



ORIGINAL RESEARCH PAPER

Neurosurgery

CONSERVATIVE MANAGEMENT OF SIGNIFICANT EXTRA-DURAL HAEMATOMA : CASES AND LITERATURE REVIEW

KEY WORDS: Traumatic Brain Injury, Extra Dural Haematoma, Acute

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ABSTRACT

OBJECTIVE: Study of natural history of significant extra dural haematoma resolution.

BACKGROUND: Traumatic brain injury is one of the leading causes of death. There are various modes of injury like road traffic accident, assault, fall and others. The traumatic brain injury can range from scalp laceration to intracranial haemorrhage. The line of management is decided upon considering several factors like age, co morbidities, Glasgow coma scale neuro deficiency, CT scan findings, other associated injury.

CASE REPORT: A 24-year-old gentleman sustained head injury following road traffic accident. CT scan (head) was suggestive of extradural haematoma. Patient was subjected to decompressive craniotomy and evacuation of extra dural haematoma. On 2nd post-operative day, CT Scan (head) was done which was suggestive of right frontal and right posterior parietal extra dural haematoma. The relatives did not give consent for surgery .Conservative management was done. Patient improved and haematoma resolved. A 42 year old male presented to the emergency with history of head injury . CT Scan was suggestive of extra dural haematoma. Conservative management was done as surgery was refused by the relatives. Patient was monitored. Patient was asymptomatic after discharge and during follow up period.

CONCLUSION: We report two unusual cases of extradural haematoma with a good outcome and uneventful follow up period.

BACKGROUND:

Traumatic brain injury (TBI) or head trauma is a major public health issue worldwide because it is the leading cause of death for patients between second and fourth decades. Epidural or extradural hematoma (EDH), which is a collection of blood between the inner table of skull and dura mater occurs in 1% - 5% of TBI. The classical presentation of EDH comprises a brief loss of consciousness (LOC), followed by a lucid interval of several hours, then, obtundation with focal neurologic signs. Untreated EDH can progress to coma, and eventually death. High risk factors for traumatic EDH include male gender, age between 20 - 30 years and activities at risk such as road traffic, falls, sports and physical assaults.⁽¹⁻⁷⁾

CASE REPORT:

A 24-year gentleman presented to emergency room with history of road traffic accident. He had a short loss of consciousness at the scene.

In the emergency room detailed evaluation, patient had a Glasgow Coma Score (GCS) of 13/15 with altered sensorium and was haemodynamically stable (BP 140/80 mm Hg). CT scan (head) was done which showed Extradural haematoma on right side.

After obtaining informed consent, craniotomy and evacuation of extra dural haematoma was done under general anaesthesia. Intra operatively, complete evacuation of extradural haematoma was done and dural hitch stitches were taken with 3-0 silk. Haemostasis was secured and closure was done in layers with suction drain no 12 in subgaleal plane.

On 2nd Post-operative day, CT Scan (head) was done which was suggestive of recurrence of Extra dural haematoma in right frontal and new extra dural haematoma formation on right posterior parietal region. Volume of right posterior parietal extra dural haematoma was >30 cc³ and midline shift >6mm. Patient had no complaints like headache, vomiting, seizures, pronator drift or any neurological deficit. GCS was 15/15. In view of existing guidelines, surgery was planned. Relatives were counselled. Relatives deferred the surgery in view of GCS being 15/15. So, with their consent we planned for conservative management. It was clearly mentioned to the

relatives that if GCS drops by 2 points or any new neurological deterioration, patient will be subjected to surgery.

Patient did not deteriorate during next few weeks or did not develop any neurological deficit, no headache, vomiting or pronator drift.

Medical management: Initially, on post-operative day1, Mannitol was not started. But on post-operative day 2, CT Scan (brain) was done which was suggestive of midline shift. Mannitol was started in view of his severe midline shift.

Patient was discharged on post-operative, week 3, with a proper follow up schedule.

On follow up, patient was assessed neurologically (GCS, pupillary response, motor weakness, sensory deficit ,cerebellar, higher function and gait). Serial CT scan was done on postoperative week 3, 4 and 9.

The second case, was a 42 year old gentleman, who presented to emergency room with history of fall. On emergency room evaluation, GCS was 15/15 and vital parameters were normal. CT scan (head) was done which was suggestive of extra dural haematoma. Surgery was advised but the relatives refused to give consent for the surgery in view of GCS being 15/15. Patient was managed conservatively and monitored closely in intensive care unit.

Patient was discharged on day 15. Serial CT scan (head) was done. The follow up period was uneventful. The haematoma resolved within 40 days.

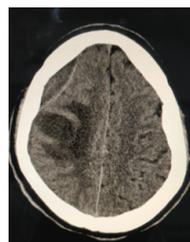


Fig 1 : CT Scan (head) on day 2.

