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CE - MEDICAL ILLUSTRATION

The runny nose

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A 40-year-old woman presented with a "runny nose" of 3 month's duration. Every morning, she had a gush of watery discharge from her nose. There was no history of headache, fever, head trauma, or neurosurgical procedure, and the patient did not use any medication. She had no coryza or sinusitis symptoms. On physical examination, the patient was alert with normal vital signs. There was a continuous fluid leakage from the right nostril. The examination was otherwise normal including neurologic examination. Laboratory studies including CBC and a complete metabolic panel were within normal limits. Computed tomography (CT scan) of her head was performed. It showed no parenchymal abnormality. There was an air-fluid level (Panel A and B) and a small suspected bony defect in the lateral wall of the right sphenoid sinus (Panel A-arrow) (Fig. 1).

Since an air-fluid level in the sphenoid sinus is always abnormal, in the absence of sinusitis symptoms, head trauma, or previous neurosurgical procedures, it connotes a fluid, namely cerebrospinal fluid (CSF). With the impression of a CSF leak, the watery gush in the mornings was attributed to accumulation of CSF in her sphenoid sinus during the night, and sudden discharge by positional change of the head and the effect of gravity. A test for beta-2 transferrin was ordered, which was positive. Thus, a diagnosis of primary spontaneous cerebrospinal fluid rhinorrhea was made.

CSF rhinorrhea refers to the drainage of CSF through a skull base defect into the nose. It can be spontaneous, or secondary to trauma, surgical procedures, or tumor. In order to make the diagnosis in the cases of bloody discharge, (which was not present in this case), filter paper to show a double ring sign can be used. A few drops of fluid from a CSF leak placed on absorbent filter paper will show a central circle of blood and an outer clear ring of CSF. Beta-2 transferrin measurement of the leaking fluid has a high specificity for detecting CSF, [1] and the non-contrast head CT scan is the imaging modality of choice [2]. While the exact etiology is unknown, there have been a number of theories postulated: such as embryologic development defect or aberrant arachnoid granulations. The most common sites of skull base leaks are at the floor of the anterior cranial fossa and sphenoid sinus, the cribriform plate being the thinnest bone wall of the area [3]. The risk factors include body mass index higher than 30, female gender, middle age, and low bone density (particularly evidence of osteoporosis) [3]. This condition may have devastating complications in some patients such as CNS infections, decreased intracranial pressure, and brain herniation. Management includes watchful waiting: (bed-rest, head elevation, and avoidance of straining), since leaks often stop spontaneously; if this does not occur then neurosurgical closure is necessary to prevent the onset of infection in the meninges. Hydroxyapatite cement was applied transnasally to the sphenoid region fistula, and the patient recovered uneventfully.

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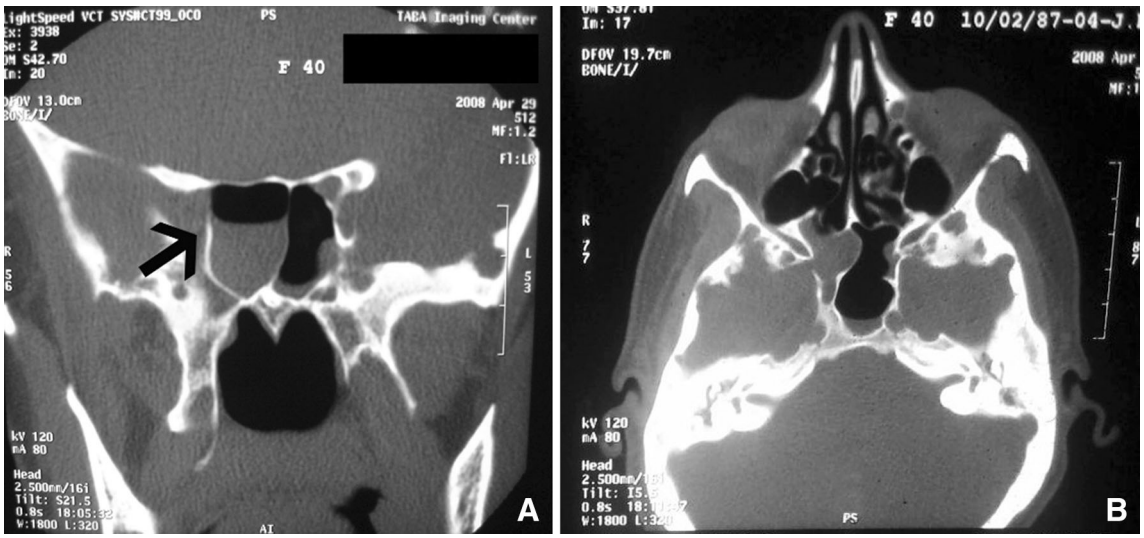

Fig. 1 *Panel A and B* CT scan shows an air-fluid level in the right sphenoid sinus with a small bony defect (*arrow*) in the lateral wall of the right sphenoid sinus

Conflict of interest None.

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