

Quick Review of Model System Research

Predicting Heterotopic Ossification Early After Burn Injuries: A Risk Scoring System^{1*}

What is the study about?

Heterotopic ossification (HO) is a painful, debilitating complication that can occur following burn injury when abnormal bone growth occurs in soft tissue. The goal of this study was to develop a scoring system that can help stratify burn patients' risk of developing HO. There are currently no adequate diagnostic measures or treatments available for HO. Identifying high-risk burn patients through a standardized scoring system is important because it will help researchers identify patients at risk who could participate in treatment trials.

Who participated in the study?

The study included 3,693 records of patients from the Burn Injury Model System National Database. The analysis included patients who were burned between 1994 and 2010, were over 18 years old, and had a primary diagnosis of thermal burn. Patients who were deceased at discharge were not included in the analysis. A separate set of 1,381 adult patients with a burn diagnosis admitted to Massachusetts General Hospital between January 2000 and January 2010 was used to externally validate the model.

How was the study conducted?

The primary outcome is diagnosis of HO at hospital discharge. Variables examined include age, sex, race, burn size, type of burn, locations of burn, locations of skin grafts, inhalation injury, and history of other medical conditions. A risk scoring system was created in which point values were assigned to variables that were predictors of HO. The points are added to produce a final risk score that is correlated with the percent risk of developing HO. Researchers also validated the model with the Massachusetts General Hospital External Database.

What did the study find?

Researchers found that the risk of developing HO increases with larger burn size. Patients that require grafting to their arms, head/neck, or trunk also have a higher likelihood of developing HO. Further, they found that the model was valid. This study resulted in the development of the HO risk scoring system, which can be used to identify patients at high risk of developing HO. It is the first HO risk scoring system that has predictive value and therefore may be useful in developing interventions and diagnostic measures to help identify and treat this condition.

Resource

Burn HO Risk Calculator: <http://spauldingrehab.org/hoburncalculator>

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¹ Schneider, J.C., Simko, L.C., Goldstein, R.S., Shie, V. L., Chernack, B., Levi, B., Jayakumar, P., Kowalske, K.J., Herndon, D. N., Gibran, N.S., and Ryan, C.M. (2016) Predicting Heterotopic Ossification Early After Burn Injuries: A Risk Scoring System. *Annals of Surgery*.

*The contents of this summary have been reviewed by the authors of the original study.