Mystery Case: Frontal meningoencephalocele causing recurrent bacterial meningitis

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Figure Meningoencephalocele in a 34-year-old woman with meningitis

Transverse (A) and coronal (B) T2 MRI of a patient with recurrent meningitis show 1-cm caudal herniation of the right gyrus rectus (arrowhead in B), with an additional 1.2-cm herniation of the meninges (arrows in A and B) extending through ethmoid air cells and reaching the level of middle nasal turbinate representing a frontal meningoencephalocele.

A 34-year-old woman presented initially with meningococcal meningitis and with *Streptococcus mitis* meningitis 6 months later. A right cribriform plate area meningoencephalocele was discovered on MRI at the second episode. In retrospect, this abnormality was present on initial MRI (figure). The patient recalled intermittent watery rhinorrhea for 1 year preceding the first meningitis episode, but without head trauma. The anterior cranial fossa defect was repaired, without recurrence of rhinorrhea or meningitis in 2-year follow-up.

Meningoencephalocele may be congenital (incidence 1:5,000 live births) or posttraumatic.^{1,2} It should be sought in recurrent bacterial meningitis by scrutiny of coronal sections of brain MRI.

AUTHOR CONTRIBUTIONS

T. Singhal: compilation of clinical and imaging data and preparation of manuscript. N. Venna: conceptualization of report, preparation and review of manuscript.

DISCLOSURE

The authors report no disclosures relevant to the manuscript. Go to Neurology.org for full disclosures.

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MYSTERY CASE RESPONSES The Mystery Case series was initiated by the *Neurology*® Resident & Fellow Section to develop the clinical reasoning skills of trainees. Residency programs, medical student preceptors, and individuals were invited to use this Mystery Case as an educational tool. Responses were solicited through a group e-mail sent to the American Academy of Neurology Consortium of Neurology Residents and Fellows and through social media.

All the answers that we received came from individual residents rather than groups. Almost half of the respondents (47%) correctly identified the neuroimaging features of a frontal meningoencephalocele extending in the nasal cavity. Other considerations included a fracture of the cribriform plate with subsequent brain herniation or a CSF fistula.

This case illustrates a rare etiology for CNS infections that should be considered in cases of recurrent meningitis.

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