Case Report

Magnetic Resonance Imaging of Leptomeningeal Cyst with Atypical Presentation: Cough-Induced Headache

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Abstract

Leptomeningeal cysts, also known as growing skull fractures, are rare complications of head trauma. It is usually seen a few months posttrauma. These lesions are rare in adults, with over 90% resulting from fractures occurring in children under the age of 3 years. The children usually present with enlarging scalp mass, seizures, focal neurological deficit, and headache. In this case series, we are going to present the two cases of post traumatic leptomeningeal cysts in adults, presenting as cough-induced headache along with imaging description.

Keywords: Leptomeningeal cyst, neurological deficit, scalp

Introduction

Leptomeningeal cysts, also known as growing skull fractures, are rare complications of head trauma. It is usually seen a few months posttrauma. These lesions are rare in adults, with over 90% resulting from fractures occurring in children under the age of 3 years[1] with incidence 0.05%–0.6%.[2] Common locations of leptomeningeal cyst are frontal or parietal skull. Occurrence in orbital roof has also been reported.[3] The exact pathogenesis is not clear[4] but it is believed to occur in skull fractures causing dural tears which allow leptomeninges and/or cerebral parenchyma to herniate into it.[5] Cerebrospinal fluid (CSF) pulsations erode the fracture margin, resulting in expansion and nonunion.[6] The children usually present with enlarging scalp mass, seizures, focal neurological deficit, and headache.[4]

In this case series, we are going to present the two cases of post traumatic leptomeningeal cysts in adults, presenting as cough-induced headache along with imaging description.

Cases

Case 1

A 25-year-old patient presented with a nontender growing scalp swelling in the right high parietal region along with headache. The headache worsens on coughing. He had a history of fall from first floor 7 months back with that time

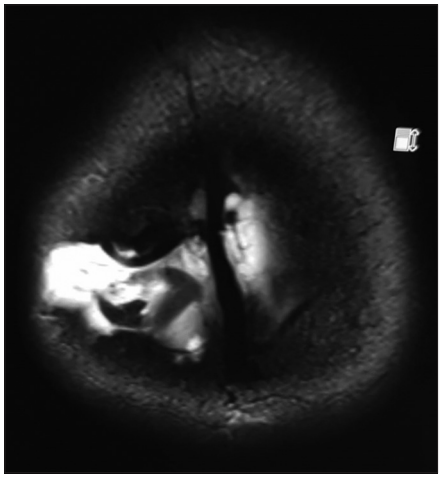

Figure 1: Axial T2 image showing reveal focal area of encephalomalacia along with cerebrospinal fluid filled sac protruding out through bony defect along with brain parenchyma in the right high parietal region

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computed tomography (CT) showing depressed fracture of the right parietal bone. That defect was primarily repaired. There was no neurological deficit. Local examination showed the presence of bony defect in the right high parietal region. After initial CT, magnetic resonance (MR) imaging was advised which reveal focal area of encephalomalacia along with CSF filled sac protruding out through bony defect along with brain parenchyma [Figures 1-3]. Based on the history and imaging appearance, diagnosis of growing skull fracture was made.

Case 2

A 20-year-old patient presented to OPD scalp swelling in the left parietotemporal with cough induced headache. The headache worsens on forceful coughing. He had a history of road traffic accident 2 years back with CT showing left parietotemporal contusions along with acute Subdural Hematoma (SDH). He underwent craniectomy followed by cranioplasty. On examination, there was soft-tissue compressible swelling in the left parietal region. There was no neurological deficit. After initial CT, MR imaging was advised which reveal focal area of encephalomalacia along with CSF filled sac protruding out through bony defect. There was no herniation of brain parenchyma through the bony defect [Figures 4 and 5]. The provisional diagnosis of growing skull fracture.

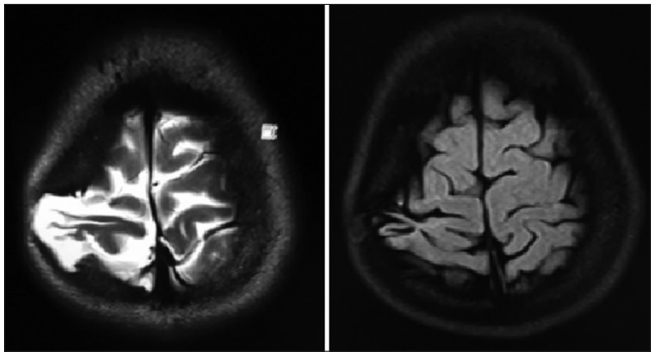

Figure 2: Axial T2 and corresponding fluid-attenuated inversion recovery image just caudal to Figure 1 showing growing skull fracture in the right high parietal region

