

Original article

Study of utility of head computed tomography after blunt head trauma: Observational study

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Abstract:

Background: Computed tomography (CT) is a vital tool in the workup of patients with closed head trauma. The aim of this study was to investigate the necessity of serial CT scans in patients with blunt head trauma.

Material and Methods: Present study was done in our department of Radio-diagnosis [Bharati Vidyapeeth (Deemed to be University) Medical College & Hospital, Sangli] since last one year. We included patients admitted to emergency department and referred to computed tomography for further confirmation, from cases of blunt trauma.

Results: In our study total of 100 cases were included of them there were 58 male patients while 42 female patients. Patients were included of blunt trauma, of them 8% were found unconscious for some time after injury. Repeated CT helped clinician for follow up and confirming progress of the patient. In our study, maximum patients were related to Road Traffic accident (32%) followed by occupation related injuries (28%). In our study, 78% cases CT was useful in emergency for diagnosis, in 5% cases worked as supportive while in 17% cases was helpful for confirmation as well as only to rule out any injury.

Conclusion: Indications for CT of the head after traumatic brain injury are unclear. The wide range of reported injuries to CT and the changes resulting from surgery and medical treatment suggest that there may be a subset of patients benefiting from CT.

Introduction:

Computed tomography (CT) is an important tool in the treatment of patients with closed head injury. The purpose of this study was to investigate the need for serial CT scans in patients with traumatic brain injury. Blunt head trauma is a common pathology seen in the emergency department (EDs). Preliminary tests include careful examination of nerves and computed tomography (CT) scans of the brain [1]. CT scans represent the first study of choice in current practice to determine the type, extent and severity of traumatic brain injury and to determine follow-up management policy [2]. The first role of brain CT scan and randomized repetition of brain CTs when neuropathy occurs is well established [3]. However, there are no guidelines regarding the need or value for repeat CT scans. There are reports emphasizing the importance of serial CT scans in traumatized patients, while others feel that it is not necessary for most patients. However, patients who present with trauma often receive CT scans to rule out further traumatic brain injury.

Material and Methods:

Present study was done in our department since last one year. We included patients admitted to emergency department and referred to computed tomography for further confirmation, from cases of blunt trauma.

We included patients that were referred from medicine and surgery department to us for further investigation and confirmation.

In our emergency department, trauma patients of all ages are first seen by emergency physicians and residents in casualty department. Our institute has a head trauma protocol. We apply the Canadian CT Head Rules for deciding whether to take a CT scan for all head trauma patients

Inclusion Criteria - All patients with blunt head trauma who were admitted, subjected to two or more CT scans of the brain were included in the study. The decision to repeat a CT scan was taken by the neurosurgeon.

There was no standard protocol for repeating the CT scan of the brain. It was ordered by the neurosurgeon after personal assessment of the patient.

All statistical analyses were performed using SPSS v16.00 statistical analysis software.

Results:

In our study total of 100 cases were included of them there were 58 male patients while 42 female patients.

Patients were included of blunt trauma, of them 8% were found unconscious for some time after injury.

Repeated CT helped clinician for follow up and confirming progress of the patient.

Mean age of patients was 34.61 years with male predominance was noted significantly in our study.

Table 1) Blunt trauma patient’s distribution – etiology

Aetiology	Number of patients (N=100)	Percentage (%)
Falling from tree	3	3
Accident	7	7
Road Traffic injury	32	32
Occupation related trauma	28	28
Heating of object	12	12
Others	18	18

In our study, maximum patients were related to Road Traffic accident (32%) followed by occupation related injuries (28%).

Table2) Utility of CT in patient diagnosis:

Utility of CT in patient diagnosis	Number of patients (N=100)	Percentage (%)
Highly useful in emergency	78	78
Support clinical finding only	5	5
Helpful in confirmation and rule out	17	17

In our study, 78% cases CT was useful in emergency for diagnosis, in 5% cases worked as supportive while in 17% cases was helpful for confirmation as well as only to rule out any injury.

Discussion:

In current cases of trauma, CT scan is the first optional study to determine the type, extent and severity of traumatic brain injury and to determine follow-up treatment law [1]. In critical settings, a cranial CT scan is performed to assess the progression of a non-cranial ulcer by surgeons. It is thought that it may alert the clinician to the need for closer monitoring and predict the outcome [6].

In our study a total of 100 cases included 58 male patients and 42 female patients. Patients were subjected to severe trauma, of which 8% were found unconscious for some time after the injury. Repeated CT helped the clinician track and confirm the patient's progress. Patients' age was 34.61 years and male use was significantly noted in our study. In our study, senior patients were associated with a bicycle accident (32%) followed by work-related injuries (28%). In our study, 78% of CT cases were helpful in emergency diagnostics, in 5% cases they served as support while in 17% cases they were helpful in confirming and removing any injuries.

Some studies clearly show that prospective or non-surgical treatment of traumatic brain injury, particularly intracranial hematoma and major outcome has a significant impact on the decision to order a repeat CT scan [6, 7, 8]. However, if there is no clinical breakdown, a repeat CT scan is less likely to reveal a wound that requires surgical intervention. Further studies have shown that no intervention based on recurrence of CTs unless the patient has coagulopathy, hypotension, intracranial pressure, or significant neurologic deterioration and has concluded that normal CTS of normal cranial cranial is not necessary. But some studies have come to the opposite conclusion. In our study we found that there were some risks in patients who had an underlying disease, but when we searched for the relationship between the type of illness and changes in CTs, due to the small number of small groups, they were statistically insignificant.

Holmes et al. reported that in children with a conventional cranial CT scan after minor head injuries, delays in intracranial sequelae requiring intervention are extremely rare [9]. In our study, we also found that none of the children had a progressive pathological condition on the 2nd CT scan. So our study shows that in children with

head injury, the first cranial CTs are diagnosed, and this age group is so low risk that there is no need for hospitalization for serial neurologic tests and serial CTs are usually not necessary.

Conclusion:

Indications for recurrent CT head after traumatic brain injury are unclear. The wide range of reported injuries to CT and the changes resulting from surgery and medical treatment suggest that there may be a set of patients benefiting from repeated CT.

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