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TRAUMATIC POSTERIOR FOSSA EXTRADURAL HAEMATOMA, A DIAGNOSTIC DILEMMA

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ABSTRACT

BACKGROUND: *Posterior fossa extradural haematoma occurring as a result of traumatic head injury make up one of the most serious emergencies.*
OBJECTIVE: *To evaluate the outcome of Posterior fossa extradural haematoma in our setup.*
MATERIAL AND METHODS: *This descriptive study was conduced at Department of Neurosurgery Liaquat University Hospital Jamshoro / Hyderabad over a period of 18 months from July 2007 to Dec 2008. Patients with head injuries admitted during the study period were evaluated. Patients with extradural hematoma observed on CT scan were included in the study. Data was recorded on pre-designed proforma.*
RESULT: *Ten male patients with age ranged from 7 to 30 years with a mean age of 18.5 years were found with posterior fossa extradural hematoma. The cause of injury was fall from height in 5 cases (50%), road traffic accident in 3 cases (30%) and assault in 2 cases (20%). All patients had evidence of external injury to the occipital area. Most of the patients were neurologically intact except for 3 patients whose GCS was 8 or below at the time of admission. One patient expired before reaching the operation theater. All other patients showed good recovery.*
CONCLUSION: *Posterior fossa extradural haematoma are usually asymptomatic initially. After this silent phase, clinical deterioration is rapid and can be lethal. Every patient of occipital trauma should be investigated with CT scan.*

KEYWORDS: Occipital trauma, brain stem compression, posterior fossa, extradural haematoma

INTRODUCTION:

Traumatic hematomas of posterior cranial fossa occur much less frequently than supratentorial hematomas.[1] Posterior cranial fossa extradural hematoma (PFEDH) is reported in 0.3% of all head injuries and 10% of all extradural hemorrhage.[2] Most of extradural hematomas result from fracture of temporal bone resulting in bleeding from middle meningeal artery or its branches. However, posterior fossa hemorrhages associated with occipital trauma are usually secondary to dural venous sinus hemorrhage.[3]
The great majority of patients who develop PFEDH have sustained direct occipital trauma, usually from a fall backward, a blow to the head or in association with motor vehicle accident.[1, 3]
The clinical diagnosis of PFEDH is not easy as the appearance and signs are non-specific, the clinical sign and symptoms of PFEDH are caused by medullary compression, cerebellar dysfunction and raised intracranial pressure by obstructive hydrocephalus.[4] The classical manifestation of supratentorial EDHs such as lucid interval and lateralizing signs are absent.[4,5] Since the advent of CT scanning, the diagnosis of this lesion has been simplified and prognosis has improved.[6] Surgery can be life saving if performed in a timely manner.[7,8]

PATIENTS AND METHODS:

This study was conducted at the department of Neurosurgery Liaquat University Hospital Hyderabad, Sindh Pakistan, during July 2004 to Dec 2007. Cranial CT examinations of 210 patients admitted to Neurosurgery department after cranial trauma were evaluated and clinical findings were assessed up on admission and level of consciousness classified according to Glasgow coma scale (GCS). Patients with extradural hematoma observed on CT scan were included in the study. A predesigned proforma used to collect the data. Frequencies were calculated through IBM SPSS version 17.

RESULTS:

There were 10 male patients with PFEDH, age ranged from 7-30 years with mean age of 18.5 years. The cause of injury was fall from height in 5 cases (50%), road traffic accident in 3 cases (30%) and assault in 2 cases (20%). Table I

The most important finding was occipital injury in the form of abrasion in 8 cases (80%), lacerated wound or swelling. In 6 cases (60%) the PFEDH was the only significant intracranial pathology, whereas in remaining 4 cases, one patient (10%) had supratentorial Occipital EDH, 2 patients (20%) had frontal contusion and 1 had subarachnoid haemorrhage.

The GCS was 15/15 in 3 patients (30%), 13-14/15 in 4 cases (40%), while remaining 3 patients (30%) has GCS 8/15 or below. The occipital fracture was seen in 5 patients (50%) as shown in Table II. CT scan of 3 patients (30%) revealed early hydrocephalus but none of the patients was treated with external ventriculostomy drain. Nine patients (90%) underwent sub Occipital craniectomy and evacuation of hematoma, recovered without any neurological deficit. One case was lost due to cardio-respiratory arrest before he could be operated upon.

Intraoperatively 9 patients (90%) found to have solid clot and no active bleeding seen. In one patient, a gush of non clotted blood with high pressure came out as burr hole was made in occiput. There was no mortality in the cases that were operated. Associated epidural haematoma rate was found in 2 patients (20%).

