The use of bronchoscopy in evaluating clinical outcomes of inhalation injuries in the intensive care unit

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Major burn centres in Australia use bronchoscopy to assess severity of inhalation injuries despite limited evidence as to how best to classify severity of inhalational injury or its relationship to patient outcomes.

All patients with burns who were admitted to the intensive care unit (ICU) at The Alfred Hospital between January 2010 and July 2014, and underwent bronchoscopy to assess inhalational injury, were reviewed. Age, total body surface area (TBSA) burnt, severity of illness indices and mechanisms of injury were extracted from medical histories, local ICU and burns registries. Inhalational injury was classified based on the Abbreviated Injury Score and then grouped into three categories (no/mild, moderate or severe injury). Uni-variable and multivariable analyses were undertaken to examine the relationship between inhalational injury and outcomes (in-hospital mortality and duration of mechanical ventilation).

128 patients were classified as having no/mild inhalational injury, 81 moderate and 13 severe inhalation injury. Median (interquartile range) duration of ventilation in each group was 56(33-144) hours, 141(55-278) hours and 79(39-208) hours respectively. Mortality in each group was 2.3% (3/128), 7.4% (6/81) and 30.7% (4/13) respectively. After adjusting for age and TBSA, only moderate inhalational injury was independently associated with increased duration of ventilation [odds ratio 2.25 (95%CI 1.53-3.31), P<0.001]. However only severe inhalational injury was independently associated with increased mortality [odds ratio 20.4 (95%CI 1.74-239.4), P=0.016].

This study suggests stratification of inhalational injury using bronchoscopy can provide useful prognostic information about duration of ventilation and mortality. Larger multicentre prospective studies are required to validate these findings.

Key Words

Adult burns, Bronchoscopy, Retrospective Studies, Intensive Care Unit, Length of Stay, Inhalation Injury, inhalation injury severity,

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