

ORIGINAL ARTICLE

Outcome of Traumatic Posterior Fossa Epidural Hematomas

AZMAT ULLAH KHATTAK, MIAN IFTIKHAR-UL-HAQ, FAROOQ AZAM

Department of Neurosurgery, PGMI / HMC, Peshawar

ABSTRACT

Objective: To present our experience in the management and outcome of posterior fossa epidural hematoma (PFEDH).

Materials and Methods: It was a descriptive study, conducted in Head injury unit Hayatabad Medical Complex, Peshawar, from December 2009 to October 2012. All patients having traumatic posterior fossa extradural hematoma confirmed on CT Brain were included in this study. The information regarding patient demographical details, clinical presentation, operative finding and post operative follow-up findings were entered into a semi structure Performa. The data was analyzed by SPSS version 17.

Results: Out of 41 patients, there were 32 (75.6%) males and 9 (21.9%) females. The age of patients ranged from 5 to 60 years. In this study the mean age was 20.4 years. Majority of patients 17 (41.4%) were in the age range of 21 – 30 years. Pre-operative GCS score were recorded in which most of the patients 21 (51.2%) were in the GCS score 13 – 15. Clinically 33 patients presented with vomiting, 25 with altered level of consciousness, and 29 with headache. Post-operative GCS score were recorded in which 31(75.6%) patients were in the GCS score 13 – 15, 9 (21.9%) patients were in the GCS score 9 – 12 and 1 (2.43%) patient was in the GCS score 3 – 8.

Conclusion: CT scan brain should be immediately done if there is even little doubt of posterior fossa extra-dural haematoma (PFEDH). Posterior fossa craniectomy has got good results. Mortality and morbidity can be decreased in PFEDHs if they are diagnosed earlier and promptly treated.

Key words: Management, Posterior cranial fossa, Epidural hematoma.

Abbreviations: PFEDH = Posterior Fossa Extra-dural Haematoma, GCS = Glasgow Coma Scale, CT Scan = Computerized Tomography.

INTRODUCTION

Posterior fossa epidural hematomas (PFEDH) are rare entities, with dark prognosis due to their specific localization. Epidural hematoma is seen in 1% of patients who present with head trauma. Posterior fossa epidural haematomas represent about 10% (range 3.4 – 12.9%) of all cases of epidural haematoma.^{1,2}

Epidural hematoma generally develops by separation of the periosteal dura from the calvarium and rupture of the interposed vessels after trauma. PFEDH is of venous origin in 85% of the cases and develops as a result of injury to the transverse or sigmoid sinuses secondary to occipital fracture. The classical history of an epidural hematoma is a short interval of post-traumatic unconsciousness followed by a lucid period

that lasts for hours, which in turn is followed by somnolence and development of potentially fatal neurological findings secondary to compression.³⁻⁵

Brain computed tomography remains the current first line investigation to demonstrate such bleeds. The characteristic image is a well localised, hyperdense, extracerebral biconvex lesion of blood. Since the volume of the posterior fossa is limited, patients deteriorate early with the development of obstructive hydrocephalus, which is visible in the CT scan in only thirty percent of cases. On MR imaging, acute epidural hematoma is seen as a localized extra-axial collection between the dura and the inner table. Imaging of the dura as a line with very low signal between the hematoma and the brain parenchyma is pathognomonic for epi-

dural hematoma. While it is not always possible to differentiate small epidural hematomas that have not formed a biconvex shape yet due to small volume, demonstration of dura between the parenchyma and the hematoma is diagnostic on MR imaging. PFEDH with low GCS or the haematoma of more than 10 ml should be operated.⁶⁻⁹

The present study was conducted to study the management and outcome of PFEDH. This will help neurosurgeons in early diagnosis and timely management of PFEDH and thus mortality and morbidity of PFEDH will decrease markedly.

