

Role of Belgium Outcome Burn Injury Score System in Burns Patients

Sagrika Mohan¹, Ravi Kumar Chittoria², Jacob Antony³

How to cite this article:

Sagrika Mohan, Ravi Kumar chittoria, Jacob Antony/Role of Belgium Outcome Burn Injury Score System in Burns Patients/ Indian Journal of Medical & Health Sciences. 2023;10(2):93-95.

Abstract

Aim of this case report is to predict the outcome of patients presenting with severe burns is crucial in guiding clinical judgment. Advancements in burn management over the years have significantly decreased burn mortality. There are various scoring systems that are formularized in predicting mortality in burns. In this article we would like to describe our pilot study in using Belgium outcome of burn injury scoring system (Table 1) in predicting mortality in burns patients.

Keywords: Belgium; Outcome; Burn; Injury; Scoring; System.

INTRODUCTION

Burns injury is one of the important factors contributing to mortality in a developing country like India.¹ Prognostic scoring systems for burn patients help in assessing the severity of the condition and its likely course, thereby ultimately allowing stratification of risk numerically and scientifically which can be statistically analysed.

There is no scoring system that accurately predicts mortality due to burns or helps in determining the course, treatment options and evaluating new or innovative interventions uniformly. Revised Bauxscore², Abbreviated Burn Scoring Index (ABSI)³, Ryan *et al.*⁴, Belgium Outcome of Burn Injury (BOBI)⁵, Smith *et al.*⁶, Mc Gwin *et al.*⁷ are some of the scoring systems available which can be used to predict the mortality in burn patients.

MATERIALS AND METHODS

The study is done in a tertiary care hospital in South India. The subject under study is a 1.5 year old female child, with no comorbidities, with alleged history of accidental spill of hot milk over the right arm, axilla, right side of the chest and sustained second degree superficial and deep burns ~14% TBSA (fig. 1). On presentation BOBI score of 0 (age-0, inhalational injury-0, %TBSA-0) with a predicted survival of 99.1% (Table 2). She was resuscitated with IV fluids as per Parkland

Author Affiliation: ¹Junior Resident, Department of General Surgery, ²Professor, Department of Plastic Surgery and Telemedicine, ³Senior Resident, Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605006, India.

Corresponding Author: Ravi Kumar Chittoria, Professor, Department of Plastic Surgery & Telemedicine, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry 605006, India.

E-mail: drchittoria@yahoo.com

Received on: 29.04.2023

Accepted on: 27.05.2023

formula and maintenance fluids according to body weight. Wound management was done by heparin saline irrigation, dermabrasion assisted tangential excision, Low level laser therapy (LLLT), Autologous Platelet Rich Plasma (APRP), amniotic membrane application, regenerative scaffold and Cyclical Negative Pressure Wound Therapy (CNPWT).



Fig. 1: At Admission

RESULTS

The subject showed good recovery (fig. 2). The patient recovered and was discharged. BOBI score prediction matched with the outcome predicted.



Fig. 2: After Recovery

DISCUSSION

Every year in India, around 10,00,000 people sustain moderate to severe burns.⁸ In developing nations like India, the burn intensive care unit beds are limited owing to the shortage of trained health professionals and the high cost needed for maintenance. In present circumstances of limited

bed availability, the need for burn scoring systems and prognostic scores are crucial in triaging burnt patients in accordance with their severity, for guiding the treatment, resource management and for counselling family members. The first prognostic factors found to be effective in predicting the mortality in patient’s burns was the Total surface area (TBSA) and age, which was first proposed by Weidenfeld, who in 1902 correlated TBSA and age

