

Revised Baux Score in Predicting Mortality in Burn Patients in a Tertiary Care Hospital - Our experience

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ABSTRACT

Burns is one of the risk factors contributing to the mortality and morbidity burden of developing countries. Even though advancements in burn patient management have significantly decreased mortality, higher death rates are egregious in developing countries where these are yet to be recognized and implemented. Predicting the outcome of severe burns patient at presentation plays a paramount role in guiding clinical judgment. Multiple scoring systems are available to predict mortality in burns patients in developed countries. In this article, the Revised Baux score has been applied in predicting mortality in burns patients.

Keywords: Revised Baux Score; Burns Mortality

Introduction

Burns are a major health problem worldwide with the majority of deaths occurring in low-income and developing countries [1]. Around 10,00,000 people in India sustain moderate to severe burns injury with high mortality and morbidity [2]. Assessing the severity of the condition and its prognosis with a prognostic scoring system will allow in risk stratification both numerically and scientifically. Therefore, predicting the mortality in burns patients at presentation not only helps in determining the clinical course but also in the handling of resources.

Various mortality or survival prediction models have been developed and verified in developed countries. Revised Baux score [3], Abbreviated Burn Scoring Index (ABSI) [4], Ryan et al. [5], Belgium Outcome of Burn Injury (BOBI) [6], Smith et al. [7], McGwin et al. [8] are some of the scoring systems used to predict the burn mortality. The exigency of an appropriate scoring system that can assess risk at presentation accurately is soaring in developing countries. In this study, the Revised Baux score has been applied to predict mortality in burns patients.

Materials and methods

The study was conducted in the burn unit of a tertiary care center. The patient's consent was obtained. The first patient was a 65-year-old male with no known comorbidities, presented with thermal burns over the scalp, back, bilateral upper limbs, left thigh, and singeing of nasal hair. At presentation, the patient was conscious, oriented, pulse=96/min, BP= 96/66 mmHg, RR= 22/min, SpO₂= 96% at room air. On initial assessment, about 5% burns were superficial 2nd degree and 25% burns were deep 2nd degree. At admission, Revised Baux score of 112 (age-65, TBSA-30, inhalational injury-1) with a predicted mortality of 100%. The patient underwent tangential excision with Integra application on day 6 of admission. The patient was intubated on day 8 and expired on day 10 of burns injury (Figure 1).



Figure 1: 65-year-old male with 30 % burns

The second patient was a 27-year-old female with no known comorbidities who presented with thermal burns over the face, neck, both upper limbs, and singeing of nasal hair. In emergency, patient was conscious, pulse=100/min, BP=100/70 mmHg, RR= 18/min, O₂ saturation=94%. On initial assessment, about 15% burns were superficial 2nd degree and 5% burns were deep 2nd degree. At presentation, Revised Baux score of 74 (age-27, inhalational injury-1, %TBSA- 30) with a predicted mortality of 48%. The patient underwent tangential excision, Integra application on day 4 of admission. The patient was intubated on day 5 and expired on day 6 of burns injury (Figure 2).



Figure 2: 27-year-old female with 30% burns

Our third patient was a 1-year-old female child with no antenatal/perinatal complications and no congenital anomalies presented with scald burns over back, buttock, genital region. In emergency, child was alert, pulse= 117/min, BP= 93/53mmHg, SpO₂=100% in room air. On initial assessment, 10% superficial partial-thickness and 7% full-thickness scald burns. At presentation, Revised Baux score of 18 (age-1, inhalational injury-0, %TBSA-17) with a predicted mortality of zero percent. Wound management was done by heterografting with collagen, Prophylactic antibiotics were started. The patient developed *Enterococcus faecalis* infection and was intubated on day 5 and expired on day 7 of burns injury (Figures 3 and 4).



Figure 3: 1-year-old female with 20% thermal burns

	Factor	Score	Total Score	Probability of death in percent	
REVISED BAUX SCORE R-Baux score = (TBSA + age + [17×R])	TBSA	-	10-50	0	
			50-60	2.90	
			60-70	16.67	
	Age	-	70-80	47.83	
			80-90	82.35	
			90-100	76.92	
	Inhalational Injury	Yes	1	100-110	100
				110-120	100
				No	0

Figure 4: Revised Baux Score

Results

Revised Baux scoring used in our patients, showed a variable outcome.

Discussion

The World Health Organization (WHO) reported 1,80,000 deaths annually due to burn injury majority of which are contributed by low and middle-income countries where the resources are limited [2]. The burn mortality is still high in developing countries due to limited resources despite the advancements in burns management [9]. To improve the outcome and minimize mortality and morbidity including post-burn disability and disfigurement, there is an inflated requirement of well-staffed specialized centers. Hence the importance of prediction of the outcome of a burn patient for guiding treatment, resource management, and counseling family members is more in developing countries. But most of the mortality predicting scores have been formulated in the developed countries and applied in their respective populations. Therefore, most of these prediction models fail to predict mortality precisely due to variations in the study population, standard of care, and available resources in developing countries.

In India, the burn intensive care unit beds are limited owing to the requirement of many 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 by their severity.

In the present study, we have applied the Revised Baux Score to predict mortality. Scores incorporating the well-known significant independent risk factors like Age, total body surface area burnt, and inhalational injury was found to have performed well in predicting burn mortality in various populations. Revised Baux score was chosen as it is a simpler scale to calculate bedside with good specificity when compared to other mortality predictor scales. Our patients had Revised Baux scores of 112, 74, and 18 with a probability of death of 100%, 48%, and zero respectively. But all the patients expired which shows a higher risk of mortality. The mortality prediction for the paediatric age group must be modified with a higher probability of death.

Limitation of the study is that it is a case report in a single-centre, with a variable outcome of mortality prediction. Hence the authors suggest a multicentre, randomized control study to validate the efficacy of the Revised Baux score in predicting mortality in burn patients especially in developing countries.

Conclusion

The study shows that Revised Baux Score can be used as a mortality predictor of burn patients and help in triaging the patient for the best use of resources available in developing countries like India but requires standardization for population and resource variability.

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