Unusual presentation of more common disease/injury

Not the usual sinusitis

Hussam Ammar,¹ Amy Kott,² Ragai Fouda³¹Department of Internal Medicine, University of Texas Health Science Center, Houston, Texas, USA²University of Texas Health Science Center, Houston, Texas, USA³Internal Medicine, Cairo University School of Medicine, Cairo, Egypt

Correspondence to Dr Hussam Ammar, hussam.m.ammar@uth.tmc.edu

Summary

An encephalocele is a protrusion of the cranial contents beyond the normal confines of the skull. It is a rare cause of seizure in adults. A 38-year-old woman presented with a first-onset seizure. Brain CT was interpreted as right frontal sinus opacification suggestive of sinusitis. The patient was discharged home with an amoxicillin prescription. A few days later, she was re-admitted with another seizure. Careful evaluation of the brain CT and MRI revealed a right frontal sinus posterior wall defect and possible brain encephalocele. The patient had complained of chronic nasal discharge for years and had also noticed a watery discharge from her right nostril. We suspected cerebrospinal fluid rhinorrhea. A bifrontal craniotomy was performed, the encephalocele was resected and cranialisation of the frontal sinus was completed. The patient remained free of seizures at the last follow-up.

CASE PRESENTATION

A 38-year-old woman was admitted for the evaluation of new-onset seizures. She developed generalised tonic-clonic convulsions that lasted for 1 min, followed by postictal confusion. Brain CT revealed opacification of the right frontal sinus. The patient was sent home with a prescription for amoxicillin for a sinus infection.

Two days later, her husband witnessed a second seizure, which started with tonicclonic convulsions of the left arm and leg and became a generalised seizure. The episode lasted approximately 2 min and was followed by 15 mins of post-ictal confusion. The patient was admitted to our hospital. Her vital signs were normal, and the physical examination was unremarkable. Her blood electrolytes, glucose level, kidney functions and urine drug screen were normal.

Brain CT revealed opacification of the right frontal sinus suggestive of sinusitis. The patient had complained of chronic nasal discharge for years, and she used over-the-counter sinus medications. She had also noticed a watery discharge from her right nostril. We suspected cerebrospinal fluid rhinorrhea.

We reviewed the brain images (figures 1 and 2), and a 3 mm posterior wall defect of the right frontal sinus was observed. The radiologist suspected that what was described as a fluid-filled right sinus was actually an encephalocele.

A lumbar puncture revealed clear cerebrospinal fluid (CSF) with one white blood cell.

TREATMENT

The patient was treated with levetiracetam and remained free of seizures at the last follow-up. A bifrontal craniotomy was performed, a right frontal sinus mass measuring 1.9×1.5×0.4 cm was resected and cranialisation of the frontal sinus was completed. The pathology revealed a well-circumscribed fragment of neurological tissue. The postoperative course was uneventful. She was last seen

6 months after her surgery. She remained free of seizures and had no nasal discharge.

DISCUSSION

An encephalocele is a protrusion of the cranial contents beyond the normal confines of the skull.¹ Encephaloceles are classified based on the anatomic site of the cranial bony defect to which they are related.² They are also

Figure 1 CT brain: right frontal sinus posterior wall defect.

Figure 2 MRI brain: right frontal sinus encephalocele.

classified according to their contents. Lesions with CSF and meninges are called craniomeningoceles, whereas lesions also containing neural tissue are called meningoencephalocoeles.³ Encephalocoeles can be congenital secondary to the failure of neural tube closure, resulting in a bony defect through which the herniation of the neural tissue may occur at birth or later in life. They can also be acquired lesions secondary to traumatic, neoplastic, metabolic and infectious damage to the skull base.^{2 3}

Frontal encephalocoeles can deform the forehead or remain occult. Associated defects of the frontal cortex, anterior corpus callosum and optic-hypothalamic structures and CSF leakage into the frontal or ethmoid sinuses pose a risk of meningitis.⁴ Posterior encephalocoeles may reach a large size and are complicated by grave neurological deficits, such as blindness, ataxia and mental retardation.⁴ They can also be small and remain hidden.⁴ Meningoencephalocoeles at the skull base tend to go undetected.⁵ They present on brain imaging as incidental findings or they become apparent by causing CSF

rhinorrhea, recurrent meningitis, chronic nasal obstruction or recurrent sinusitis.⁵ Seizures can be the first clinical presentation of meningoencephalocoeles.^{3 5} In a review of 33 cases of meningoencephalocoeles associated with seizures, 82% were congenital, and presentation typically occurred in middle age (mean age 34 years).³ The remaining 18% were due to trauma, postoperative complications, neoplasms and osteoporosis.³ The encephalocoele location was variable; 45% temporal, 23% occipital, 29% frontal (including 13% nasal) and 3% parietal.³ Resection of the encephalocoele was associated with resolution of the seizures.³

Sinusitis is not a common aetiology for seizures; an abnormal sinus finding should prompt consideration of another aetiology, including the complications of a CSF leak and encephalocoele.

Learning points

- ▶ Encephalocoeles are a rare cause of seizures in adults.
- ▶ Sinusitis is not a common aetiology for seizures; an abnormal sinus finding should prompt consideration of another aetiology, including the complications of a cerebrospinal fluid leak and encephalocoele.
- ▶ A detailed and diligent history is an important part of seizure evaluation.
- ▶ Premature closure is a common cognitive error. Avoiding a narrow minded belief in a single idea and considering alternative diagnoses can prevent this error.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Scully RE**, Mark EJ, McNeely WF, *et al*. Case records of the Massachusetts General Hospital. Weekly clinicopathological exercises case 39–1989. A 63-year-old woman with a polypoid nasal mass and a recent grand-mal seizure. *N Engl J Med* 1989;**32**:884–93.
2. **David DJ**, Proudman TW. Cephalocoeles: classification, pathology, and management. *World J Surg* 1989;**13**:349–57.
3. **Faulkner HJ**, Sandeman DR, Love S, *et al*. Epilepsy surgery for refractory epilepsy due to encephalocoele: a case report and review of the literature. *Epileptic Disord* 2010;**12**:160–6.
4. **Allan R**, Martin S. *Adams & Victor's principles of neurology*. 9th edn. New York: McGraw-Hill; 2009.
5. **Eichler L**, Z'Graggen WJ, Caversaccio M, *et al*. Symptomatic epilepsy with a tumor in the nose. *J Neurol* 2006;**253**:1113–14.

Copyright 2012 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Ammar H, Kott A, Fouda R. Not the usual sinusitis. *BMJ Case Reports* 2012;10.1136/bcr-2012-006749, Published XXX

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow