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Case Report

Traumatic Rupture of an Intracranial Dermoid Cyst: An Extremely Rare Diagnosis in the Emergency Room

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Abstract

Introduction: Dermoid and epidermoid cysts are a benign intracranial tumors arising from ectopic epithelial cells. The rupture of an intracranial dermoid cyst is a relatively rare event. We present an exceptional case of a traumatic rupture of an intracranial dermoid cyst.

Observation: A 30-year-old man admitted in the emergency room with a moderate cranial trauma following a road accident. On presentation, the patient had a Glasgow Coma Scale at 12/15 with intense headaches, no hemodynamic or respiratory distress. Brain CT scan showed a frontal lesion located on the midline, in front of the tank chiasmal, unilocular, of oval form, limited and had heterogeneous fat density without calcification. The ventricular system has a normal morphology, with supernatant fat density of droplets at the frontal horns of the lateral ventricles, in the 4th ventricle and at the basal cisterns. The scan also showed a left-sided acute parietal subdural hematoma. The Brain CT Scan with contrast injection at the sixth hour after cranial trauma showed an unchanged appearance of the cyst and of the subdural hematoma. There was no indication for neurologic surgery, the patient was kept for observation. the evolution was favorable without complications.

Conclusion: Dermoid cysts are benign formations of slow growth, which explains the late diagnosis sometimes fortuitous in the emergency department; The diagnosis of ruptured cyst is based on the finding of an intraventricular and/or subarachnoid space fat-fluid level in CT scan and MRI.

Keywords: *Adult; Dermoid Cyst; Cranial Trauma; Intracranial Rupture; Emergency Room; Tomography*

Abbreviations

GCS: Glasgow Coma Scale; CT Scan: Computed Tomography Scan; HU: Hounsfield Units; MRI: Magnetic Resonance Imaging

Introduction

Dermoid and epidermoid intracranial cysts are rare, they accounts for 0.04 to 0.6% of all intracranial tumors [1] that arise from ectodermally committed cells at the time of closure of the neural groove between the third and fifth week of embryonic life. They are slow-growing benign entities but can cause significant morbidity through compression of neurovascular structures and, rarely, rupture into the subarachnoid space. We present a rare case of a traumatic ruptured intracranial dermoid cyst.

Case Report

We report the case of a 30-year-old man, with no notable medical history, admitted in the emergency room for moderate cranial trauma following a road accident; On physical examination the patient was agitated with intense headaches and had a Glasgow coma scale (GCS) at 12/15, he was found to have no external injuries, no signs of localization and no hemodynamic or respiratory distress. CT of the

brain (Figure 1) revealed a large low-density (- 30 HU) frontal lesion, located on the midline, in front of the tank chiasmal, unilocular, of an oval form, limited and had an heterogeneous fat density without calcification. It measures 36 x 26 x 24 mm. The ventricular system has a normal morphology, with supernatant fat density of droplets at the frontal horns of the lateral ventricles and in the 4th ventricle, fat density of droplets at the basal cisterns. They also sit at the cortical sulci bilaterally, these features suggest the diagnosis of frontal dermoid cyst ruptured. The CT scan also showed a subdural left parietal hematoma of 3 mm maximum thickness, the median structures are in place without traumatic bone injury. The Brain CT Scan with contrast injection at the sixth hour after cranial trauma showed an unchanged appearance of the cyst and of the subdural hematoma. There was no indication for neurologic surgery. The patient was kept under neurological monitoring in the emergency room with control of the secondary cerebral injury of systemic origin, a medical pain therapy consisting of Paracetamol administration was initiated. Then he was referred to the neurology center after 48 hours in the emergency department. In this particular case, conservative treatment was chosen, due to the less pronounced clinical picture and the location of the dermoid cyst. The brain MRI was done during the hospitalization has shown multifocal high signal in a subarachnoid distribution confirming the presence of cholesterol secondary to rupture of the dermoid cyst. The patient was completely recovered without neurological symptoms and discharged after five days.

