

Images in Allergy

Spontaneous Cerebrospinal Fluid Leak Presenting as Chronic Rhinitis

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Cerebrospinal fluid (CSF) rhinorrhea occurs because of abnormal communication between the subarachnoid space and the nasal cavity. Although most leaks have an underlying cause, spontaneous CSF (sCSF) leaks are those not explained by traumatic injury, previous surgery, or secondary cause and account for approximately 6% to 23%¹ of all cases of CSF rhinorrhea. The clinical diagnoses can be challenging due to its resemblance to chronic rhinitis. It presents in obese, middle-aged women and is linked to benign intracranial hypertension.

A 64-year-old Hispanic woman with a medical history of hypertension, renal cell carcinoma, and hypothyroidism and a body mass index of 26.08 kg/m² presented with a 1-year history of continuous clear rhinorrhea from her left nostril. The patient had persistent cough and postnasal drip despite multiple courses of antibiotics, intranasal steroids, and oral antihistamines. She denied any surgical history. Aeroallergen skin testing, rhinoscopy, and computed tomography of the temporal bones were negative, but a sample of the nasal fluid tested positive for beta-2 transferrin. Subsequently, a brain magnetic resonance imaging revealed a bilateral cribriform meningocele with a linear signal hyperintensity arising from the left nostril (Figure 1, A, white arrow). The magnetic resonance imaging also revealed meningoceles of the Meckel cave and jugular foramina along with an increased optic nerve sheath diameter (diameter, 8.4 mm; normal, <6 mm) (Figure 1, B and C). The patient had endoscopic sinus surgery with intrathecal fluorescein; on starting the procedure, an opening CSF pressure of 20 cm H₂O was recorded. An active leak and a meningocele were detected on the left and right side, respectively. The leak was repaired with a nasal septal flap. She was discharged 3 days after the procedure on acetazolamide 250 mg twice a day. On clinical follow-up 9 months after surgery, the patient is doing well and denies rhinorrhea or any headaches postclosure.

This case illustrates the diagnosis of sCSF leak. Unilateral anterior clear drainage is a clinical pearl that prompts a differential of sCSF rhinorrhea, especially in a setting where there is no history of trauma or surgery. Other diagnoses to consider on the basis of initial presentation of this patient include rhinorrhea of aging, allergic rhinitis, and atrophic rhinitis. Beta-2 transferrin testing is the reference standard for identifying sCSF leak, with a specificity and sensitivity of 94% to 100% and 98% to 100%, respectively. After sCSF leak confirmation, imaging testing (high-resolution computed tomography or magnetic resonance imaging) should follow for a complete evaluation of skull base and paranasal sinuses, allowing localization of the leak. Surgical treatment is a crucial part of management; meningitis and intracerebral infection are frequent complications of unrepaired leaks. A systematic review conducted by Lobo et al² revealed how the endoscopic repair of anterior and lateral skull base leaks proved safe and effective with high success and low long-term failure rates. In the instance of bilateral leakage, there should be caution when using bilateral septal flaps due to the decreased blood supply to parts of the septum. If benign intracranial hypertension is suspected as an underlying cause, treatment with acetazolamide is important to prevent leak recurrence as illustrated in this case.

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Conflicts of interest: The authors declare that they have no relevant conflicts of interest.

Received for publication August 23, 2019; revised September 5, 2019; accepted for publication September 9, 2019.

Available online ■■

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J Allergy Clin Immunol Pract 2019;■■:■■-■■.

2213-2198

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<https://doi.org/10.1016/j.jaip.2019.09.019>

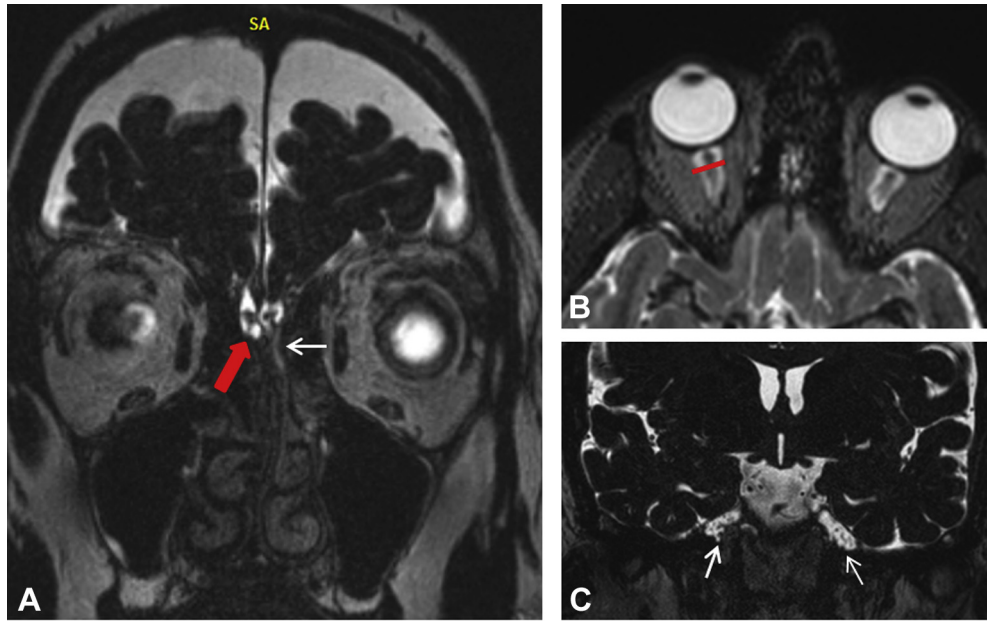


FIGURE 1. (A) Coronal T2-weighted MRI showing a right cribriform meningocele (*red arrow*); however, the leak can be seen as linear fluid signal in the nasal roof on the left side from a cribriform plate defect (*white arrow*). (B) Axial T2-weighted, dilated optic nerve sheath diameter (8.4 mm; normal, <6 mm). (C) Coronal T2-weighted MRI, dural diverticula arising from Meckel's cave (*arrows*). *MRI*, Magnetic resonance imaging.