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The Role of Acute Phase Computed Tomography Scores in Predicting Duration of Hospital Stay for Patients Admitted for Traumatic Brain Injury

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Introduction

Traumatic brain injury is a common medical emergency with potentially devastating neurological consequences to sufferers. Computed tomography (CT) plays an important role in the early assessment of patients with traumatic brain injury. The Marshall and Rotterdam scores are the most widely used head trauma scoring systems using CT findings to stratify patients into groups. These scores have been shown to correlate well with the risk of early mortality.

Objectives

The aim of the study is to investigate the role of Marshall and Rotterdam scores in predicting early mortality, neurological outcome, and duration of hospital stay.

Methodology

Radiology records were retrieved from the electronic Radiology Information System of Prince of Wales Hospital from January to December of 2015. All CT reports with the keyword "trauma" or "head injury" or "HI" were systematically reviewed. Those confirmed to have CT as result of head trauma were included in the study.

Data collection included patient demographics, initial CT findings, mechanisms of injury, mobility and cognitive outcome, hospital stay duration and mortality. Rotterdam and Marshall scores were calculated for each patient. We examined whether each score was related to early death, worse neurological outcome (mobility and cognitive) and prolonged hospital stay. Significance level was set at p

Result

Higher Marshall Category and Rotterdam scores were significantly associated with increased mortality risk and significantly correlated with increased hospital stay. There was however no association between the CT scores and cognitive and mobility outcome at 12 months after injury. Our results demonstrate that the use of CT scores may aid in predicting the burden to the hospital wards, allowing appropriate preparation and resource allocation by hospital management.

In addition, risk factors for increased mortality included age greater than 60 years and either fall or motor vehicle accident as mechanism of injury. Being hit by an object or being the victim of a motor vehicle accident were significantly associated with longer hospital stay.