

CLINICAL PICTURE

Tension pneumoventricle and cerebrospinal fluid rhinorrhea

A 46-year-old male, who experienced left frontal skull open fracture with intracerebral hemorrhage and received conservative treatment 5 months previously, presented with headache, walking difficulty and left-sided clear watery rhinorrhea for 2 days. Physical examination showed decreased cognitive function and gait ataxia. The rhinorrhea was aggravated especially when leaning forward. Skull Water's views showed notable air-filled lateral ventricles (Figure 1a). Subsequent head computed tomography (Figure 1b) showed marked air in the left frontal lobe, both lateral and third ventricles, and subarachnoid space with complicated fractures (arrows) involving frontal skull and sinus. He received craniotomy, a dura defects beneath the fractured frontal sinus lead to the cerebrospinal fluid (CSF) rhinorrhea. Encephalomalacia developed from the resolution of old

left frontal intracerebral hematoma created a fistula tract between lateral ventricle and frontal sinus. This resulted in air entrance into the ventricular system. After dural repair and lumbar CSF drainage, his neurologic symptoms improved dramatically.

Tension pneumoventricle, a rare form of symptomatic intraventricular pneumocephalus, has been reported as a complication of CSF shunt surgery or excision of ventricular tumor.^{1,2} It may manifest as headache, rapid deterioration of consciousness, incontinence and gait ataxia due to the rapid accumulation of air in the ventricle.^{1,3} Surgical management with external ventricular drainage to relieve the pressure caused by trapped air is mandatory.^{2,3} CSF rhinorrhea occurs when there is a fistula between the dura and the skull base and discharge of CSF

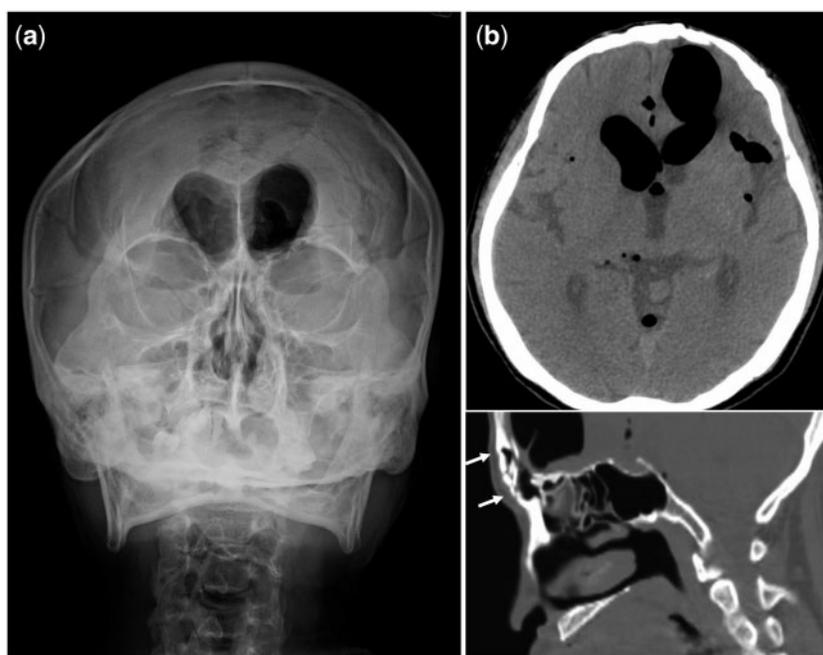


Figure 1. (a) Skull Water's view showing air-filled lateral ventricles. (b) The head CT showing marked air in the left frontal lobe, both lateral ventricles, third ventricle, and subarachnoid space with complicated fractures (arrows) involving frontal skull and sinus.

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from the nose.⁴ It mostly occurs following head trauma with frontal-based skull fractures or as a result of intracranial surgery and usually presents unilaterally.^{4,5} Simultaneously presence of tension pneumoventricle and CSF rhinorrhea was scarcely reported in the literature. As our patient, it may occur in a delayed frontal skull fracture with sinus involvement and intracranial hemorrhage.

Photographs and text from: Jen-Chih Tsai*, Kai-Yuan Cheng*, Department of Emergency Medicine, Ditmanson Medical Foundation Chiayi Christian Hospital, Chiayi, Taiwan; Sheng-Tzung Tsai, Department of Neurosurgery, Buddhist Tzu Chi General Hospital, and Tzu Chi University, Hualien, Taiwan; Ming-jen Tsai, Department of Emergency Medicine, Ditmanson Medical Foundation Chiayi Christian Hospital, Chiayi, Taiwan; and Department of Sports Management, Chia Nan University of Pharmacy and Science, Tainan, Taiwan. email: tshi33@gmail.com

*These authors contributed equally to this work.

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