VOLUME - 10, ISSUE - 04, APRIL - 2021 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Neurosurgery

DIAGNOSIS AND MANAGEMENT OF ACUTE EXTRADURAL HAEMATOMA-A 6 YEARS STUDY AT MEDICAL COLLEGE HOSPITAL,BIKANER

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ABSTRACT

Background: Extradural haematoma refers to an extra-axial accumulation of blood between the dural lining of brain and the inner table of skull. Acute EDH may expand rapidly and it is a neurosurgical emergency requiring prompt surgical evacuation.

Methods: This research article is based on diagnosis and management of acute EDH in the neurosurgery department of SP medical college and associated group of hospitals,Bikaner in the 6 years duration from 2014 to 2020.It comprises of the evaluation of 235 cases of acute EDH who underwent surgical evacuation of the haematoma.

Results: Following surgical treatment,83.83% of the acute EDH patients had a favourable outcome in our study group.

Conclusion:CT scan is the most reliable diagnostic modality for EDH.Timely intervention can be life saving in this potentially life threatening emergency.There is excellent functional outcome after surgical evacuation when the EDH is rapidly detected and evacuated.

KEYWORDS : EDH:Extradural haematoma, CT:Computed tomography

INTRODUCTION

Extradural haematoma,also known as epidural haematoma, is a collection of blood between the inner table of skull bone and the duramater.It is a life threatening condition.Incdence of EDH in patients hospitalized for head injury ranges between 1 to 3%. (1,2,3). EDH commonly occurs between the age of 10 to 40 years (4). It is more common in males with a male to female ratio of 4:1. The usual sites of occurrence of EDH are temporal in 60% to 80% and frontal in 5%to15% of cases(5). The middle meningeal aretery and its branches are the common source of bleeding inEDH. The middle meningeal veins and venous sinuses are other sources of bleedingin EDH. Bleeding from diploic channels as a result of a skull fracture or from a torn dural venous sinus are other sources of bleeding.The nature and the source of haemorrhage determine the speed of haematoma collection ranging from catastrophic rapidity to a slow ooze. The site of injury to the skull determines the source and site of haematoma. Rapid diagnosis and evacuation are crucial for good outcome.

MATERIAL AND METHODS

This study has been carried out in the Department of Neurosurgery,S.PMedical College and Associated Group of Hospitals,Bikaner.The study consists of 235 cases who underwent surgery for acute EDH over the 6 year period from 2014 to 2020.The patients in the study group were subjected to detailed history taking,physical examination,haematological examination, biochemical examination and radiological examination. X ray of skull in conscious patients and CT scan of head in all cases were done.The patients were managed according to the routine protocol.Surgical procedure comprised of craniotomy with evacuation of hematoma except in the cases of posterior fossa haematomas for which craniectomy with evacuation of hematoma was the procedure adopted and prompt haemostasis was achieved.

RESULTS

Table 1. Age wise distribution of cases

Age group in years	No of cases	Percentage
≤ 20 years	68	28.94%
21-40 years	104	44.26%
41-60 years	45	19.15%
>60 years	18	7.66%
Total	235	100.00%

Maximum (44.26%) patients were from 21-40 years age group followed by 28.94% patients were from ≤ 20 years age group, 19.15% patients were from 41-60 years age group and 7.66% patients were more than 60 years age group.

Table 2. Sex wise distribution of cases

Sex	No of cases	Percentage
Male	212	90.21%
Female	23	9.79%
Total	235	100.00%

90.21% patients were male and 9.79% patients were female.

Table 3. Side wise distribution of cases

Side of EDH	No of cases	Percentage
Right	125	53.19%
Left	105	44.68%
Bilateral	5	2.13%
Total	235	100.00%

Most common side of EDH was right side (53.19%) followed by left side (44.68%) and bilateral (2.13%).

