CASE REPORT DOI: https://doi.org/10.18502/fem.v8i1.14896

A rare case in emergency department: intracranial dermoid cyst rupture

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Published online: 2024-02-01

Abstract: Intracranial dermoid cysts (IDC) are rare cystic lesions that are present from birth. After rupture of these cysts, patients may present to the hospital with ischemic cerebral symptoms, headaches, seizures, syncope, and meningitis. Brain magnetic resonance imaging (MRI) is the most sensitive radiologic method in the diagnosis of IDC rupture, which has a high mortality rate. Patients should be rapidly evaluated for surgery if a symptomatic and ruptured cyst is detected. In this presentation, we aimed to describe the diagnosis and treatment of IDC in a 23-year-old male patient brought to the emergency department after syncope.

Keywords: Emergency Department; Intracranial Dermoid Cysts; Syncope

Cite this article as: Buyurgan S.Ç , Yarkaç A, Köse B. A rare case in emergency department: intracranial dermoid cyst rupture. Front Emerg Med. 2024;8(1):e8.

1. Introduction

Intracranial dermoid cysts (IDCs) are cystic lesions that are present from birth with a mean prevalence of 0.4%-0.6% (1). They are usually observed in the first 30 years of life (2). Although rupture of these cysts is rare, it carries a high mortality risk. Patients may present to the hospital with different neurologic symptoms after cyst rupture. In this presentation, we aimed to describe the diagnosis and treatment of IDC in a young male patient who was brought to the emergency department after syncope.

2. Case presentation

A 23-year-old man presented to the emergency department (ED) with syncope following dizziness. He had no history of comorbidity or drug use. On admission, his vital signs were within normal limit. There were no significant abnormalities in his laboratory tests. After few hours, the patient, who was conscious and had a normal neurological examination, had a generalized tonic-clonic seizure during his follow-up in ED. Abortive anti-convulsant treatment was administered. Computed tomography (CT) scan of the brain showed a hypodense lesion with density equal to fat and calcification, which were surrondied by hypodense paranchyma (Figure 1). These findings were compatible with a ruptured IDC lesion. The diagnosis was confirmed by contrast-enhanced magnetic resonance imaging (MRI) (Figure 2). After consultations with neurosurgeons and neurologists, the patient was admitted to the intensive care unit and underwent surgery. The patient had no active complaints in the postoperative follow-up and was discharged with prophylactic antibiotics and antiepileptic treatment.

3. Discussion

Intracranial dermoid cysts are rare cystic lesions that are present from birth and are usually detected in the first 30 years of life (1,2). These cysts typically contain fat and epidermal cells and have a high mortality rate when they rupture. IDC rupture may be due to head trauma or may develop spontaneously (3). In the literature, it has been reported that increased glandular secretion probably due to age-related hormonal changes may cause rapid enlargement and spontaneous rupture (1). The clinical appearance of rupture varies according to the location of the dermoid cyst, the growth rate of the cyst and the age of the patient. Spread of the contents into the subarachnoid space and/or ventricles after cyst rupture may lead to cerebral ischemia by causing cerebral vasospasm or vasculitis (4,5). In case reports in the literature, it has been reported that the most common reason for presentation in these patients is headache and seizure and hydrocephalus symptoms (6). Although a large number of cases of IDC rupture have not been described, there are few cases presenting with marked neurologic deficit in the literature (5). Detailed neurologic examination and meningeal irritation findings in patients with headache may be guiding in the diagnosis of IDC. New-onset headaches mimicking migraine and/or tension-type headache or changes in the pattern of chronic headache are important in terms of ruling out organic/secondary causes such as rupture of IDC. Aseptic meningitis findings may also develop in patients presenting with ruptured IDC (7).

Radiologic tests have an important place in the diagnosis of these patients. In brain CT imaging of patients with IDC rupture, diagnostic hypodense fat droplets compatible with cyst content are seen in the subarachnoid and/or subdural spaces

