

Case Report

Bilateral asymmetric epidural hematoma

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Abstract**Background:** Acute bilateral extradural hematoma is a rare presentation of head trauma injury. In sporadic cases, they represent 0.5–10% of all extradural hematomas. However, higher mortality rates have been reported in previous series.**Case Description:** The authors described the case of a 28-year-old male presenting head injury, comatose, Glasgow Coma Scale of 6, anisocoric pupils without pupillary light reflex. Computed tomography showed asymmetric bilateral epidural hematomas, effacement of the lateral ventricles and sulci, midline shift and a bilateral skull fracture reaching the vertex. Surgical evacuation was performed with simultaneous hematoma drainage. Patient was discharged on the 29th postoperative day with no neurological deficit.**Conclusion:** The correct approach on bilateral epidural hematomas depends on the volume, moment of diagnosis, and neurological deficit level. Simultaneous drainage of bilateral hematomas has been demonstrated to be an effective technique for it, which soon decreases the intracranial pressure and promotes an efficient resolution to the neurological damage.**Key Words:** Bilateral, extradural, hematoma, trauma, traumatic brain injury**Access this article online****Website:**www.surgicalneurologyint.com**DOI:**

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Quick Response Code:**INTRODUCTION**

Trauma is the leading cause of death among young people. Head injury is associated with at least 50% of the fatalities related to trauma.^[16] One of the most important complications of head injury is intracranial hematomas, which occur in 25–45% of severe cases and 3–12% of moderate cases.^[21]

Although extradural hematomas (EDH) are an uncommon (1–2%^[1] of all cases), their mortality rates ranges from 10% to 40%,^[14] but it has been decreasing

due to early treatment and improvement in diagnostic and monitoring tools.^[3,6]

Acute bilateral EDH is a rare presentation of head trauma injury. Some of their cases have been reported in literature^[4,8,11,12,13,18-20] and they represent 0.5–10% of all EDH.^[8,11,12,19]

CASE REPORT

A 28-year-old male was admitted 3 h after a motorcycle accident. During admission, he was comatose with

a Glasgow Coma Scale (GCS) of 6, his pupils were anisocoric (the right one bigger than left one), without any pupillary light reflex. His past medical history was unremarkable.

A Computed tomography (CT) was performed and showed asymmetric bilateral epidural hematoma (the major one at the right side measuring $109.1 \times 44.2 \times 60$ mm, with a volume of 144.5 cm^3 and the left one with a volume of 61.3 cm^3 , with a total volume of 205.8 cm^3), an effacement of the lateral ventricles and sulci, a shifty midline, and a bilateral skull fracture reaching the vertex [Figures 1 and 2].

The focal lesions were indicated to immediate surgery and he underwent emergency surgery to evacuation the epidural hematomas. The left temporal hematoma was the first to be drained. The patient was on supine position, head bent to the right. A left frontotemporal incision was performed and linear temporal bone fracture was found. Trepanation and decompressive craniectomy was performed and the hematoma was drained. The right hematoma was drained sequentially, the patient was on supine position, head round to the left. Right frontoparietal incision was performed, opening the temporal muscle. The linear fracture was identified, right frontotemporal craniotomy was done, and the hematoma was drained. Intraoperative findings included middle meningeal arteries hemorrhage, which was controlled, and the surgery was performed without further complications.

The patient had clinical complications in the intensive care unit (ICU), but his health improved after 2 weeks. Repeated CT head scan showed no residual collections [Figure 3]. He was discharged on the 29th postoperative day, and at discharge, he attained a GCS score of 15/15 with no focal neurological deficit.

DISCUSSION

Cases of bilateral extradural hematomas (BEH) are rare in the literature.^[8,11,12] However, higher mortality rates (42–100%) have been reported in previous series of BEH.^[11] Unlike the case presented, they usually occur due to trauma and are detected by CT scan. Although, in few cases, a subsequent hematoma can occur later on without being detected in the initial CT. Therefore, another CT must be done in case the patient's condition does not either improve or deteriorate after the hematoma removal.

