Abstract

Introduction
We report a case of unilateral mydriasis following microvascular decompression for hemifacial spasm complicated by pneumocephalus through the operative incision.

Case report
A 50-year-old gentleman with a past medical history of hypertension presented with a left hemifacial spasm. He received left-side microvascular decompression under general anaesthesia. After operation, the patient’s right pupil was found to be markedly dilated (6 mm), with diminishing direct or consensual light reflex. The left pupil was 2 mm and also non-reactive to light. Emergent head CT revealed pneumocephalus and no intracranial haemorrhage or any other abnormalities. We concluded that the right oculomotor must have been distorted by pneumocephalus. The patient was extubated in the operation room. The right pupil returned to normality within the next 6 h. Postoperative course was uneventful other than insomnia in the first 24 h.

Conclusion
We think that pneumocephalus leads to brainstem shift and distorted the right oculomotor nerve. Unilateral mydriasis is alarming after neurosurgery and must be interpreted with caution.

Introduction
Unilateral mydriasis unsettles the anaesthesiologist as it might indicate a serious neurological complication, with the necessity for rapid diagnosis for possible life-threatening events. The aetiology of the unilateral mydriasis includes the effects of anaesthetic agents\(^1\), stellate ganglion block, impaired venous return from the head and neck\(^2\), acute intracranial mass lesion or intracranial haemorrhage (ICH) event, direct eye trauma, pre-existing medical or surgical conditions and inadvertent direct deposition of alpha-adrenergic\(^3\) or anticholinergic\(^4\) agents in the eye.

This article reports a case of postoperative unilateral mydriasis caused by pneumocephalus.

Case report
A 50-year-old gentleman with a past medical history of hypertension presented with a left hemifacial spasm. The patient was not compliant with his blood pressure medications. He received left-side microvascular decompression under general anaesthesia. After peripheral intravenous access was established, intravenous induction was initiated with midazolam 2 mg, fentanyl 100 mg, etomidate 16 mg and rocuronium 50 mg, and then the patient was intubated. After intubation, the patient’s blood pressure went up to 190/100 mmHg. The anaesthesia was maintained with propofol and remifentanil. The incision was infiltrated with lidocaine. The operation was finished within 60 min without intraoperative complications. The total estimated blood loss was about 50 ml.

After operation, the patient’s right pupil was found to be markedly dilated (6 mm), with diminishing direct or consensual light reflex. The left pupil was 2 mm and also non-reactive to light. Vital signs were stable. Both eyes had no oedema, congestion or trauma. The patient did not have pre-existing eye problems or previous eye surgeries. About 250 ml manitol IV was given immediately for presumed ICH. Emergent head CT revealed pneumocephalus and no ICH or any other abnormalities (Figure 1). We concluded that the

* Corresponding author
Email: lilei927@126.com

1 Department of Anesthesiology, China Meitan General Hospital, Beijing 100028, China
2 Department of Anesthesiology, Beijing United Family Hospital, Beijing 100016, China

Figure 1: (a) shows no brainstem shift before surgery and (b) shows pneumocephalus (A) leading to brainstem shift (B) and no intracranial haemorrhage.
right oculomotor must have been distorted by pneumocephalus. The patient was extubated in the operation room. Right pupil returned to normality within the next 6 h. Postoperative course was uneventful other than insomnia in the first 24 h.

Discussion
In this case, both of the patient’s eyes were coated with erythromycin ointment and closed with tape during the procedure. Therefore, there was no exposure of orbits to sympathomimetic agents. Patient had no history of anisocoria. Although leaking or rupture of an aneurysm of posterior communicating artery could cause pupil dilation, there was no evidence of this in the CT scan. CT scan showed pneumocephalus on the right side, which caused transtentorial herniation. The herniation then caused right oculomotor nerve distortion. The mechanism for the pneumocephalus is that too much intracranial injection causes pneumocephalus and intracranial hypertension and has a mass effect with neurological deterioration.

Although an asymmetrically dilated pupil is considered to be an ominous sign, implying cranial nerve III disease, uncal herniation or saccular aneurysm, the patient with anisocoria who is otherwise alert and ambulatory is unlikely to have a significant space-occupying central nervous system lesion.

Conclusion
We recommend checking for pupil size and equality immediately before anaesthesia, after induction and at the end of surgery in order to better determine the cause of this rare complication.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal.

Abbreviations list
ICH, intracranial haemorrhage.

References

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