

Spontaneous Resolution of Acute Subdural Hematoma in Young Adult with Significant Head Injury: A Case Report

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Abstract

Traumatic acute subdural hematoma is one of the most common neurosurgical emergencies accounting for 10-20% of all trauma cases. It is usually associated with mortality rate ranging 50-90% but increases to 90-100% in patients receiving anticoagulants. Majority of these patients are managed surgically by evacuation of hematoma depending upon clinical and radiological findings. Acute subdural hematoma with thickness more than 10mm or midline shift more than 5mm should be evacuated regardless of GCS. Patients with acute subdural hematoma thickness less than 10mm or midline shift less than 5mm should undergo evacuation if GCS drops more than 2 points from admission to injury, pupils asymmetrical, fixed or dilated or ICP more than 20mmhg. Whereas conservative treatment is warranted for patients with acute subdural hematoma thickness less than 3mm. There are case reports regarding spontaneous resolution of acute subdural hematomas even with thickness more than 10mm and midline shift more than 5mm but clear incidences are not available. Here in our article we represent a case of young adult with post traumatic acute subdural hematoma which resolved spontaneously within three days after head injury.

Keywords: Traumatic Acute Subdural Hematoma; Spontaneous Resolution; Conservative Management.

Introduction

Traumatic acute subdural hematoma is one of the most common neurosurgical emergencies accounting for 10-20% of all trauma cases [1]. It is associated with higher magnitude of impact damage as compared to extradural hematoma and is more lethal. Patient may be symptomatic either midline shift due to hematoma, brain parenchymal injuries or possibly due to cerebral edema [2]. It is usually associated with mortality rate ranging 50-90% but increases to 90-100% in patients receiving anticoagulants [3].

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There are two common mechanisms for traumatic acute subdural hematoma: accumulation around parenchymal lacerations and tearing of surface or bridging veins. Majority of these patients are managed surgically by evacuation of hematoma depending upon clinical and radiological findings. Acute subdural hematoma with thickness more than 10mm or midline shift more than 5mm should be evacuated regardless of GCS. Patients with acute subdural hematoma thickness less than 10mm or midline shift less than 5mm should undergo evacuation if GCS drops more than 2 points from admission to injury, pupils asymmetrical, fixed or dilated or ICP more than 20mmhg [4]. Whereas conservative treatment is warranted for patients with acute subdural hematoma thickness less than 3mm. There are case reports regarding spontaneous resolution of acute subdural hematomas [5] even with thickness more than 10mm and midline shift more than 5mm but clear incidences are not available. Time interval for spontaneous resolution may vary from few hours to few days after the head injury [6].

Here in our article we represent a case of young adult with post traumatic acute subdural hematoma which resolved spontaneously within three days after head injury. We will also review about possible mechanisms associated with this phenomenon.

Case Presentation

A 21 year old young adult brought to emergency department after alleged history of road traffic accident about one hour back. There was history of headache and brief loss of consciousness. Vitals were stable and GCS was $E_3V_4M_5$ (12/15) with no focal neurological deficit. On CT Head there was an acute subdural hematoma on right side with thickness of 12mm and midline shift of 7.2mm. The patient's attendants were not ready for emergency surgery and also based upon above initial clinical findings patient was put on conservative management with regular vitals and GCS monitoring. As the clinical status of patient improved on next day with GCS $E_4V_4M_5$ (13/15) and there was no deterioration of vitals, conservative management was continued. Patient completely recovered neurologically on third post

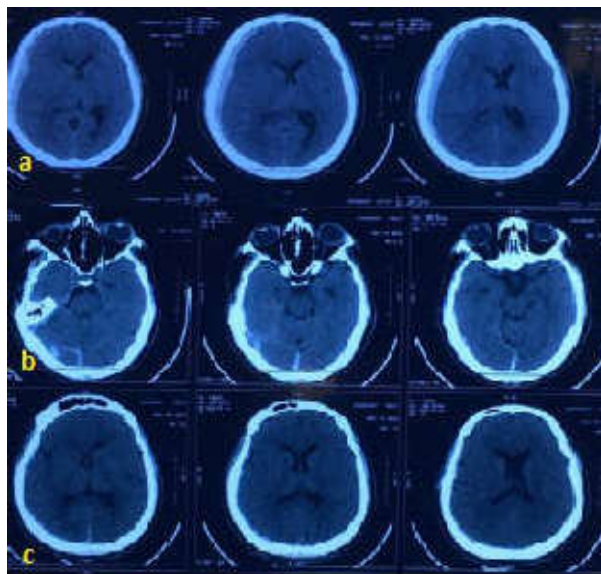


Fig. 1(a): NCCT Head showing Acute subdural hematoma along right cerebral hemisphere of 12mm thickness and 7.2mm midline shift. **Fig. (b)** showing redistribution of subdural hematoma around the tentorium. **Fig. (c)** showing complete resolution of acute subdural hematoma on fourth day.

traumatic day with GCS $E_4V_5M_6$ (15/15). A CT Head was repeated on fourth day which revealed significant resolution of acute subdural hematoma. Later patient referred to orthopedic department for management of limb trauma.

Discussion

Acute subdural hematoma with thickness more than 10mm and midline shift more than 5mm always warrants surgical evacuation regardless of GCS as per standard guidelines till date. But there are some case reports of spontaneous resolution of acute subdural hematoma which happens between few hours to few days after head injury [7].

There are two possible mechanisms regarding spontaneous resolution of acute subdural hematoma: "CSF washout effect" through arachnoid tears [8] and "compression and redistribution" of hematoma [9].

In first mechanism some cases of acute subdural hematoma are usually associated with arachnoid tears. These tears allow flow of CSF into subdural space which dilute the hematoma and reabsorbed back in subarachnoid space. In second mechanism, increased ICP and cerebral swelling results in compression and redistribution of hematoma in inter hemispheric and cerebellar tentorium subdural spaces. And also accompanying dural tears and skull fractures may drain hematoma into interdiploic and subgaleal spaces.

Some radiological signs have been suggested for likelihood of resolution of acute subdural hematoma. Presence of low density layer between hematoma and inner plate of skull is suggestive of CSF in subdural space is an favorable sign supporting our hypothesis of "CSF washout effect" through arachnoid tears [10]. Another signs may show beaking into sulcus or cistern. Follow up CT scan of our patient demonstrated significant reduction in thickness of acute subdural hematoma. Redistribution of blood to the cerebellar tentorium on the same side on follow up CT scan support the hypothesis of "compression and redistribution". Also the presence of low density layer between inner table and hematoma in first CT scan support the hypothesis of "CSF washout effect" through arachnoid tears.

Conclusion

All the patients of acute subdural hematoma, even with significant thickness and midline shift may not require craniotomy for evacuation of hematoma, depending upon their initial clinical presentation and further progression.

The patients who do not deteriorate after initial presentation and the surgery have been delayed due to any cause, should undergo repeat CT scan for

assessment of progression or resolution of acute subdural hematoma. It may avoid some number of unnecessary craniotomies.

Conflict of Interests

The authors declare that they have no conflict of interests.

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