BEH is usually found in head injury cases. Nevertheless, Kuwayama^[15] has described the first case of spontaneous bilateral epidural hematomas. They are associated with skull fracture, which frequently are linear, in 95–100% of patients. When the fractures are across the midline, bleeding may result from the superior sagittal sinus,

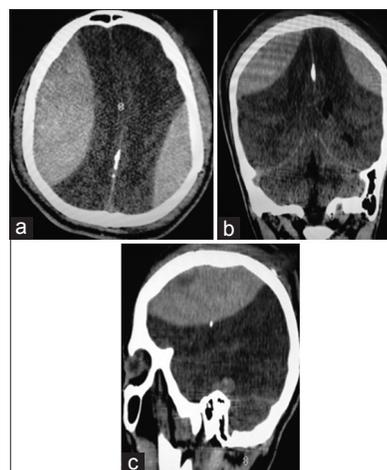


Figure 1: Initial brain computer tomography (CT) of the patient. (a) Axial, (b) Coronal and (c) Sagittal slices demonstrating two hyperdense areas, latter confirmed as bilateral hematomas, the right one (144.5 cm^3) and the left one (61.3 cm^3)

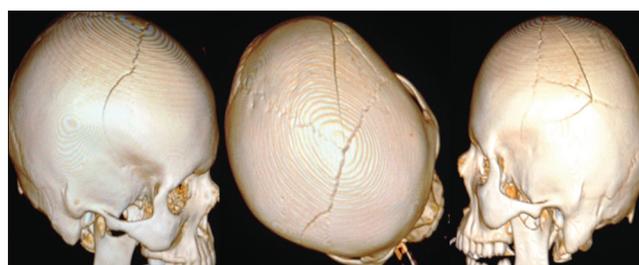


Figure 2: Initial brain computer tomography (CT) of the patient – Reconstruction 3D. Skull fracture reaching the vertex was observed

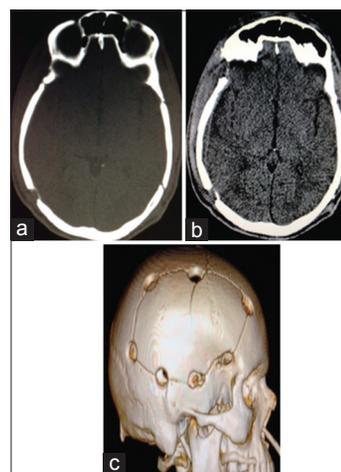


Figure 3: Post operative computer tomography (CT). (a) Skull CT with bone window demonstrating bilateral fractures and on the left posterior side one of the trepanation points. (b) Brain CT indicating resolution of the bilateral hematomas and subsequently resolution of the midline shift (c) 3D skull reconstruction presenting the trepanation points

although, in this case, the hematoma is generally under the line fracture. The arterial bleeding is the most important factor for the hemorrhage produced by the epidural hematoma. In our case, the bleeding was

originated by the middle meningeal artery, the main artery for these hematomas.^[2,4,8,10,13,14,15,22]

After the diagnosis of BEH, immediate surgery is necessary. Unlike our case, of asymmetric EDH, a simultaneous approach should be first considered since it promotes a quicker treatment to the increased intracranial pressure and functional recovery even in patients under critical neurological conditions. However, subsequently hematomas removal can also be performed. The hematoma causing neurological deterioration should be first removed followed by the evacuation of contra lateral one and, in cases of symmetric BEH, the one in the dominant site should be removed first. Mortality in these patients is higher when there are large hematomas (>150 cm size).^[5]

The intraoperative brain swelling in the epidural hematomas is essential for the management of these lesions, because it may be the first sign of the expansion of hematoma in the contra lateral side of the lesion. If the patient does not improve after the hematoma removal or if there is any neurological deficits, further brain imaging is indicated in order to evaluate the efficacy of the drainage and the possible hematoma expansion.^[7,9,17]

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REFERENCES

1. Babu ML, Bhasin SK, Kumar A. Extradural haematoma-an experience with 300 cases. *Surg Neurol* 2005;7:205-7.
2. Baykaner K, Alp H, Cerviker N, Keskil S, Seçkin Z. Observation of 95 patients with extradural hematoma and review of the literature. *Surg Neurol* 1988;30:339-41.
3. Becker DP, Miller JD, Ward JD, Greenberg RP, Yopung HF, Sakalos R. The outcome from severe head injury with early diagnosis and intense management. *J Neurosurg* 1977;47:491-502.

