

Bilateral intracranial acute epidural hematoma

Case report of Bilateral intracranial acute epidural hematoma in Alicante

History

The first bilateral [intracranial acute epidural hematoma](#) case was described by Roy in 1884 ¹⁾.

Epidemiology

In cases of bilateral [hematomas](#), [EDH](#) is most common ^{2) 3)}.

Bilateral intracranial [acute epidural hematoma](#) reports have been sporadic with an [incidence](#) ranges from 0,5 to 2% of all [intracranial acute epidural hematomas](#) ^{4) 5) 6)}.

Dharker et al. ⁷⁾ found a very high incidence of up to 20% in the pediatric age group. The ratio of Görgülü et al. in the same group was 5.2% ⁸⁾

Etiology

It is suggested that two types of bilateral extradural hematoma may be found, depending upon whether venous or arterial bleeding is responsible ⁹⁾.

The main cause of bleeding in the BEH is usually venous bleeding ¹⁰⁾.

Intraoperative development of an epidural hematoma contralateral to a craniotomy for acute traumatic extraaxial hematoma has been previously reported. This entity, however, has never been distinctly defined and differentiated from either the delayed or the bilateral acute epidural hematoma ¹¹⁾.

Frank et al. ¹²⁾ thought that the more common directions of the force of impact in the patients who developed bilateral epidural hematoma tend to be anteroposterior rather than lateral. However, Arienta ¹³⁾ stated that this mechanism was only valid for the subacute and late bilateral epidural hematoma. However, in acute bilateral epidural hematoma, various localized head impacts causing bilateral skull fractures should be responsible for the hematomas. Arienta's ¹⁴⁾ statements are also supported by the cases reported in the study of Görgülü et al. ¹⁵⁾.

Clinical features

They are often associated with linear skull fractures, which are found in 95–100% patients

Feuerman et al. presented 3 new cases of intraoperative contralateral acute epidural hematoma and review the 14 previously reported cases. The typical clinical presentation is a severe head injury with an acute extraaxial hematoma and severe ipsilateral brain displacement during craniotomy. If brain displacement is not noted at craniotomy, then the contralateral hematoma is manifested by immediate postoperative neurological deterioration or intractable elevated intracranial pressure. The presence of any of these signs makes an immediate postoperative CT scan or burr holes contralateral to the original craniotomy mandatory for early diagnosis. In addition to defining “intraoperative contralateral epidural hematoma,” stricter definitions of the terms “delayed epidural hematoma” (no hematoma present on the initial CT scan but one present on a later scan) and “bilateral epidural hematomas” (present on the initial scan) are proposed ¹⁶⁾.

Outcome

High mortality rates (42-100%) have been reported in old series on bilateral epidural hematoma ¹⁷⁾ ¹⁸⁾.

This rate was 20% in Dharker’s series ¹⁹⁾ and 15.7% in Görgülü et al. series ²⁰⁾.

High mortality rates (42-100%) have been reported in old series of BEH. With the widespread use of CT scan, early diagnosis has changed the surgical results and prognosis with recent series reported a decrease in mortality rates to 15,7% ²¹⁾.

Dharker and Bhargava analysed twenty cases of bilateral epidural haematoma over a period of eleven years. In 60% cases haematoma was across the midline and in 40% cases haematoma was found at different locations on either side. Skull fracture was present in 95% cases. Mortality was 20% ²²⁾.

Case series

Six cases of bilateral extradural haematomas with an incidence of 2.5% of all cases of extradural haematomas surgically treated.

There were 5 males and 1 female with a mean age of 32.6 years (range 16-55). In 3 cases haematoma was across the midline and in the other 3 cases haematomas was found at different locations on either side. Skull fracture was present in all cases. Surgical approach was the primary treatment in all cases. Mortality in was 50%.

Bilateral extradural haematomas is a rare condition and the prognosis is mainly dependent of the pre-operative neurological state ²³⁾.

19 cases of bilateral epidural hematoma hospitalized between 1987 and 1997. All of the cases, with the exception of three, were diagnosed within the first 6 h. The neurologic evaluations on admission and during hospital stay were based on the [Glasgow Coma Scale](#). Hematomas were determined by CT scans in all cases. The patients were evaluated using the [Glasgow Outcome Scale](#) after 6 months. In 13 patients, the bilateral epidural hematoma was in the midline. In six patients, hematomas were at

different locations on either side. Surgical approach was chosen as the primary treatment modality in 18 patients. One was treated conservatively. The mortality rate was 15.7% in this series. With the widespread use of CT scan, diagnosis before deterioration of the neurological status affects the results of surgery and prognosis or even presents the possibility of a conservative treatment ²⁴⁾

12 cases of traumatic bilateral extradural haematomas. The incidence was 4.8% of all cases of extradural haematomas. The most common site was the frontal region. CT scan examination was necessary for early diagnosis. Ten patients were operated upon while one patient was treated conservatively. Two patients died ²⁵⁾.