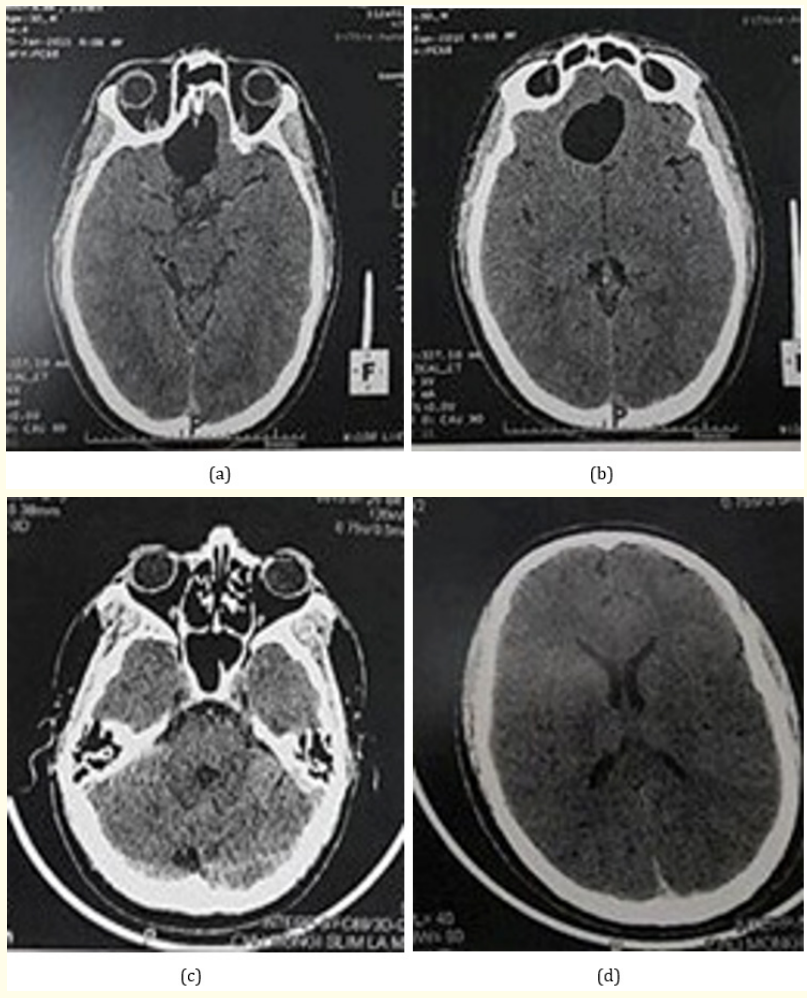

Figure 1: *Axial CT, (a) (b) a large low-density frontal lesion, on the midline, in front of the tank chiasmal, unilocular, of an oval form, limited and had an heterogeneous fat density without calcification. It measures 36 x 26 x 24 mm, fatty lesion arising from the basal cistern, hypodense on CT scan. (c) (d): supernatant fat density of droplets at the frontal horns of the lateral ventricles and in the 4th ventricle.*

Discussion

Rupture of intracranial dermoid cysts is a rare phenomenon typically spontaneous but can occur secondary to closed head trauma [2]. The case presented involved a traumatic ruptured intracranial dermoid cyst causing major headaches and agitation. The dissemination of intracystic fat breakdown products following rupture can cause a wide variety of symptoms ranging headache to hallucinations [3-5]. Clinical presentation can vary depending on the cyst location, and in one analysis of available case reports headache was the most common symptom (32.6%), followed by seizures (26.5%), cerebral ischemia with sensory and/or motor hemisyndrome (16.3%), and aseptic meningitis (8.2%) [6]. On CT scans, dermoid cysts can have mixed densities [7] and rarely enhance with contrast administration [8,9]. The intracystic fat and disseminated fat droplets appears hypodense, whereas calcifications in the wall are hyperdense. Hydrocephalus and fat-fluid level may be present following rupture into the ventricular system. On MRI, dermoid cysts are hyperintense on T1-weighted sequences and variable on T2- weighted sequences [10]. MRI is more sensitive than CT in the detection of dermoid cysts and due to the higher contrast resolution, the ease of multiplanar imaging and the lack of bone artifacts [11]. Dermoid cysts are benign entities, and have a generally favorable prognosis. Surgery is only indicated in cases where dermoid cysts cause mass effect and serious neurological deficits. In cases where the cyst is intact, the goal is complete surgical removal of the primary tumor capsule and intracystic contents and dissection from adjacent neurovascular structures. However, dissemination of fat droplets following rupture is usually too extensive to allow for complete removal [12]. Several research [7,13,14] have demonstrated that long-term monitoring with serial MRI scans and clinical examinations of patients with extensive disseminated fat particles has not demonstrated evolution or movement of the fat or new neurological deterioration. In those cases, medical management is indicated for symptom control.