4. Bret P, Gavin C, Massini B, Bascoulegue Y, Huppert J. Bilateral extradural haematomas. Report of two cases. *Neurochirurgia (Stuttg)* 1987;30:193-6.
5. Cooper PR. Post-traumatic Intracranial Mass Lesions. In: Head injury. 3rd ed. Baltimore: Williams and Wilkins Inc.; 1993. p. 275-329.
6. Cordobes F, Lobato RD, Rivas JJ, Muñoz MJ, Chillón D, Portillo JM, et al. Observations on 82 patients with extradural hematoma. Comparison of results before and after the advent of computerized tomography. *J Neurosurg* 1981;54:179-86.
7. Crooks DA. Pathogenesis and biomechanics of traumatic intracranial haemorrhages. *Virchows Arch A Pathol Anat Histopathol* 1991;418:479-83.
8. Dharker SR, Bhargava N. Bilateral epidural haematoma. *Acta Neurochir (Wien)* 1991;110:29-32.
9. Eftekhari B, Ketabchi E, Ghodsi M, Esmaeili B. Bilateral asynchronous acute epidural hematoma: A case report. *BMC Emerg Med* 2003;3:1.
10. Gelabert-González M, Iglesias-Pais M, Serramito-García R, Fernández-Villa J, García-Allut A, Martínez-Rumbo R. Simultaneous bilateral epidural haematomas. *Neurocirugia (Astur)* 2005;16:256-60.
11. Gorgulu A, Cobanoglu S, Armagan S, Karabagli H, Tevruz M. Bilateral epidural hematoma. *Neurosurg Rev* 2000;23:30-3.
12. Gupta SK, Tandon SC, Mohanty S, Asthana S, Sharma S. Bilateral traumatic extradural haematomas: Report of 12 cases with a review of the literature. *Clin Neurol Neurosurg* 1992;94:127-31.
13. Idei M, Shima T, Nishida M, Yamane K, Mihara C, Hatayama T, et al. Symmetrical bilateral extradural haematoma after head injury in the mid-parietal region: Case report. *No Shinkei Geka* 2004;32:379-82.
14. Jamesson KG. Extradural and subdural haematomas. Changing patterns and requirements of treatment in Australia. *J Neurol* 1970;33:632-5.
15. Kuwayama N, Takahashi S, Sonobe M, Sugita K. Spontaneous bilateral extradural hematomas: Case report. *J Neurosurg* 1985;62:139-41.
16. Mackenzie EJ. Epidemiology of injuries: Current trends and future challenges. *Epidemiol Rev* 2000;22:112-9.
17. Matsuno A, Katayama H, Wada H, Morikawa K, Tanaka K, Tanaka H, et al. Significance of consecutive bilateral surgeries for patients with acute subdural hematoma who develop contralateral acute epi or subdural hematoma. *Surg Neurol* 2003;60:23-30.
18. Reale F, Biancotti R. Acute bilateral epidural hematoma. *Surg Neurol* 1985;24:260-2.
19. Rivas JJ, Lobato RD, Sarabia R, Cordobés F, Cabrera A, Gomez P. Extradural hematoma: Analysis of factors influencing the courses of 161 patients. *Neurosurgery* 1988;1:44-51.
20. Subrahmanian MV, Rajendraprasad GB, Rao BD. Bilateral extradural haematomas. *Br J Surg* 1975;62:397-400.
21. Thurman D, Guerrero J. Trends in hospitalization associated with traumatic brain injury. *JAMA* 1999;282:954-7.
22. Udoh DO. Bilateral post-traumatic acute extradural hematomas: A report of four cases and review of literature. *Niger J Clin Pract* 2012;15:104-7.