Don't Hold Your Breath

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A 50-year-old athletic man presented with two weeks of debilitating “sinus” headache, continuous left nostril drainage, persistent cough, with no history of head trauma.

Figure 1. His nasal discharge was unilateral, worse with coughing or leaning forward.

Figure 2. Endoscopy revealed a small bony defect in his left nasal cribriform plate.

His nasal discharge was unilateral, worse with coughing or leaning forward (Fig. 1), with one clear drop every 2–3 seconds. Analysis demonstrated beta-2 transferrin, a transferrin isoform found almost exclusively in cerebrospinal fluid (CSF). Brain MRI showed no cribriform or ethmoid sinus fractures. Endoscopy revealed a small bony defect in his left nasal cribriform plate (Fig. 2), with active CSF drainage, causing his rhinorrhea. After endoscopic meningocele repair, his symptoms completely resolved. Further review revealed that our patient was a former US Marine who exercised aggressively, bench-pressing 200–300lbs daily, but with poor technique—holding his breath while lifting. Normal intracranial pressures (ICPs) range from 5–15cmH₂O when laterally recumbent¹. Patients with CSF leaks, regardless of etiology, have ICPs of 26–33cmH₂O, suggesting correlations between intracranial hypertension and CSF leak². When fifteen patients were placed in left lateral recumbent positions and asked to bear-down against a closed glottis (Valsalva), every patient achieved ICPs of 25cmH₂O or greater, with one reaching 47cmH₂O³. People performing frequent Valsalva maneuvers, including weightlifting without exhaling, elevate their ICPs to pressures associated with spontaneous CSF leaks. Smaller leaks may spontaneously heal. Large, symptomatic or continuous leaks should be repaired to prevent meningitis. Large or rapidly draining defects may be visualized during endoscopy. Smaller defects are localized with dyes injected into CSF. We presume that our patient's Valsalva maneuvers during weightlifting elevated his ICP, eroded his meninges, eventually causing a meningocele and spontaneous CSF rhinorrhea.

Conflict of interest: None disclosed.

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