MATERIALS AND METHODS

It was a descriptive study, conducted in Head injury unit Hayatabad Medical Complex, Peshawar, from December 2009 to October 2012. A total forty – one patients having traumatic posterior fossa epidural hematoma confirmed on CT brain were included in this study. The exclusion criteria were supra-tentorial EDH, PFEDH due to bleeding disorders or post-operatively. Those patients were operated where the volume of hematoma on CT scan was more than 10 ml and deteriorating neuro-conscious level. Surgery consisted of doing occipital craniectomy and evacuation of the hematoma. All patients were followed up to their stay in hospital and GCS scale was used to measure the outcome. GCS 9 and above was considered as favorable and below 9 unfavorable.

The information's regarding patient demographical details, clinical presentation, operative finding and post-operative follow-up findings were entered into a semi structure Performa. The data was analyzed by SPSS 17.

RESULTS

Out of 41 patients, there were 32 (75.6%) males and 9 (21.9%) females (Table 1).

The age of patients ranged from 5 to 60 years. In this study the mean age was 20.4 years. Majority of

Table 1: Gender distribution.

Gender	Number	Percentages
Male	32	75.6
Female	9	21.9
Total	41	100%

patients 17 (41.4%) were in the age range of 21 – 30 years (Table 2).

Table 2: Age distribution.

Age (Years)	Number	Percentages
5 – 10	3	7.31
11 – 20	6	14.6
21 – 30	17	41.5
31 – 40	7	17.1
41 – 50	6	14.6
51 – 60	2	4.9
Total	41	100%

Pre-operative GCS score were recorded in which 21 (51.2%) patients were in the GCS score 13 – 15, 11 (26.9%) patients were in the GCS score 9 – 12, 8 (19.5%) patients were in the GCS score 7 – 8 and only one (2.43%) patient was in the GCS score 5 – 6 (Table 3).

Table 3: Glasgow coma scale.

GCS Score	No of Cases	Percentage
5 – 6	1	2.43%
7 – 8	8	19.5%
9 – 12	11	26.9%
13 – 15	21	51.2%
Total	41	100%

Clinically 33 patients presented with vomiting, 25 with altered level of consciousness, and 29 with headache (Table 4).

Table 4: Clinical features.

Clinical Features	Number	Percentages
Vomiting	33	80.5
Altered level of consciousness	25	61.9
Headache	29	70.7

Outcome

Post-operative GCS score were recorded in which 31 (75.6%) patients were in the GCS score 13 – 15, 9 (21.9%) patients were in the GCS score 9 – 12 and 1 (2.43%) patient was in the GCS score 3 – 8 (Table 5).

Table 5: Post-operative Glasgow coma scale.

GCS score	Number	Percentages
13 – 15	31	75.6
9 – 12	9	21.9
3 – 8	1	2.43
Total	41	100%

DISCUSSION

Epidural haematoma of the posterior fossa is relatively rare and can be easily missed. Due to the small volume of the posterior fossa and contained important structures mortality can be high if the haematoma is missed. A high index of suspicion is needed for timely intervention to prevent death.^{5,7,10}

PFEDHs are common in the third and fourth decades as well as in the pediatric age group.^{4,5} In our study the highest incidence is in third decade followed by fourth decade.

In the present study, male – female ratio of 4:1 is reflection of our social culture where most of our females are housewives and are not exposed to external works. Yilmazlar S has also reported male dominance in his study.¹¹

Signs and symptoms in the majority of cases are nonspecific for acute PFEDH. Some studies have shown that altered level of consciousness was the commonest clinical signs.¹² In the present study vomiting (33 = 80.5%) followed by headache (29 = 70.7%) were the commonest complaints. This difference is because of the fact that PFEDH has got a very variable presentation. Roka YB et al have observed the same clinical features.¹³

Depending on the clinical status of the patient and available facilities, patients with PFEDH can be conservatively managed. There have been case reports of these hematomas resolving spontaneously without any intervention.¹⁴ We treated only three cases conservatively. In all these cases hematoma was less than 10 ml, GCS was 15/15 and there was no mass effect.