DISCUSSIONS:

Traumatic posterior fossa extradural hematomas are relatively rare as compared with their supratentorial compartments.[7,14] These bleeds are commonest in the 20-47 years age group as well as the pediatric age group.[8] Bleeding is thought to be venous is most cases. [9]

External injury to the occiput was the most common feature in this study. Seven out of 10 cases (70%) had local trauma to the back of head. Confirmation of an Occipital abrasion, haematoma or laceration should direct the surgeon to exclude a PFEDH. Occipital fractures occur in about 58-70% of PFEDH and should arouse the suspicion of examining physician. [10, 11] In this series 5 out of 10 (50%) cases had a fracture diagnosed on skull x-rays, 3 (30%) cases were diagnosed Intraoperatively, while there was no fracture found in 2 cases (20%).

A fracture line that traverses the lateral sinus is a vital indicator of PFEDH.[12] Another significant radiological sign is diastasis of lambdoid suture. A categorization of extradural haematoma based on the interval among the traumatic events and operation is well familiar. Acute onset is less than 24 hours, subacute is between 24 hours to 10 days and chronic is up to 10 days.[13]

In acute phase, with the beginning of symptoms with in 24 hours, compression of brain stem structures may lead to quick deterioration [10]. In subacute phase, with the beginning of symptoms within 24 hours to 10 days, there is slower increase of extradural haematoma, permit accommodation of brain stems and cerebellar structures, cerebellar and medullary dysfunctions occur besides hydrocephalus[1]. The chronic phase with the onset of symptoms become evident weeks or months after trauma is rare [3, 11]. Because of frequently non specific clinical presentation, the diagnosis of PFEDH is established with the aid of CT scanning.

On non-enhanced CT scan, acute epidural haematoma is observed as high density collection found between the brain and bone. If blood keeps on to accumulating fast, one can see low density areas inside the lesion. Although magnetic resonance imaging (MRI) is more sensitive in detection of associated parenchymal condition or dural venous thrombosis possibly associated with PEFDH [17, 18]. But acquiring an MRI study is not easy in unstable trauma patients, the initial imaging of choice and the most usually used technique is still unenhanced CT. Presence of hydrocephalus on CT is an ominous sign [19]. In our study 6 out of 10 patients were children, a same age range was reported by Osborn et al and Bozbuoa et al. [18, 20] Seven patients were with PEFDH but without any

TABLE I
MODE OF INJURY

Mode	Number of patients	Percentage
Fall From Height	5	50%
Road Traffic Accident	3	30%
Assault	2	20%

TABLE II
GCS ON ARRIVAL, CLINICAL COURSE, BLOOD PRESSURE, OCCIPITAL SOFT TISSUE AND SKULL INJURIES

Sr. No.	GCS on arrival	Clinical course	Blood pressure stable	Occipital Soft tissue injuries	Fracture on Skull X-ray
1	13	Acute	Yes	Abrasion	No
2	15	Subacute	Yes	Laceration	No
3	14	Acute	Yes	Hematoma over occiput	Yes
4	15	Subacute	Yes	NIL	No
5	8	Acute	Hypotensive	Laceration	Yes
6	7	Acute	Hypotensive	Laceration	Yes
7	14	Acute	Yes	Abrasion	No
8	15	Subacute	Yes	NIL	No
9	8	Acute	Hypotensive	Hematoma over left occiput	Yes
10	14	Acute	Yes	Hematoma over occiput	Yes

associated traumatic pathology, 3 had GCS of E4M6V5 and completely normal neurological examination at presentation, another 4 cases had drowsiness with vomiting, where as rest of 3cases had GCS 8 or below.

In our study eight patients went through sub Occipital craniectomy 1 patients managed conservatively, while one patient lost before reaching the operation theater. All 9 cases had complete recovery after treatment and follow up. Deciding between conservative and surgical management is some what controversial [21, 22]. A GCS score of 15 and the exclusion of both mass effect and associated lesions are the criteria to indicate conservative therapy. All patients in subacute groups had an excellent outcome; this is similar with reports in the literature.[20] In this series the overall morality rate is comparable with other studies.[2, 20] It is likely to be explained by the use of cranial CT scanning and consequent early diagnosis and prompt treatment.

CONCLUSION:

Patients with cranial trauma involving the occiput should be definitely examined with cranial CT scan. Patients of occipital trauma should be kept under observation to see any late deterioration even if they are neurologically intact.

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