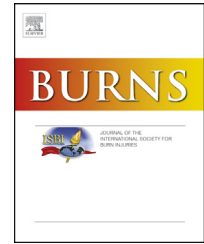


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Pre-existing psychiatric disorder in the burn patient is associated with worse outcomes

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ABSTRACT

Objective: To compare patient and burn characteristics between patients who had a pre-existing psychiatric diagnosis and patients who did not in a Burn Unit at an academic hospital.

Background: Psychosocial issues are common in patients recovering from a burn; however, little is known regarding hospital course and discharge outcomes in patients with a pre-existing psychiatric diagnosis presenting with a burn. Baseline medical comorbidities of burn patients have been shown to be a significant risk for in-hospital mortality.

Methods: A retrospective chart review of 479 consecutive patients admitted to the Burn Unit of an academic hospital in Halifax, Nova Scotia between March 2nd 1995 and June 1st 2013 was performed. Extensive data regarding patient and burn characteristics and outcomes was collected. Patients with and without pre-existing psychiatric diagnoses at the time of hospital admission were compared.

Results: Sixty-three (13%) patients had a psychiatric diagnosis, with the most common being depression (52%). Forty-percent ($n=25/63$) of these patients had multiple pre-existing psychiatric diagnoses. Patients with a psychiatric diagnosis had a greater total-body-surface-area (TBSA)% covered by a third-degree burn ($p=0.001$), and were more likely to have an inhalation injury ($p<0.001$). These patients were also significantly more likely to experience 6 of the 10 most prevalent in-hospital complications and had a higher mortality rate ($p=0.02$). They were less likely to be discharged home ($p=0.001$), and more likely to go to a home hospital ($p=0.04$) or rehabilitation facility ($p=0.03$). Psychiatric diagnosis was associated with significantly more placement issues (e.g. rehab bed unavailability, homeless) upon discharge from the Burn Unit ($p=0.01$). The risk of death in burn patients with pre-existing psychiatric disorders was about three times the risk of death in patients with no psychiatric disorders when adjusting for other potential confounders (95% CI, 1.13-9.10; p -value 0.03).

Conclusion: Presence of a pre-existing psychiatric disorder in the burn patient was associated with worse outcomes and was a significant predictor of death. Psychiatric diagnoses should be identified early in burn treatment and efforts should be made to ensure a comprehensive approach to inpatient support and patient discharge to reduce unfavorable burn outcomes and placement issues.

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1. Introduction

Burns and the recovery from such injuries are well known to cause psychological distress in some patients [1-3]. Although psychosocial issues such as post-traumatic stress disorder and depression have been well described in patients recovering from a burn, little is known about the hospital course and discharge outcomes in patients with a pre-existing psychiatric diagnosis that present with a burn [4,5].

Previous studies have identified burn patients as being more likely to have a pre-existing mental health issue or psychiatric diagnosis than the general population [6,7]. A recent study identified that burn patients had a significantly increased prevalence of pre-burn depression and substance use disorders compared to controls [8]. This has been identified as an area that needs further research [7,9]. Burn survivors with a history of psychiatric disorders have been shown to have a higher number of post-burn psychiatric problems [10]. However, the effect of psychiatric disorders on important burn outcomes such as complications and mortality is not well understood.

Burn characteristics that are associated with worse outcomes and a greater risk of mortality include a larger total body surface area (TBSA) percentage covered by a second or third degree burn, the presence of an inhalation injury, and increased age [11,12]. Identifying further burn and patient characteristics that predict worse outcomes and mortality may help improve patient survival and recovery.

The presence of medical comorbidities (e.g. renal disease, congestive heart failure) in a patient presenting with a burn has been shown to be a significant risk for in-hospital mortality [13,14]. In addition, a pre-existing psychiatric diagnosis has been associated with an increased length-of-stay in hospital for burn patients [14]. Psychiatric diagnosis is a factor that can be identified upon admission, and therefore poses clinical utility in better understanding the prognosis and outcome of the patient's burn.

The objective of this present study was to compare patient characteristics and burn outcomes in a Burn Unit at an academic hospital between patients who had a pre-existing psychiatric diagnosis and patients who did not. We hypothesized that burn patients with psychiatric diagnoses would have worse outcomes.

2. Methods

2.1. Study design

A retrospective chart review was performed of 577 patients who were consecutively admitted to the Burn Unit of an academic hospital in Nova Scotia between March 2nd 1995 and June 1st 2013. The hospital has a catchment area of over 1.5 million people, including Halifax Central and surrounding areas, Newfoundland, Prince Edward Island, and New Brunswick. The Burn Unit has six beds. Admission criteria are in keeping with the American Burn Association clinical practice guidelines. Patient charts of eligible patients (n=479) were reviewed for health information and burn

characteristics. Eligibility criteria included adults (>18years old) who were admitted to the Burn Unit for a second or third-degree burn. Patients were followed until discharge from the hospital. Reasons for exclusion were not being able to find patient records (n=61), health care management continued outside of Canada (n=1), readmission to the hospital (non-Burn Unit, not for reconstructive operations) (n=19), and admission for non-burns (n=17).

2.2. Definition of outcomes and data collection

We compared patient and burn characteristics between those with and without a psychiatric diagnosis at the time of hospital admission for their burn. Data was collected on patient and burn characteristics at hospital admission, as well as clinical characteristics and outcomes during hospital stay. The primary outcome was mortality rate during hospital stay. The secondary outcomes were where the burn occurred, presenting co-morbidities, burn TBSA%, type of burn, presence of an inhalation injury, body location of burn, and associated injury upon admission. Presenting co-morbidities were determined by patient or substitute decision maker self-report at the time of hospital admission, or data available from previous health records. Secondary outcomes also included discharge placement issues and burn complications. Discharge placement issues were identified if the patient was homeless or if there was bed unavailability for the patient in any of the following facilities at the time of discharge: assisted care facility, rehabilitation facility, or home hospital.

2.3. Statistical analyses

Descriptive statistics were used to analyze patient and burn characteristics. Continuous variables were expressed as mean \pm standard deviation and categorical variables were expressed as frequency and percentage. Differences between patients with and without a pre-existing psychiatric diagnosis were analyzed using a Mann-U Whitney test, Fisher exact test, or Chi-square test. Logistic regression was performed using forward stepwise regression. Total body surface area (TBSA) % for both second- and third-degree burns were categorized into highly severe (>30 TBSA%) and less severe burns. Model fitness was assessed using Hosmer and Lemeshow test. All analyses were done in SPSS Version 20.0.0 (IBM® SPSS® Statistics, 1 New Orchard Road Armonk, New York) and a P value of 0.05 or less was considered as statistical significance.

3. Results

3.1. Study population

Between March 2nd 1995 and June 1st 2013, 577 patients were admitted to the Burn Unit at an academic hospital in Halifax, Nova Scotia, of which 479 patients (mean age 45.5 \pm 18.9years) were eligible for this present study (Fig. 1). Table 1 shows the baseline patient and injury characteristics of all patients as well as further divided into those with and without psychiatric diagnosis upon hospital admission. The majority of patients was male, obtained the burn at home, and burned themselves

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