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RESEARCH ARTICLE

ISOLATED INTOXICATED HEAD INJURY PRESENTATIONS- ARE WE MANAGING IT WELL?

***Chowdhury, D.**

Specialty Doctor in Emergency Medicine, Emergency Department, University Hospital Ayr, Ayr, Scotland

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Corresponding author: Chowdhury, D.

ABSTRACT

Intoxicated head injury constitutes a significant proportion of Emergency Department presentations throughout the United Kingdom. The presentation can be widely varied from isolated head injury to the multiply injured patient with co-existing head injury. As a result, the presentation can range from the inebriated walking patient to the patient brought in by ambulance with a standby-call in to the Department. In several Emergency departments across the United Kingdom have an ambulatory care unit where the patient with isolated inebriated head injury without any neurological deficit (and no acute findings on CT imaging) is admitted for neurological observations. In the presence of distracting head injuries, it is important to exclude the presence of any additional injuries. In this article, our main aim is to discuss isolated head injuries secondary to alcohol consumption.

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INTRODUCTION

National Institution of Clinical Excellence (NICE) (https:// www.nice.org.uk/ guidance/cg176/chapter/1-recommendations #investigating-clinically-important-brain-injuries) has formed a specific set of risk factors that necessitate performing a CT Head scan with one hour as follows:

- GCS less than 13 on initial assessment in ED
- GCS less than 15 at 2 hours after the injury on assessment in ED
- Suspected open or depressed skull fracture
- Any signs of basal skull fracture
- Post-traumatic seizure
- Focal neurological deficit
- More than 1 episode of vomiting

It also advises for CT Head scan within 6 hours with the following risk factors:

- Age 65 years or older
- Any history of bleeding or clotting disorders
- Dangerous mechanism of injury
- More than 30 minutes retrograde amnesia of events immediately before the head injury
- From the 2014 guidance it suggests that a provisional radiology report should be obtained with 1 hour of the scan being performed.

Immediate versus delayed CT imaging: From the United States statistics, the incidence of subdural haematoma is approximately 125 000 cases per year (Frontera, 2011) with the vast majority of cases in those aged above 65 years. The major risk of subdural haematoma is the chance of reaccumulating (Bullock, 2006) that leads to further brain injury and poorer outcomes. These are the patients that present with acute on chronic subdural haematoma. The risks of intracerebral bleeding in elderly patients (>65 years or older) with history of chronic alcoholism is increased significantly due to the relative low impact injury leading to shearing of the bridging veins leading to subdural bleed. Clinicians have largely two broad schools of thoughts for dealing with head injury in the elderly population with any of risk factors as highlighted above. Firstly, immediate CT Head scan and pending no acute intracranial abnormality is see, the patient is safely discharged with a responsible adult with written head injury advice to return if any concerns noted. Secondly, admission for neurology observations on the aforementioned ambulatory care unit especially if the clinician does not feel safe to discharge the patient even if the CT brain does not show any acute intracranial abnormality. The clinical case becomes more complex when alcohol is involved with the head injury. In this article we wish to discuss the benefit of early CT Head imaging in the profoundly inebriated patient where accurate GCS evaluation is difficult. A formal neurological examination proves to be beyond the realms at that moment.

Red flag features as per NICE guidance
Frailty Score
GCS at presentation as per NICE guidance
History of chronic alcohol abuse
Previous positive findings on CT Head
History of recurrent falls
History of coagulopathy as per NICE guidance
History of intercurrent illness (unstable International Normalised Ratio (INR))
Alternating GCS

The acutely mentally disturbance in the inebriated patient could be incorrectly attributed to alcohol intoxication alone, whilst it could be possibly due to meningeal irritation due to intracerebral bleed. The dilemma for the clinician is to consider immediate imaging or consider imaging at a later time when the patient is less inebriated or on the development of neurological deficit with lateralising signs. This can prove to be resource intensive with the nursing and medical staff being aware of the clinical signs at reassessment. This also requires dedicated nursing staff trained to assess and evaluate patients with head injury. These patients are noted to be unsteady and thereby increases the fall risk and resultant intracerebral bleed. With the widespread use of CT imaging available in most hospitals in the United Kingdom, accessibility is no longer a significant issue. In large teaching hospitals the CT radiographers are more readily available than in district general hospital where the radiographers have to be called in.

FURTHER DISCUSSION

The pattern of injuries associated with alcohol intoxication was highlighted in a study done by Johnston et al in 2003. The conclusion from the study suggested that alcohol related falls was associated with significant craniofacial abnormalities and the severity of the head injury was directly related to the blood alcohol level. Even with the patient with severe trauma as highlighted in the REACT-2 trial (Sierink, 2016), immediate total body CT scan does not reduce the in-hospital mortality compared with the standard radiological work up. The presence and volume of contrast given during scanning could have a detrimental effect on renal function especially in patients with chronic renal disease. The counter argument could that because of the distracting head injury other injuries to the body could be potentially missed. There would be a more constant need for reassessment of the other body that were not scanned to avoid missing important injuries. As highlighted in the trial, larger studies are required to further evaluate this. In a study done in 1998 Bombardier et al. (1998). the impact of neuropsychological impairment following traumatic brain injury was investigated. The resultant impairment was persistent for one to two months post head injury and was also directly related to the blood alcohol concentration.

Proposal: In view of the various aspects of managing intoxicated head injury highlighted in this article local Emergency Departments in the United Kingdom should implement safety measures to ensure that significant intracranial pathology is not missed on admission. Clinicians should have a low threshold to perform CT Head imaging if there are any clinical concerns on presentation with close monitoring in those patients at high falls risk due to acute alcohol intoxication. A risk scoring tool can be useful that incorporates NICE guidance on CT Head imaging with additional risk factors that predispose to intracerebral bleed. Risks could include the following.

History of chronic alcohol abuse and recurrent falls: Chronic alcohol abuse leads to atrophic changes of the brain, this factor is compounded by the aging brain as has been previously highlighted. It has already been mentioned that in patients with chronic alcoholism have increased chances of falls and sustaining significant head injury.

History of previous positive findings on CT brain imaging: Patients with a history of intracranial bleeding with falls have increased risk of rebleeding into the area that has bled before. If there is longstanding history of mobility problems with residual neurology secondary to the previous traumatic brain injury, this increases both the chances of falls and the risk of further bleed.

History of intercurrent illnesses and coagulopathy: NICE guidance on CT imaging of patients with history of bleeding diathesis and on anticoagulants are considered to be significant risk factors. Any history of intercurrent illnesses would potentially lead to a further derangement of the clotting cascade and thereby increase the chances of bleeding.

Alternating GCS: In the elderly patient population presenting with a head injury with lucid intervals and alternating GCS, the possibility of a subdural haematoma is always present and should be taken as a high-risk patient with immediate scanning.

Conclusion

Careful clinical consideration is required when assessing intoxicated head injury. This often-challenging presentation needs meticulous ongoing assessment and reassessment from presentation to discharge. Staff dedicated in the management of head injury is required in the management of such patients. As highlighted in this article, a risk scoring assessment tool could be useful in potentially identifying the at-risk patients and the necessary steps could be undertaken. The risk assessment tool could be implemented in future studies to validate its wide use in patients with intoxicated head injury.

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