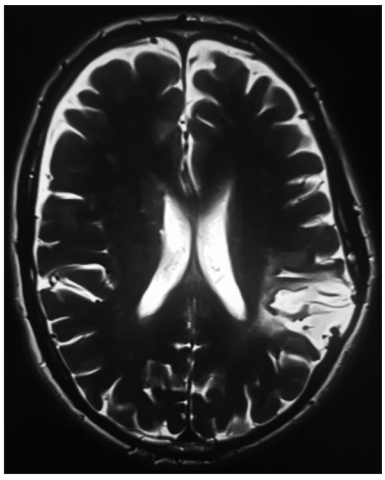

Figure 4: Axial T2 image showing reveal focal area of encephalomalacia along with cerebrospinal fluid filled sac protruding out through bony defect along with brain parenchyma in the left high parietal region

Discussion

Growing skull fracture has been described in the literature as an entity synonymous to a leptomeningeal cyst, enlarging skull fracture, expanding skull fracture, posttraumatic bone absorption, posttraumatic porencephaly, traumatic ventricular cyst, craniocerebral erosion, and cephalohydrocele due to collection of CSF underneath.[7] It was first recognized and reported by John Howship in 1876.[8] Cause for growing skull fractures is multifactorial but the main factor is tear in the dura mater. This interposition of tissue prevents osteoblasts from migrating, inhibiting fracture healing. The resorption of the adjacent bone by the continuous pressure from tissue herniation through the bone gap adds to the progression of the fracture line.

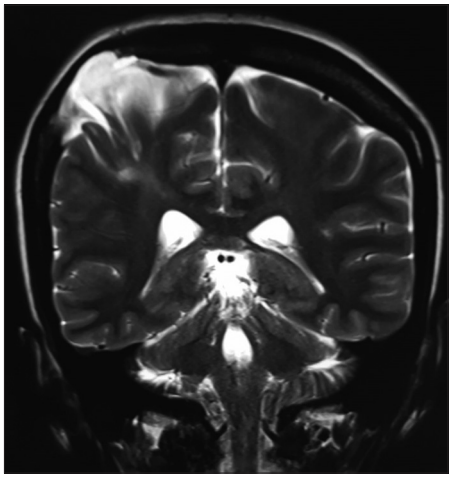

Figure 3: Coronal T2 image showing reveal focal area of encephalomalacia along with cerebrospinal fluid filled sac protruding out through bony defect along with brain parenchyma in the right high parietal region

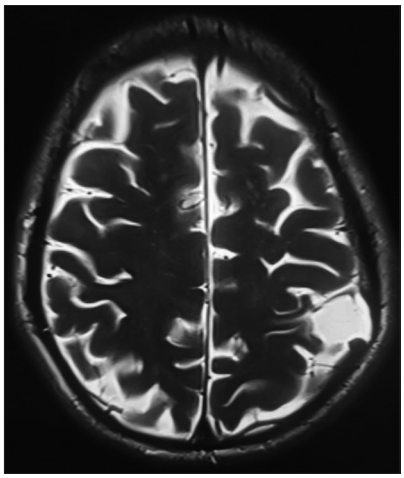

Figure 5: Axial T2 image just cranial to Figure 4 showing growing skull fracture in left high parietal region

Leptomeningeal cyst is commonly found in pediatric age group. These fractures commonly present as a progressive, scalp mass that appears sometime after head trauma sustained during infancy. There may seizures and hemiparesis, but an asymptomatic palpable mass may be the sole sign. The usual site is the parietal region. The various risk factors on which the development of growing skull depends upon: In our study, there are various atypical features such as old age and cough-induced headache. Headache is the common symptoms in leptomeningeal cyst, but cough-induced headache is rarely reported in literature.

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Conflicts of interest

There are no conflicts of interest.

References

1. Lende RA, Erickson TC. Growing skull fractures of childhood. J Neurosurg 1961;18:479-89.
2. Houra k, Beros V, Sajko T, Cupic H. Traumatic leptomeningeal cyst in 2 4-year old man. Case Rep Neurosurg 2006;58:E201.
3. Giuffrida M, Cultrera F, Antonelli V, Campobassi A, Servadei F. Growing-fracture of the orbital roof with post-tramaticencephalocele Inan adult patient. J Neurosurg Sci 2002;46:131-4.
4. Arora AM, Puri SK, Upreti LM. Brain Imaging: Case Review Series. Jaypee Brothers Medical Pub; 2011.
5. Liu XS, You C, Lu M, Liu J. Growing skull fracture stages and treatment strategy. J Neurosurg Pediatr 2012;9:670-5.
6. Naidich TP, Castillo M, Cha S, Smirniotopoulos J. Imaging of the Brain, Expert Radiology Series, 1. Saunders; 2012.
7. Suri A, Mahapatra AK. Growing fractures of the orbital roof. A report of two cases and a review. Pediatr Neurosurg 2002;36:96-100.
8. Bir SC, Kalakoti P, Notarianni C, Nanda A. John Howship (1781-1841) and growing skull fracture: Historical perspective. J Neurosurg Pediatr 2015;16:472-6.