5 years versus 25.5 ± 9 years ($P = 0.01$, $t = 2.5$). Patients burned by explosion of butane container presented more PTSD than the others: 33.3% versus 11.1% ($P = 0.04$, $\chi^2 = 4.1$, OR = 4). The length of stay in PTSD group was longer (142.7 days) than in the group without PTSD (103.1 days). The difference was not significant ($P = 0.1$, $t = 1.2$). In addition, a significant relationship was found between PTSD and depression ($P = 0.04$, $\chi^2 = 4.1$, OR = 4). The mean HDRS score in the PTSD group was 20.4 ± 7.1 versus 13.4 ± 7.9 in the patients with PTSD ($P = 0.004$, $t = 2.9$). A higher HARS score was related to the presence of PTSD ($P = 0.01$, $t = 2.4$).

In short, PTSD was related to a decreased GAF score, which represent a low social and professional functioning ($P = 0.04$, $t = 2.1$). Otherwise, no relationship was found between post-traumatic stress disorder and gender, educational level, or severity of burn.

4. Discussion

4.1. Limitations

Before discussing and comparing our findings with previous surveys, a few important issues and limitations should be addressed for those patients with long intervals between the moment of burn and the interview, the results are based on data that require lifetime recall of the symptoms associated with trauma. It's possible that there was some recall failure in respondents' report, leading to underestimation of the prevalence of PTSD.

4.2. Prevalence

Consistent with previous studies, the prevalence of PTSD in our survey was 23.3%. The prevalence of PTSD in burns victims varies between 8 and 45% [8–11]. Roca et al. [12] reported that 22% of burned patients had a post-traumatic stress disorder. Patterson et al. [13] found 29% of PTSD in a sample of burns victims.

4.3. Predicting factors

In this study, PTSD was significantly related to age, to explosion of butane, to depression and to low social func-

tioning. On the other hand, we did not find any significant relation between PTSD and gender, educational level, length of hospital stay or severity of burn. Powers et al. [14] reported also that there is no statistically significant relation between PTSD and severity of burn or length of hospital stay. However, several other authors [15–17] reported that the presence of PTSD is correlated to gender, educational level, length of hospital stay and severity of burn. In this study, there was more depression in the PTSD group with a higher HDRS score represent an intense depressive symptoms. These findings are consistent with what was reported by Fauerbach et al. [17].

The explosion of butane containers seemed to be a Moroccan characteristic not found elsewhere. The majority of burned patients belonged to a low socio-economic level and used the small butane container of 3 kg that does not possess a security system to remain cheap and affordable.

5. Concluding remarks

Post-traumatic stress disorder remains a neglected entity by practitioners and remains therefore under-diagnosed. The improvement of the health and the quality of life of these patients necessitates the earliest possible management of PTSD symptoms to be done in collaboration with liaison psychiatrist. Anti-depressants and a psychotherapeutic relationship can be of great help to these patients.

From a preventive point of view, it would be highly advisable to pass a law forbidding the use of small butane containers without a security system.

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References

- [1] American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM IV). Washington (DC): American Psychiatric Association, 1994.
- [2] Center d'Etudes et de Recherches Démographiques (CERD) Atlas démographique Maroc. Rabat, Morocco: Royaume du Maroc, Premier Ministre, Ministère du Plan, Direction des statistiques, 1990.
- [3] Center d'Etudes et de Recherches Démographiques (CERD). Menages: variables socio-démographiques. Rabat, Morocco: Royaume du Maroc. Premier ministre, ministère du plan, Direction des statistiques, 1990.
- [4] Green C, Fenn D, Moussaoui D, Kadri N, Hoffman W. Quality of life in treated and never-treated schizophrenic patients. *Acta Psychiatr Scand* 2001;103:131–42.
- [5] Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry* 1960;23:56–62.

- [6] Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol* 1959;32:50–5.
- [7] Endicott J, Spitzer RL, Fleiss JL, et al. The global assessment scale: a procedure for measuring overall severity of psychiatric disturbance. *Arch Gen Psychiatry* 1976;33:766–71.
- [8] Magne J, Rochet JM. Incidence des problèmes psychologiques et psychiatriques sur le travail de rééducation de la brûlure. *Brûlure* 2000;2:1–4.
- [9] Michaels AJ, Michaels CE, Peterson C. Post-traumatic stress disorder after injury. *J Trauma* 1999;47:460–6.
- [10] Williams E, Griffiths TA. Psychological consequences of burn injury. *Burns* 1991;17:478–80.
- [11] Yu BH, Dimsdale JE. Post-traumatic stress disorder in patients with burn injuries. *J Burn Care Rehabil* 1999;20:426–33.
- [12] Roca R, Spence R, Munster A. Post-traumatic adaptation and distress among adult burn survivors. *Am J Psychiatr* 1992;149:1234–8.
- [13] Patterson D, Everett J, Bombardier C, et al. Psychological effects of severe burn injuries. *Psychol Bull* 1993;113:362–78.
- [14] Powers PS, Cruse CW, Daniels S, Stevens B. Post-traumatic stress disorder in patients with burns. *J Burn Care Rehabil* 1994;15:147–53.
- [15] Fauerbach JA, Lawrence JW, Munster AM. Prolonged adjustment difficulties among those with acute post-trauma distress following burn injury. *J Behav Med* 1999;22:359–78.
- [16] Baker RA. Degree of burn, location and length of hospital stay as predictors of psychosocial status and physical functioning. *J Burn Care Rehabil* 1996;17:327–33.
- [17] Fauerbach JA, Lawrence JW, Richter D. Preburn psychiatric history affects post-trauma morbidity. *Psychosomatic* 1997;38:374–85.