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Case Report

Neurosurgical Emergences in Head Trauma

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Neurosurgical Emergences in Head Trauma

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Abstract

During 1987 and 1988, the trauma service at Hahnemann University Hospital, a level I trauma center, evaluated 1,875 consecutive patients. Four hundred ninety-seven consecutive computed tomographic (CT) scans were performed to evaluate intracranial trauma in the emergency department. These patients' records were reviewed to determine the adequacy of loss of consciousness, amnesia, Glasgow Coma Scale (GCS) score, and mechanism of injury in predicting intracranial findings. In 302 patients with a GCS score of 13 or greater, 55 (18%) CT scans showed abnormal findings. Eleven (4%) of these patients required neurosurgical intervention. Furthermore, patients with normal CT scans required no interventions for head trauma. Mechanism of injury directly influenced the incidence of neurosurgical intervention. Current bedside methods to evaluate patients for possible intracranial injury in our trauma patient population are inadequate. Emergency department CT scans should be performed on all patients referred to the trauma service with previously classified mild- or low-risk criteria for intracranial trauma, regardless of GCS score.

Keywords

Neurosurgical emergencies, Trauma and Sports

Introduction

The panel identified two main groups of patients—those at high risk of intracranial injury and those at low risk of such injury — and developed a management strategy for imaging in the two groups. The high-risk group consists primarily of patients with severe open or closed-head injuries who have a constellation of findings that are usually clinically obvious. These patients are candidates for emergency CT scanning, neurosurgical consultation, or both. The low-risk group includes patients who are asymptomatic or who have one or more of the following: headache, dizziness, scalp hematoma, laceration, contusion, or abrasion. Radiographic imaging is not recommended for the low-risk group and should be omitted. An intermediate moderate-risk group is less well defined, and skull radiography in this group may sometimes be appropriate.

A prospective study of 7035 patients with head trauma at 31 hospital emergency rooms was conducted to validate the management strategy. No intracranial injuries were discovered in any of the low-risk patients. Therefore, no intracranial injury would have been missed by excluding skull radiography for low-risk patients, according to the protocol.

We conclude that use of the management strategy is safe and that it would result in a large decrease in the use of skull radiography, with concomitant reductions in unnecessary exposure to radiation and savings of millions of dollars annually.

Patient Distribution Over Year, Week, And Day

Relatively more patients were seen from May to September (160–190/month compared with 106–130/month October to April). June and July were peak months in the emergency room, reflecting that most cases of traumatic brain injury were recorded in this time (77 and 80/month). intracerebral haemorrhage showed peaks in spring and autumn, whereas subarachnoid haemorrhage and neoplastic diseases were evenly distributed over the year. In general, more patients were seen on Fridays and Saturdays.

More patients originating from outside hospitals were seen on Fridays whereas those from within our hospitals were most frequent on Saturdays. The number of patients admitted to the emergency room was evenly distributed over the week. Patients with traumatic brain injury peaked on Sundays. Less than 50% of recorded patients were seen by 5 00 pm with most patients being seen up until 2 00 am. Most patients within our own hospitals were recorded between 6 00 pm and 9 00 pm.

Neurosurgical Action

Neurosurgical action is outlined in Seventy five per cent of all patients were personally seen by a neurosurgeon. Of 1361 patients examined by a neurosurgeon 64% were admitted or transferred from another service to a neurosurgical ward. Every second admission carried an indication for surgical intervention. Twenty five per cent of patients remained on their non-neurosurgical wards, only 10% had an elective indication for later surgery. The remaining 11% of the patients were sent back to an outside hospital, a third of them immediately after surgical treatment.

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