

Tension pneumocephalus following ventriculoperitoneal shunt insertion

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CASE REPORT

A 76-year-old man, with a history of arterial hypertension and ischemic stroke without focal deficits three years ago, was admitted to our hospital for embolization of ruptured anterior communicating artery aneurysm. The following day of the embolization, an extracranial cerebrospinal fluid (CSF) shunt was placed due to acute hydrocephalus. During his stay in the neurosurgery department, he developed acute respiratory failure type 2, and was intubated and transferred to our intensive care unit (ICU). In the ICU, the patient remained with normal-sized pupils, sluggishly reacting to direct light. Ten days later, while he was breathing spontaneously via tracheostomy tube and with improving neurological condition (GCS 11/15, E4 V1 M6), the extracranial CSF shunt was removed, and a ventriculoperitoneal (VP) shunt was placed. After less than 48 hours, his level of consciousness progressively deteriorated, and he developed anisocoria (dilatation of the right pupil) without light reflex. The head computed tomography (CT) scan showed an amount of air in the right frontal subdural space causing shifting of the midline to the left (Figure 1). The patient's clinical condition improved impressively after the aspiration of approximately 60 mL of air with a 20-gauge needle, from a small hole in the frontal bone, through which the previous extracranial shunt was inserted (Figure 2). It is worth mentioning that the procedure took place on his ICU bed. Three days later, he transferred back to the neurosurgery department, presenting similar neurological status as prior to the surgery.

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Figure 1: CT scan of the head after the deterioration of level of consciousness.



Figure 2: CT scan of the head after the aspiration of 60 mL of air.

DISCUSSION

Tension pneumocephalus (TP) is a life-threatening neurosurgical condition, which requires prompt intervention. The clinical findings are nonspecific, presumably reflecting increasing brain parenchymal compression. Case reports concerning pneumocephalus complicating VP shunt insertion are extremely rare. Most of them described the occurrence of pneumocephalus months or years following the VP shunt insertion. As far as we are aware, this is the third case of early postoperative TP after shunt surgery described in the literature and the first in our ICU department [1–3]. It is important to note that in our case the pathognomonic radiographic sign of TP, called “Mount Fuji” (separation of both frontal lobes away from the falx cerebri in the midline), did not appear. The short period of time that intervened between the surgery and the alteration of patient’s level of consciousness could be one explanation for the latter.

CONCLUSION

Even though early onset TP following VP shunt insertion is unusual, our case report indicates that close monitoring of the patients after the specific surgery is lifesaving.

Keywords: Cerebrospinal fluid, Tension pneumocephalus, Ventriculoperitoneal

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REFERENCES

1. Baradaa W, Najjar M, Beydouna A. Early onset tension pneumocephalus following ventriculoperitoneal shunt insertion for normal pressure hydrocephalus: A case report. Clin Neurol Neurosurg 2009;111(3):300–2.

2. Aydoseli A, Akcakaya MO, Aras Y, Boyali O, Unal OF. Emergency management of an acute tension pneumocephalus following ventriculoperitoneal shunt surgery for normal pressure hydrocephalus. Turk Neurosurg 2013;23(4):564–7.
3. Harvey JJ, Harvey SC, Belli A. Tension pneumocephalus: The neurosurgical emergency equivalent of tension pneumothorax. BJR Rep Case 2016;2(2):20150127.

Author Contributions

Marinakis Giorgos – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Grigoris Gkouvelos – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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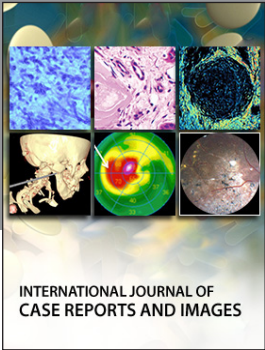
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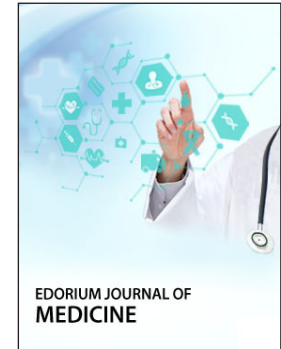
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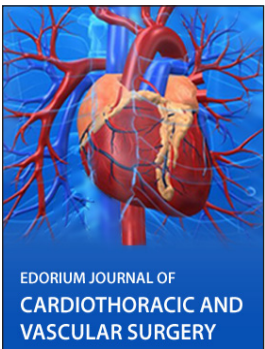
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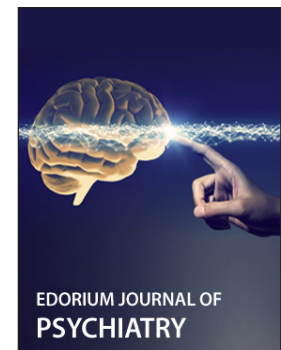
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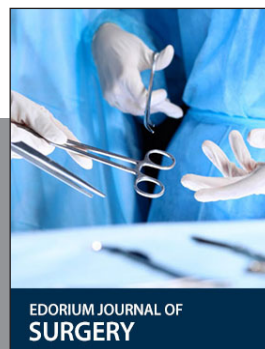
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