Table 4. Location wise distribution of cases

location of EDH	No of cases	Percentage
Frontal	61	25.96%
Temporal	84	35.74%
Parietal	79	33.62%
Posterior fossa	5	2.13%
Occipital	6	2.55%
Total	235	100.00%

Most common location of EDH was temporal region(35.74%) followed by parietal (33.62%), frontal (25.96%), occipital (2.55%) and posterior fossa (2.13%)

Table 5. Distribution of EDH cases according to bone fracture

Bone fracture	No of cases	Percentage
EDH with fracture	37	15.74%

EDH without fracture	198	84.26%
Total	235	100.00%

84.26% patients presented without bone fracture and 15.74% patients presented with bone fracture.

Table 6. Distribution of EDH cases according to prognosis

Prognosis	No of cases	Percentage
Death	38	16.17%
Survival	197	83.83%
Total	235	100.00%

16.17% patients died and 83.83% patients survived.

DISCUSSION

EDH deserves a high index of suspicion in every patient with head injury.EDH is an extraaxial collection of blood within the space between the outer layer of dura mater and the inner table of the skull.The space between the dura mater and inner table of skull is normally only a potential space. Hence the stripping of the dura off the inner table is essential before the torn branches of meningeal vessels can bleed extradurally. Direct force applied to the skull is more likely to strip the dura (5,6). EDH is more likely to be encountered in fall from height, indirect injuries such as assault, fall of heavy object and in depressed fractures and road traffic accidents(7,8).Non-traumatic causes include infection ,abscess, coagulopathy, haemorrhagic tumors and vascular malformations.

The clinical presentation of patients with EDH may be the following (2,9)

1 Conscious throughout
2 Unconscious throughout
3 Initially unconscious and subsequently recovered
4 Initially conscious followed by loss of consciousness
5 Initially unconscious,followed by recovery, later followed by a second loss of consciousness.

The triad of head injury with lucid interval, mydriasis on the side of haematoma and contralateral paresis occurs only in 18% of cases.

Dilated and non reactive pupil can be associated with ipsilateral hemplegia. This is due to indentation of the contralateral cerebral peduncle by the edge of the tentorium cerebelli .Initially pupil on the side of EDH contracts due to irritation of the occulomotor nerve, the opposite side pupil remains normal in size. In the next stage the ipsilateral pupil dilates due to paralysis of occulomotor nerve. Finally the pupils of both sides become dilated and fixed.

Diagnosis:X ray of skull should be done in conscious patients.The presence of skull fracture increases the risk of intracranial haematoma.

CT scan of head-plain: CT scan is the mainstay of diagnosis of EDH.Acute EDH is described as biconvex lens shaped hyperdense lesion on CT scan . The temporo-parietal convexity is the most common site. A contralateral clot occurring five hours after unilateral clot was observed(10,11) .If basal cisterns on the ipsilateral side cannot be seen, uncal herniation may be assumed. Lanksch et al felt that displacement of septum pellucidum by more than 8mm and diffuse oedema of the white matter are bad prognostic signs(12)

Management:Surgical intervention is recommended in patients with acute EDH and in hematoma volume of more than 30 ml.Weinmann and Muttukumaru reported a mortality of 20% from Colombo(13).The mortality in patients who are already comatose is higher as evidenced by the study of Tandon PN. Among 47 patients who were unconscious from time of injury till surgery and were operated upon by Tandon for EDH,26 had a fatal outcome,that is,the mortality rate was 55.3% whereas the mortality rate was 11.1% in patients who were drowsy and disoriented at the time of surgery(14). Similarly,mortality is greater when one pupil is dilated and greatest when both pupils are dilated before surgery(15).

CONCLUSION

Early diagnosis and prompt management are the keys to good outcome in EDH patients.In our study group, EDH was commonest in 21 to 40 years age group.It was found to be more common in males as compared to females with a M:F ratio of 90.2%:9.8%.Temporo-parietal region was the commonest site of EDH in the study.The investigation of choice concluded by the present study was plain CT scan of head.Outcome was favourable in 83.83% of surgically treated patients.Outcome of treatment was found to depend upon the level of consciousness,primary neuronal damage,pupillary reaction and associated neurological deficits at the time of presentation.

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