Spontaneous tension pneumocephalus after esophagogastroscopy

An 80-year-old man presented with generalized weakness and upper abdominal discomfort. A computed tomography (CT) brain scan showed hyperpneumatized paranasal sinuses but was otherwise normal (**Fig. 1**).

An esophagogastroscopy was performed which revealed gastritis. He received intravenous sedation during the procedure but was noted to have been gagging. He lapsed into coma 5 days later due to a massive tension pneumocephalus, which was urgently relieved through a burr hole (**Fig. 2**).

A cisternography demonstrated a cerebrospinal fluid (CSF) fistula at the left frontal sinus. Surgical repair was performed through a burr hole, which confirmed the presence of the fistula and a bony defect on the posterior sinus wall (**Fig. 3**). The patient recovered well.

Neurological complications of gastrointestinal endoscopy are extremely rare; cerebral air embolism has been described, but the occurrence of pneumocephalus has never been reported [1]. Pneumocephalus is an uncommon but potentially fatal condition. The majority of cases are traumatic in origin [2]. Spontaneous pneumocephalus may result from actions which generate high pressure within the paranasal sinuses, such as Valsalva's maneuvre [3]. The presence of hyperpneumatized paranasal sinuses may also predispose to spontaneous pneumocephalus [4]. In the present case, a sudden rise in airway pressure during endoscopy, albeit transient, was likely to have resulted in the formation of a CSF fistula through a hyperpneumatized sinus. The resultant dural tear acted as a ball valve which allowed continuous inflow of air, and presented with the delayed onset of spontaneous pneumocephalus.

Spontaneous pneumocephalus may resolve on conservative treatment. Surgical treatment is indicated when there is evidence of raised intracranial pressure, neurological deterioration, or when the dural defect does not heal satisfactorily. We have successfully repaired the CSF fistula through a craniostomy, although endoscopic frontal outflow tract obliteration may be considered as a viable, minimally invasive alternative [5].

Fig. 1 Plain computed tomography (CT) scan showing hyperpneumatized air sinuses.

Fig. 2 Pneumocephalus after esophagogastroscopy.

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Competing interests: None

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Fig. 3 Cerebrospinal fluid fistula on the posterior wall of the left frontal sinus.

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