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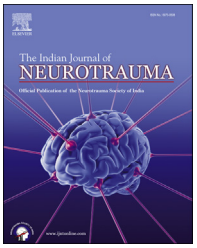

Original Article

Early mortality predictor of severe traumatic brain injury: A single center study of prognostic variables based on admission characteristics

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ABSTRACT

Objective: Traumatic brain injury (TBI) is one of the leading cause of death in many developing countries. The intention of this study was to develop a predictor model – to identify high death risk of severely head-injured patients in an early period in order to plan an effective and efficient treatment strategy.

Method: We conducted a retrospective cross-sectional study with subjects of severe TBI patients ($n = 61$) from 1st of January to 31st December 2010. Variables included age, gender, blood pressure, mean arterial pressure, pulse rate, respiration rate, temperature, Glasgow Coma Scale (GCS) score, motor response, choice of treatment and head computed tomography (CT) profiles. These models – then analyzed using multiple logistic regression.

Results: The outcome of this study produced five factors that correlated significantly with the survival of these patients: compression in basal cistern, low motor response (<4), presence of intradural lesion, mean arterial pressure, and midline shift. We divided these factors into major and minor factor according to their contribution to survival. Compression of basal cistern compression and low motor response (<4) are the most significant factors in predicting mortality (sensitivity greater than 90%).

Conclusion: Basal cistern compression and motor response were the most valuable factors in determining the risk of death in severe TBI patients.

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1. Introduction

Traumatic brain injury (TBI) constitutes a critical public health and socioeconomic problem throughout the world. It is the leading cause of mortality and disability among young individuals in many countries. Worldwide, the incidence of TBI is rising sharply, mainly because of increasing motor vehicle use in low income and moderate income countries. TBI will surpass many diseases as the major cause of death and disability by the year 2020. The incidence varies from 67 to 317 per 100,000 individuals and mortality rate range from around 4% to 7% for moderate injury to approximately 50% with severe traumatic brain injury.[1–3]

In Indonesia, incidence of severe TBI is between 6 and 12% of all traumatic brain injuries with mortality rate ranging between 25 and 37%. Trauma data from our emergency

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