Mortality Score equation
Rate Calculation

Mortality

| | | |
|-------------|----------------------------|--------------------|
| BOBI | Age: <50 = 0 | Sum of score: |
| | 50-64 = 1 | 0 = 0.1% mortality |
| | 65-79 = 2 | 1 = 1.5% mortality |
| | >80 = 3 | 2 = 5% mortality |
| | Burn TBSA%: <20 =0 | 3 = 10% mortality |
| | 20-39 = 1 | 4 = 20% mortality |
| | 40-59 = 2 | 5 = 30% mortality |
| | 60-79 = 3 | 6 = 50% mortality |
| | 80-100 = 4 | 7 = 75% mortality |
| | Inhalation injury: Yes = 3 | 8 = 85% mortality |
| | No = 0 | 9 = 95% mortality |
| | | 10 = 99% mortality |

Table 1. BOBI Score System

| BOBI | Age: <50=0 | Sum of Score |
|------|-------------------------|------------------|
| - | Burn TBSA % <20= 0 | 0=0.1% mortality |
| | Inhalation injury: No=0 | |

with the mortality. The effectiveness of these two parameters was affirmed later 1949 by Bull and Squire in 1949 and later by Baux in 1963 as Baux score.⁹ Abbreviated Burn Scoring Index (ABSI), Ryan *et al.*, Belgium Outcome of Burn Injury (BOBI), Smith *et al.*, McGwin *et al.*, are some of the scoring systems available which can be used to predict the mortality in burn patients. In the present study, we have applied Belgium Outcome of Burn Injury (BOBI) score to predict mortality. The BOBI score uses values of age, TBSA and presence of inhalational injury. The maximum score is 10 which give a 99% risk of mortality.⁵ Incorporation of the well-known significant independent risk factors like Age, Total body surface area involved, and inhalational injury were found to have performed well in predicting burn mortality in various populations. BOBI score was chosen as it is a simpler scale to calculate bedside with high specificity when compared to

other mortality predictor scales.

CONCLUSION

The study shows that BOBI can be used as a mortality predictor of burn patient and help in triaging the patient for the best use of resources available in developing countries like India. But the outcome of the patient cannot be precisely predicted by using the BOBI score alone. The scoring system requires standardisation for population and resource variability. In our study BOBI Score prediction matched with the outcome which was predicted.

REFERENCES

1. Agarwal P, Adalti S, Agrawal V, Sharma D. A simple mortality prognostic scoring system for burns. *Indian J Burns*. 2017; 25: 26-32.
2. Osler T, Glance LG, Hosmer DW. Simplified estimates of the probability of death after burn injuries: extending and updating the baux score. *J Trauma*. 2010; 68(3): 690-697. doi: 10.1097/TA.0b013e3181c453b3.
3. Tobiasen J, Hiebert JH, Edlich RF. Prediction of burn mortality. *Surg Gynecol Obstet*. 1982; 154(5): 711-714.
4. Ryan CM, Schoenfeld DA, Thorpe WP, Sheridan RL, Cassem EH, Tompkins RG. Objective estimates of the probability of death from burn injuries. *N Engl J Med*. 1998; 338(6): 362-366. doi: 10.1056/NEJM199802053380604.
5. Belgian Outcome in Burn Injury Study Group. Development and validation of a model for prediction of mortality in patients with acute burn injury. *Br J Surg*. 2009; 96(1): 111-117. doi: 10.1002/bjs.6329.
6. Smith DL, Cairns BA, Ramadan F, Dalston JS, Fakhry SM, Rutledge R, *et al*. Effect of inhalation injury, burn size, and Age on mortality: a study of 1447 consecutive burn patients. *J Trauma*. 1994; 37(4): 655-659. doi: 10.1097/00005373-199410000-00021.
7. McGwin G Jr, George RL, Cross JM, Rue LW. Improving the ability to predict mortality among burn patients. *Burns*. 2008; 34(3): 320. doi: 10.1016/j.burns.2007.06.003.
8. World Health Organization: <https://www.who.int/news-room/factsheets/detail/burns>.
9. Bull JP, Squire JR. A study of mortality in a burns unit: Standards for the evaluation of alternative methods of treatment. *Ann Surg*. 1949; 130: 160-173.