

Case Report

Repair of Traumatic Encephalocele- A Rare Presentation of Head Injury

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Abstract Post traumatic encephalocele is protrusion of brain through skull gap after head trauma. We are presenting a 5 month old boy who suffered from head trauma and presented with right parietal encephalocele 17 days after injury. Computed tomography (CT) scan of brain confirmed the diagnosis. The encephalocele was repaired by craniotomy by using pericranium autologous graft to repair dura matter. The post-operative recovery was uneventful.

Key Words: Traumatic encephalocele, craniotomy, dura repair.

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Introduction

Encephalocele is defined as herniation of brain tissue through a bony defect of skull. When it is accompanied with meninges it is called meningoencephalocele. Encephalocele are classified as traumatic, congenital, tumoral or spontaneous. Common causes of traumatic encephalocele are head trauma or iatrogenic.¹ It was found acquired encephaloceles are head injury origin in 96% cases.² Meningitis and cerebrospinal fluid (CSF) leakage are the devastating complications of this condition. The locations of the traumatic encephaloceles are mainly calvarial, orbital and basal. Computed tomography (CT) scan of brain or magnetic resonance imaging (MRI) of brain are important investigation for diagnosis. Most of the encephalocele patients need surgical repair.³ Endoscopic repair is suitable for basal and orbital

cases, when direct closure is comfortable in calvarial cases.

We are presenting a child of traumatic encephalocele who underwent surgical repair by the neurosurgery department of Sylhet Women's Medical College Hospital. Informed consent was achieved from the patient's father as the patient was of pediatric age group. No experimental intervention was assigned to the patient for the research and the identity of the child was kept anonymized.

Case Report

This 5 month old boy was on the lap of his mother when she was walking to visit her neighbor. Suddenly one tree branch fell on them and the child got injured. The tree branch hit on the right side of the head of the child. The boy was taken to a local hospital where he was admitted for observation. In the next two days the child did not show any neurological deterioration. There was a mild swelling on the right parietal region; apart from that the patient was conscious with no deficit. As he was tolerating oral diet and there was no sign of head injury so he was discharged after two days from the hospital. From the 12th day of the injury the boy started developing weakness in his left side and the scalp swelling started getting larger. After 5 days of

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watching at home when the condition got worsening the parents brought him to this hospital and was admitted in to neurosurgery department. At the time of admission, on examination the child was conscious having left both limbs weakness of 1/5. There was a swelling measuring 8 X 6cm on his right parietal region which was non-tender and soft in consistency. There was no scar observed on the swelling. There was no urinary bladder or bowel problem. CT scan of brain revealed right parietal skull gap with protrusion of brain through the gap (Figure 1). After proper counseling the child was scheduled for craniotomy and repair of the encephalocele under general anesthesia (G/A).

Figure 1: CT scan of brain shows brain protrusion through bony gap.



After painting and draping the head of the child was tilted slightly on his left during operation. Right parietal horse-shoe shaped skin incision was marked. After retraction of skin flap brain was found herniated through the bony gap and dura was found torn (Figure 2). Dura was repaired by pericranial graft. Fragmented bone pieces were repaired by and fixed by silk with the skull. Remaining bony gap was covered (Figure 3) by absorbable gelatin sponge (gelfoam). Skin was closed in layers. His post-operative recovery was

uneventful. His left sided motor power started improving to 4/5. There was no CSF leaking or wound infection. The wound was healed by primary intention. At the time of 2 month follow up the child was unremarkable with left sided power 5/5 with well healed scalp scar.

Figure 2: Intra operative picture showing the encephalocele.

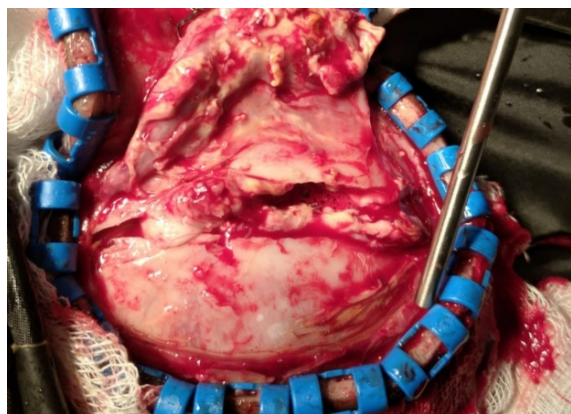


Figure 3: Intra operative picture after repair of dura and bone.