Patients were followed-up for one month, at two

weeks interval after discharge. Glasgow outcome score was used to measure the outcome. 40 (97.6%) patients had favorable outcome (GCS more than 9). Similar results (79%) were reported by Roka YB.¹³

CONCLUSION

CT scan brain should be performed immediately if there is even little doubt of PFEDH. Posterior fossa craniectomy has got good results. Mortality and morbidity can be decreased in PFEDHs if they are diagnosed earlier and promptly treated.

Address for correspondence:
 Mian Iftikhar-ul-Haq
 Training Medical Officer
 Department of Neurosurgery
 PGMI / HMC, Peshawar
 Email:drmiulhaq@gmail.com

REFERENCES

1. Su TM, Lee TH, Lee TC, Cheng CH, Lu CH. Acute clinical deterioration of posterior fossa epidural hematoma: clinical features, risk factors and outcome. *Chang Gung Med J* 2012; 35: 271-80.
2. Sencer A, Aras Y, Akcakaya MO, Goker B, Kiris T, Canbolat AT. Posterior fossa epidural hematomas in children: clinical experience with 40 cases. *J Neurosurg Pediatr* 2012; 9: 139-43.
3. Papacoea T, Papacoea A, Dănilă L, Papacoea R, Ion D, Bădărău A, Ciornei C, Buraga M. (Posterior fossa epidural hematoma). *Chirurgia (Bucur)* 2011; 106: 309-13.
4. Balik V, Lehto H, Hoza D, Sulla I, Hernesniemi J. Posterior fossa extradural haematomas. *Cent Eur Neurosurg* 2010; 71 (4): 167-72.
5. Asanin B. Traumatic epidural hematomas in posterior cranial fossa. *Acta Clin Croat* 2009; 48: 27-30.
6. Oliveira MA, Araujo JF, Balbo RJ. (Extradural hematoma of the posterior fossa. Report of 7 cases). *Arq Neuropsiquiatr* 1993; 51: 243-6.
7. Karasu A, Sabanci PA, Izgi N, Imer M, Sencer A, Cansever T, Canbolat A. Traumatic epidural hematomas of the posterior cranial fossa. *Surg Neurol* 2008; 69: 247-51.
8. Li TC, Chen Y, Lin SM, Tseng SH. Acute posterior fossa isodense epidural hematoma: diagnostic pitfalls on computed tomography. *J Trauma* 2007; 63: 417-9.
9. Malik NK, Makhdoomi R, Indira B, Shankar S, Sastry K. Posterior fossa extra-dural hematoma: our experience and review of the literature. *Surg Neurol* 2007; 68: 155-8.

10. Hayashi T, Kameyama M, Imaizumi S, Kamii H, Onuma T. Acute epidural hematoma of the posterior fossa – cases of acute clinical deterioration. *Am J Emerg Med* 2007; 25: 989-95.
11. Yilmazlar S, Kocaeli H, Dogan S, Abas F, Aksoy K, Korfali E, Doygun M. Traumatic epidural haematomas of non-arterial origin: analysis of 30 consecutive cases. *Acta Neurochir*; 147: 1241-8.
12. Radulovic D, Tasic G, Jokovic M. (Epidural hematomas of the posterior fossa). *Vojnosanit Pregl* 2004; 61: 133-6.
13. Roka YB, Kumar P, Bista P, Sharma GR, Adhikari P. Traumatic posterior fossa extradural haematoma. *JNMA J Nepal Med Assoc* 2008; 47: 174-8.
14. Ahmad FU, Pandey P, Mahapatra AK. Spontaneous posterior fossa extradural hematoma – a rare complication following cardiac surgery. *Pediatr Neurosurg* 2005; 41: 49-51.

Authors Information

Dr. Azmat Ullah Khattak	Associate Professor Neurosurgery, PGMI / HMC, Peshawar
Mian Iftikhar-ul-Haq	PGR / MO, PGMI / HMC, Peshawar
Dr. Farooq Azam	Associate Professor Neurosurgery, PGMI / HMC, Peshawar