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Traumatic Cerebellar Hematoma: A Single Institute Experience

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ABSTRACT

Background-Traumatic cerebellar hematoma(TCH)is rare, but they are important cause of morbidity and mortality.
Method-Thisretrospective study was conducted over two years on patients of head injury at a tertiary care centerat Rajasthan(India).
Result- A total of 3610 patients with head injury were admitted in 2 year study period in which 14(0.39%) patientswere with TCH.Out of 14 patients, GCS at time of admission of 9patients (64%) was ≥8 and that of 5 patients (36%) was <8.Patients with GCS ≥8 were initiallymanaged conservatively; of which 2 patients deteriorated in which CSF diversion procedure done.Out of 5 patients with GCS <8, two patients expired and 3 patients were operated(soboccipitalcraniectomy with evacuation of hematoma).
Conclusion- TCH is a rare but life threatening condition. Management and outcome depends on initial GCS, hematoma size, location of hematoma,and development of acute hydrocephalus.

KEYWORDS Traumatic cerebellar hematoma, GCS, shunt, craniectomy.

Introduction

Traumatic cerebellar hematomasarefar more rare in comparison to hematoma caused by hypertension. Though these traumatic lesions contribute to very small percentage of head injuries, but their management is very challenging in comparison to supra-tentorial lesion of same size and volume.This is due to lesser capacity of posterior fossa to adapt to any further increase in volume. These hematomas may be the isolated lesions or there can be other concomitant lesions of the posterior fossa like extradural hematoma, subdural hematoma or similar lesions in supra-tentorial compartment. These traumatic cerebellar hematomas may differ in presentation; most of them have acute onset and very few present in delayed fashion. Factors such as hematoma volume, location, GCS, status of 4th ventricle as well as cisterns determines and other concomitant injuries determine the final outcome.

Materials and methods

This retrospective study was conducted on patients of head injury from November 2014 to October 2016 in a tertiary care center in Southern Rajasthan (India). Data was collected and analyzed in terms of demography, mode of injury, management protocol, prognostic factors and outcome of TCH.

Results

Out of the 3610 patients who were admitted to our neurosurgery department due to severe cranial trauma during a period of 2 years (from November 2014 to October 2016) cranial CT examinations showed traumatic posterior fossa conditions in 14 cases (0.39%).

The mean age of the patient in our series is 24.8 years (Range 6 months to 64 years). Out of the 14 cases, 11patients (78.6%) had fracture of occipital bone.Four patients (28.6%) had associated supra-tentorial lesion also.Out of 14 patients 11 were male (79.6%) and 3 were female (21.4%).Ages of the patients ranged between 1-64 years (mean 28.4 years).Causes of injury were RTA (11 cases), fall from height (two cases) and fall of object on head (one case).GCS ranged between 4 and 15 at presentation.Out of 14 patients, GCS at time of admission of 9 patients (64%) was ≥8 and that of 5 patients (36%) was <8.On initial scan, size of hematoma <3cm in 10 patients (71.5%) and >3cm in 4 patients (28.5%).All the patients with GCS≥8 (n-9) were initially managed conservatively; of which 2 patients deteriorated in which CSF diversion procedure done.Rest of the patients wasput on closed observation and with serial CT scan.Hematomas in these cases decreased in size.Out of 5 patients with GCS <8, two patients expired and 3 patients were operated (soboccipitalcraniectomy with evacuation of hematoma). Out of these two patients who expired one died because of sudden cardiopulmonary arrest before he could be operated on.Later on one patient with suboccipitalcraniectomy expired.The mean hospital stay for the patients was 9.4 days (Range 3 days to 41 days). Overall mortality in this study was 21%. Amongst severe head injury group this mortality rate was 60%. All the patients with GCS of more than eight at admission have favorable GOS at discharge and at three-month follow-up. Only one patient who sustained severe head injury had favorable outcome at three-month follow-up and remaining one patient is in vegetative state even after a follow up of 6 months.

Discussion

Traumatic cerebellar hematoma are far rare in comparison to post-traumatic intracerebral hematoma and are described in < 1% of all head injuries [1,2].Literature regarding these rare lesions of posterior fossa is sparse [1-11].In our series the incidence of cerebellar hematoma is 0.4%, which is comparable to other series by D'Avella et al [3], Takeuchi et al [4], Sato et al [5],theyhave reported an incidence of hematoma 0.54%, 0.4%, and 0.7% respectively.

All the age group can be affected by cerebellar hematoma. A series by Zuccarello et al [6] identified that young adults are more susceptible to these injuries due to motor vehicular accidents. In our seriesthe mean age of the patient in our series is 24.8 years and the affected age range was 6-month child to 64-year elderly male.

In the study of the 49 patients with a traumatic posterior fossa condition, conducted by Dirim et al[12], 59% had only occipital fracture.In this series of 14 cases, 11 patients (78.6%) had fracture of occipital bone.

CT scan is the investigation of choice to evaluate the traumatic cerebellar hematoma and other associated traumatic lesions. Hematoma volume is calculated by using ABC/2 formula, where A is the greatest distanceon CT, B is the diameter perpendicular to A and C is the number of CT slices among lesion, multiplied by slide thickness[13].

The appearance of signs of raised intracranial pressure, are corroborative with the volume of hematoma. Takeuchi et al

[4]observed that the average hematoma volume of 12.4 (+/-) 11.9 cm3 in his unfavorable outcome group in comparison to 2.2 (+/-) 2.6 cm3 in the favorable outcome group (p = 0.025).

In our serieson initial scan the size of hematoma in greatest distance was <3cm in 10 patients (71.5%) and >3cm in 4 patients (28.5%) with greater mortality in patients with hematoma size more than 3 cm in maximum diameter. Volumetric analysis of these hematomas in our study showed the patients in favorable outcome group has the mean hematoma volume of 2.4 cm^3, whereas with unfavorable group the mean volume was 13.1 cm^3.

Buczek et al[14],advocated that although before advent of CT the prevailing opinion was that all intra-cerebellar hematoma should be treated surgically, the present view is that small size, peripheral location in cerebellar hemispheres, laterally situated, without any of symptoms of intracranial hypertension and with frequent CT controlthese may be treated without surgical intervention.

In our series 14% patients (n-2) underwent CSF diversion procedure on account of hydrocephalus, 21% patients (n-3) underwent posterior fossa decompression surgery (craniectomy and hematoma evacuation).

The patients who had initial GCS eight or less have a mortality rate of 60%, whereas overall mortality was 21% in this study. All the patients with GCS of more than eight at admission have favorable GOS at discharge and at a follow-up of three-month. Only one patient who sustained severe head injury had favorable outcome at three-month follow-up and remaining one patient is in vegetative state even after a follow up of 6 months.
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Conclusion

Traumatic cerebellar hematoma is rare but life threatening condition. With availability of CT scan all around, frequent neurological checks in intensive care units, conscious patient, patients with small hematomas can be observed. Management and outcome depends on initial GCS, hematoma size, location of hematoma, and development of hydrocephalus.

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