Discussion

This report of encephalocele was compared with other similar case reports and case series of international articles. Though few contrast cases were reported in terms of location of the

encephalocele but presentation and management plan were similar to the other reports.

Fuminari et al. presented a 37 year old man who was involved in a motor vehicle accident and presented with unconsciousness.⁴ Computed tomography (CT) scan of brain showed right sided extradural hematoma with pneumocephalus. The three-dimensional (3D) reconstructed bony window showed a 20mm sized bony gap in the planum sphenoidale of the sphenoid bone. Magnetic resonance imaging (MRI) of brain confirmed traumatic meningo-encephalocele with cerebrospinal fluid (CSF) collection in the sphenoidal sinus. Extradural hematoma was removed by craniotomy and the sphenoidal traumatic meningo-encephalocele was repaired by endoscopic trans-nasal approach. Dural gap was repaired by abdominal fascia.

An 18 year old boy was presented by Nesat et al who suffered a blow from a road traffic accident.⁵ Initially he had only some ecchymoses on his front of the forehead. There were no other abnormal neurological findings and was discharged from hospital after 2-3 hour observation. After 2 weeks he presented with clear per nasal fluid discharge which was eventually proven as CSF by beta-2-transferrin test. CT brain revealed fracture in left side of frontal sinus and ethmoid bone. MRI brain showed brain herniation into frontal and ethmoidal sinus. The encephalocele was repaired surgically.

A 66 year old gentleman was presented with bitemporal visual impairment and confusion after involving in a motor accident. MRI brain was reported as a pituitary mass with significant hydrocephalus.⁶ External ventricular drainage catheter was inserted into lateral ventricle to relieve the hydrocephalus. Follow up MRI brain confirmed a spheno-ethmoidal basal encephalocele.

A 45 year old gentleman was brought to the emergency department with the history of

progressive lower limb weakness with gait disturbance for 4 weeks.⁷ He denied any recent trauma to head or spine but recalled a history of fall from a tree 36 years ago. At that time, he was diagnosed as right sided closed parietal bone fracture. On examination he had left sided weakness, lower limb weakness more than the upper limb. MRI brain showed that the intradiploic gap was filled by the right precentral gyrus and surrounding brain parenchyma. There was no palpable bony gap detected by scalp palpation.

An 8 year old noticed right sided eyelid swelling with mil headache in morning. It subsided in course of time but reappeared in the next morning with double vision.⁸ When detail trauma history was retrieved, he could remember a blunt trauma over forehead few days ago. His neurological examination was unremarkable with no CSF otorrhea or rhinorrhea. MRI brain showed protrusion of brain matter with CSF pouch within meninges inside the right eyeball and right maxillary sinus. The patient was advised for repair of the lesion but the relatives refused the surgery.

The CT scan of brain of a 11 year old child showed a gyral pattern occipital lobe herniation with CSF in the intradiploic gap of right sided occipital bone.⁹ The cranial diploe was also expanded. The boy remembered head trauma 8 years ago in the same region of skull. It was diagnosed as intradiploic encephalocele with arachnoid cyst. A case series of three cases was reported by Leslie et al on traumatic orbital encephalocele.¹⁰ Two patients were involved in motor vehicle accident and the other patient suffered from accidental gunshot injury. All the three patients had orbital roof fracture in CT scan of brain. Gradually they developed proptosis. Subsequently MRI of brain confirmed frontal lobe herniation into the orbit through the fractured orbital roofs. A series of 8 patients diagnosed with traumatic basal encephalocele was reported in 2008.¹¹ Out of these 8 patients 4 had bony defect in ethmoid sinus, 2 in cribriform

plate and 2 in sphenoid bone. In all cases bony gaps were repaired by free grafts by endoscopic method. No CSF leak or meningitis was associated with any post-operative patient.

This case report was on a 5 month old child who had head trauma due to fall of object on head from height. The encephalocele was calvarial type, right parietal region. Surgical repair was done successfully.

Conclusion

Traumatic encephalocele is a rare presentation of head injury. It can be presented after few weeks to few years after injury. Orbital, basal and calvarial are the variants of encephalocele. After surgical closure most of the time it shows a good prognosis.

Conflict of Interest: No conflict of interest was declared.

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