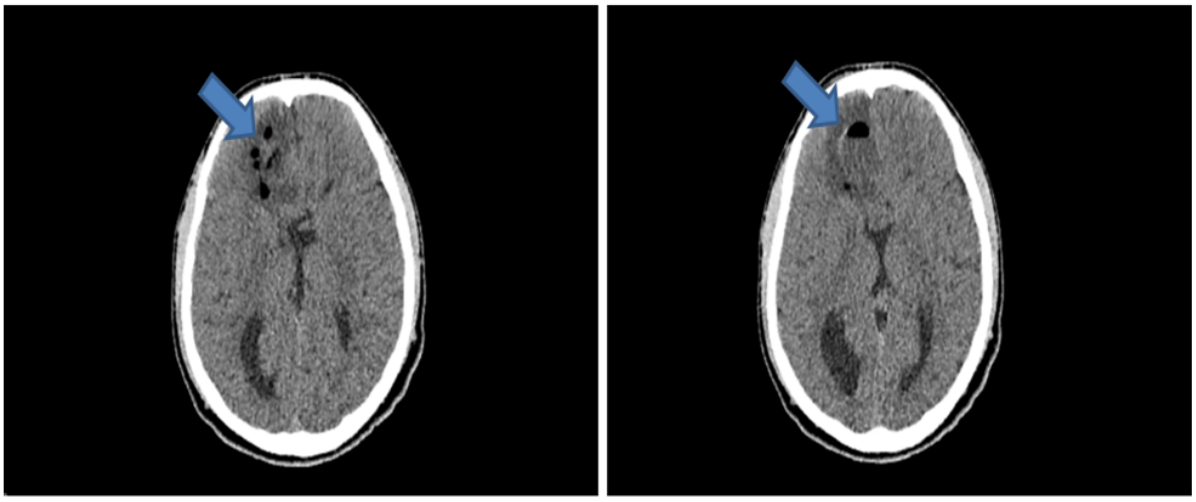

Figure 1 Arrows show the lesion with calcification and fatty areas in the right frontal region

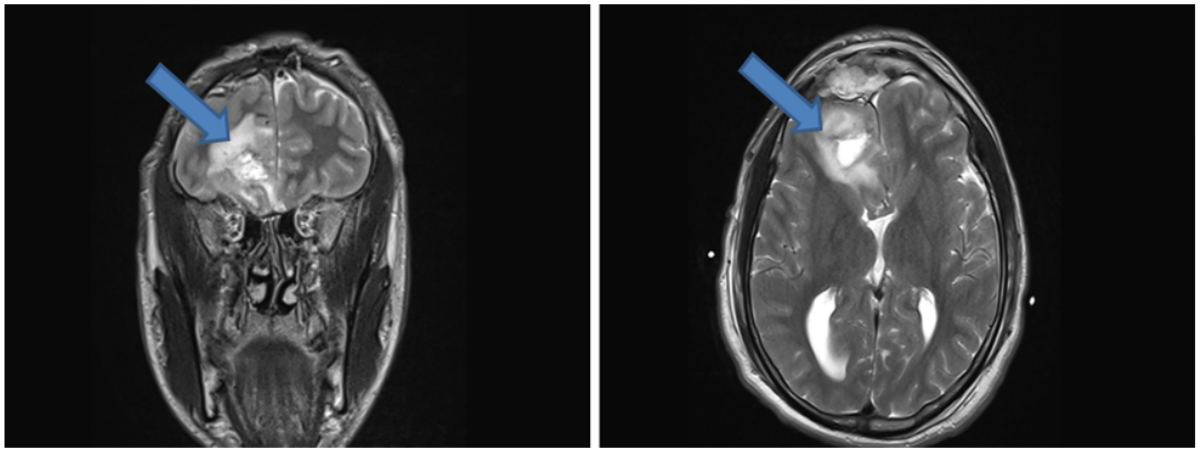

Figure 2 Ruptured dermoid cyst on contrast-enhanced T2 weighted MR imaging

or ventricles (8). Of note, fat inside the ventricles might give a fat-fluid level. Due to bloom artifacts, fat droplets on T2 and SWI MR imaging may be misinterpreted as hemorrhage. T1-weighted images (WI) contrast-enhanced MR imaging, especially T2-WI, has a higher sensitivity than diagnostic CT in the diagnosis of ruptured IDC (3). High-intensity signal within the lesion and in the subarachnoid space in T1-WI MR imaging is consistent with fat droplets. Conservative and surgical methods are available for the treatment of these patients. Conservative treatment is recommended for asymptomatic patients with no significant change in cyst size during follow-up, whereas surgery is recommended for symptomatic patients with pathologic neurologic examination findings and a larger mass on MR imaging. Recurrence is rare in patients in whom the mass and tumor wall are completely resected (9,10). Although many cases of IDC rupture have not been described in the literature, because of its fatal course, patients who present to the emergency department with neurologic symptoms and who are found to have IDC cyst rupture on radiologic imaging should be rapidly evaluated by emergency physicians for neurosurgical treatment and intervention. In the literature, patients with delayed cerebral ischemic deficit and transient aseptic meningitis findings due to postoperative vasospasm have been described as well as cases with a mortal course (6).

4. Conclusion

IDC is rare but has a high mortality rate when ruptured. Patients may present with ischemic cerebral symptoms, headaches, seizures, syncope and meningitis. Brain MRI is the most sensitive radiologic method in the diagnosis of IDC rupture. Patients should be rapidly evaluated by emergency physicians for surgery if a symptomatic and ruptured cyst is detected.

5. Declarations

5.1. Acknowledgement

None.

5.2. Authors' contribution

The authors meet all criteria for authorship based on the recommendations of the International Committee of Medical Journal Editors (ICMJE).

5.3. Consent for publication

Informed consent was not required as no personally identifying information was used in this case.

5.4. Conflict of interest

None.

5.5. Funding

None.

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