Conclusion

Intracranial dermoid cysts are benign rare slow-growing tumors, their rupture is an exceptional complication which is diagnosed by the presence of lipid droplets in the subarachnoid spaces and ventricles. The patient in our case had an uncomplicated recovery. Early recognition of these pathognomonic imaging findings by radiologists with the neurological monitoring and management by the emergency physician is crucial to improve the prognosis of these cysts in the event of life-threatening complications.

Conflict of Interest

The authors declare that there is no financial or conflict of interest.

Bibliography

1. Carvalho GA., *et al*. "Subarachnoid Fat Dissemination after Resection of a Cerebellopontine Angle Dysontogenic Cyst: Case Report and Review of the Literature". *Neurosurgery* 47.3 (2000): 760-764.

2. Cohen JE., *et al*. "Massive Rupture of Suprasellar Dermoid Cyst into Ventricles. Case Illustration". *Journal of Neurosurgery* 87.6 (1997): 963.

3. El-Bahy K., *et al*. "Ruptured Intracranial Dermoid Cysts". *Acta Neurochirurgica* 148.4 (2006): 457-462.

4. Hamer J. "Diagnosis by Computerized Tomography of Intradural Dermoid with Spontaneous Rupture of the Cyst". *Acta Neurochirurgica* 51.3-4 (1980): 219-226.

5. Karabulut N and L Oguzkurt. "Tetraventricular Hydrocephalus Due to Ruptured Intracranial Dermoid Cyst". *European Radiology* 10.11 (2000): 1810-1811.

6. Larsson EM., *et al*. "Persisting Intraventricular Fat-Fluid Levels Following Surgery on a Ruptured Dermoid Cyst of the Posterior Fossa". *Acta Radiologica (Stockholm, Sweden: 1987)* 28.4 (1987): 489-490.

7. Liu James K., *et al*. "Ruptured Intracranial Dermoid Cysts: Clinical, Radiographic, and Surgical Features". *Neurosurgery* 62.2 (2008): 377-384.

8. Lunardi P and P Missori. "Supratentorial Dermoid Cysts". *Journal of Neurosurgery* 75.2 (1991): 262-266.

9. Muçaj Sefedin., *et al*. "Role of MRI in Diagnosis of Ruptured Intracranial Dermoid Cyst". *Acta Informatica Medica* 25.2 (2017): 141-144.

10. Phillips WE., *et al*. "Ruptured Intracranial Dermoid Tumor Secondary to Closed Head Trauma. Computed Tomography and Magnetic Resonance Imaging". *Journal of Neuroimaging: Official Journal of the American Society of Neuroimaging* 4.3 (1994): 169-70.

11. Rubin G., *et al*. "Craniocerebral Epidermoids and Dermoids. A Review of 44 Cases". *Acta Neurochirurgica* 97.1-2 (1989): 1-16.

12. Smith AS., *et al*. "Diagnosis of Ruptured Intracranial Dermoid Cyst: Value MR over CT". *AJNR: American Journal of Neuroradiology* 12.1 (1991): 175-180.

13. Stephenson TF and RM Spitzer. "MR and CT Appearance of Ruptured Intracranial Dermoid Tumors". *Computerized Radiology: Official Journal of the Computerized Tomography Society* 11.5-6 (1987): 249-251.

14. Yoshimoto K., *et al*. "Movable Oil in the Brain: Intracranial Ruptured Dermoid Tumors. Case Illustration". *Journal of Neurosurgery* 86.4 (1997): 734.

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