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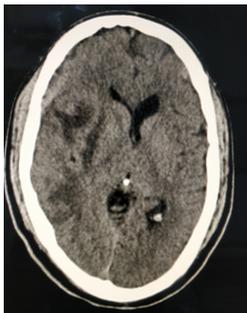


Fig 2 : CT Scan (head) showing midline shift .

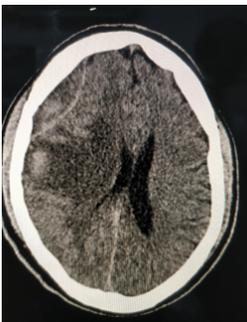


Fig 3 : CT Scan in 2nd week.

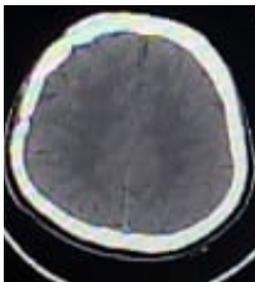


Fig 4 : CT Scan in 3rd week.

DISCUSSION:

Any patient with head injury which presents to the emergency room has a history of road traffic accident, fall, assault or any similar incident with a medicolegal importance.

A thorough clinical examination is performed, especially evaluating the central nervous system (Higher function, cranial nerves, sensory and motor system evaluation, cerebellar, gait, reflexes, power). Patient is resuscitated.

“The indications for Surgery in a case of Extradural haematoma are⁽⁸⁾:

(Level III)

1. EDH volume >30cm³ should be evacuated regardless of GCS
2. EDH with the all the following characteristics can be managed non surgically with serial CT scans and close neurological observation in a neurosurgical centre:
 - a) volume <30cm³
 - b) thickness <15mm
 - c) with midline shift (MLS) <5mm
 - d) GCS >8
 - e) no focal neurologic deficit”

“The timing of surgery recommended⁽⁹⁾:

(Level III)

It is strongly recommended that patients with an acute EDH and GCS <9 and anisocoria undergo surgical evacuation as soon as possible.”

Patient with head injury are asked for a follow up routinely with CT scan for the knowleg=dge of any new haemorrhage

and other changes leading to significant symptoms in the patient, even when there is low suspicion. Usually in low suspicion cases, an intraparenchymal haematoma or contusion is seen, in approximately 40 percent of patients.⁽¹⁰⁻¹²⁾ The reported incidence of delayed epidural hematoma varies from 5.6% to 13.3%.^(13,14,15)

In our case, we did the CT Scan of the patient on post-operative day 2 and subsequently as planned. We observed the formation of extradural haematoma on post-operative day 2, on the same site as well as on the posterior parietal area on right side.

Mohindra *et al* reported two cases of contralateral extradural haematoma, for acute subdural haematoma, after decompressive craniotomy.⁽¹⁶⁾

Ono *et al* retrospectively analysed 272 patients with severe head injury, brought a conclusion that Glasgow Coma Score is the only prognostic factor.⁽¹⁷⁾

On examining our patient, GCS was 15/15, higher functions were normal, there was no neuro-deficit. Patient was haemodynamically stable. Surgery was planned as Extradural haematoma volume was more than 30 cc.

The relatives denied the consent for surgery in view of patient being conscious and oriented.

The guidelines for management of extradural haematoma was explained to the relatives.

With due consent of the relatives, the patient was conservatively managed and closely monitored in Intensive Care Unit, on various Neurological parameters. It was decided that patient will be taken for Surgery if a 2-point drop of GCS was observed.

Patient was discharged in post-operative week 2. The patient was followed up for two months. The follow up period was uneventful.

In the pre CT Scan era, the various surgical procedures like burr holes were one of the diagnostic modalities for the diagnosing extra dural haematomas. The surgical evacuation was almost performed in all the cases of head injury to prevent the further complications like brain stem compression.

In a study done by Rosario *et al* ⁽¹⁸⁾ , a left fronto-parietal haematoma was reported under skull fracture.. The midline shift was significant. Volume of haematoma reported was 30 cc³ but in spite of all this, patient was stable neurologically, hence observed.

It was seen that ,in some studies, small extra dural haematoma resolves with conservative management without any complications. In a case series by Hamilton *et al* ⁽¹⁹⁾ , patient was managed conservatively with no signs and symptoms during follow up period.

Balmer *et al* ⁽²⁰⁾ , describes few cases in their series, being conservatively managed . Surgery was planned only on deterioration neurologically.

CONCLUSION:

This case report aims to add to the management guidelines of extra dural haematoma and questions whether the guidelines need to be revised. Our study recommends that significant extra-dural haematoma more than 30 cc² can be conserved successfully if GCS is 15/15.

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