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Sixty-four cases of bilateral epidural hematomas were reviewed. The factors of patient age, direction of injuring forces, location of hematomas, presence of associated skull fracture, and time interval between injury and onset of signs and symptoms were analyzed. The results of this analysis show that bilateral epidural hematomas may develop slowly indicate that they occur with traumatic forces predominantly oriented in the anteroposterior direction, have fewer overlying fractures associated with them than unilateral epidural hematomas, and commonly contain venous blood. The differences between unilateral and bilateral epidural hematomas in direction of injuring forces, frequency of overlying skull fracture, and type of hemorrhage suggests that varying mechanisms may be responsible for production of these hematomas. Serial angiograms and CT scans have shown delayed accumulation of blood in bilateral epidural hematomas. This finding challenges the theory that epidural hematomas develop within minutes following injury ²⁸⁾.

Eleven cases of bilateral extradural haematomas were encountered in a total of 49 cases of extradural haematoma during a period of 4 years among 1000 consecutive cases of acute head injury. Assault was held responsible for 60 per cent of the total head injuries. Most of the patients were seen late; 8 were already unconscious and 5 had dilated fixed pupils. All 11 patients died, 4 soon

after admission. Nine cases were found to have associated brain damage at autopsy. In 2 cases bilateral extradural haematomas with compression of the brain were the only intracranial abnormalities. In 4 cases a clot was missed on conventional exploration ²⁹⁾.

Case reports

A 25-year-old man with a known bilateral AC who was involved in a motor vehicle accident and developed a bilateral temporal EDH. The brain computed tomography scan also showed fractures in the skull on both temporal areas. The patient was treated conservatively. He was discharge with Glasgow Coma Scale score of 5

Bilateral temporal EDH in a bilateral temporal AC has never been reported in the literature. The presence of an AC may predispose a patient to complications because of the anatomic changes in the area. It is important to educate asymptomatic patients and their families about these cysts and the importance of avoiding head injury and not being involved in contact sports or military service ³⁰⁾.

Wang and Mares presented an unusual case of a Division I collegiate football athlete who sustained a bilateral epidural hematoma with parietal [skull fracture](#) after falling down a flight of stairs. It highlights the initial presentation to rehabilitation up until eventual return-to-play 4 months later. There were no setbacks or complications in rehabilitation process. ³¹⁾

Pereira et al. 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 29(th) postoperative day with no neurological deficit.

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 ³²⁾.

A man found unconscious with Glasgow Coma Scale score; 8/15. Computed tomography of skull revealed bilateral epidural hematoma. Two emergency craniotomies were performed simultaneously, with satisfactory radiological control and neurological outcome ³³⁾.

Kelten et al. report a bilateral epidural haematoma in a 32 year old, HIV infected male patient who came to the emergency service with a head trauma because of a motor vehicle-pedestrian accident. The occurrence of bilateral epidural haematoma in an HIV infected patient is a rare condition as a

result of head trauma in a lateral direction on one side. As a result of the vasculopathy and coagulopathy, which are complications of HIV infection, the cerebral vessels have a fragile structure that leads to complications that facilitate the development of contralateral intracranial epidural haematoma together ³⁴⁾.

A 55-year-old patient presented with history of fall of branch of tree on her head. She had loss of consciousness since then and had multiple episodes of vomiting. Examination of the scalp was suggestive of diffuse subgaleal hematoma. Her Glasgow coma scale was nine and there were no lateralizing signs. Her computed tomography scan showed bilateral, symmetrical, parietal EDH with diastases of coronal suture. The patient underwent bicoronal scalp flap well behind the coronal suture running across the junction of anterior two-third and posterior one-third of hematoma to gain bilateral exposure. Initially, left parietal trephine craniotomy was performed and without disturbing the blood clot, left trephine craniotomy was performed and the hematomas were evacuated. Management of bilateral EDH cases requires careful planning, adequate exposure, judicious surgical approach, and time management for good results ³⁵⁾.

A 72-year-old male accidentally fell from the roof at a height of about 3 meters and hit his head against the ground. He was transferred to the emergency ward in our hospital. On admission, he was alert and had no neurological deficits. Skull X-ray film revealed a depressed fracture in the mid parietooccipital region and bilateral linear fractures extending from the parietal regions to the temporal regions. CT scan showed symmetrical bilateral epidural hematomas in the both parietotemporal regions. His consciousness deteriorated to be drowsiness about one hour after admission. An additional CT scan revealed enlargement of the both epidural hematomas and impending tentorial herniation. Therefore, an emergency operation was called for. For rapid decompression of the brain, bilateral craniotomies were carried out simultaneously by the two neurosurgeon-groups involved and bilateral epidural hematomas were also simultaneously removed. Injury of both of the middle meningeal arteries was revealed to be the cause of the bilateral epidural hematomas. Clinical course after operation was uneventful and the patient was discharged without any neurological deficit. Simultaneous bilateral craniotomies and removal of the epidural hematomas would have contributed to obtaining the good result in this patient ³⁶⁾.

Arienta et al. published two cases of acute posttraumatic bilateral epidural hematomas with different clinical pictures ³⁷⁾.

A patient with acute simultaneous bilateral extradural hematomas is presented and the mechanism of formation and the sequence of operations necessary to reduce the risk of disability are discussed. The recent literature is reviewed and it is suggested that two types of bilateral extradural hematoma may be found, depending upon whether venous or arterial bleeding is responsible ³⁸⁾.

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