

Corneal depression immediately after cardiac surgery

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To the Editor:

Intraoperative changes in aqueous humor volume and intraocular pressure (IOP) might be affected mainly by arterial and venous pressure, plasma osmolality, and drugs [1, 2].

We unexpectedly encountered two patients with bilateral corneal depression immediately after cardiac surgery under cardiopulmonary bypass (CPB) (Electronic Supplementary Material Fig. 1). During the CPB, the perfusion pressure remained low (20–50 mmHg), and 20 % mannitol was administered. In both patients, the corneal depression had completely resolved by the following day and did not cause any impairment of visual function.

CPB can change hemodynamics and plasma osmolality. Hypoperfusion to the reticular formation (where aqueous humor is produced) might result in the insufficient production of aqueous humor. Furthermore, the suppression of aqueous humor production might be caused by the decreased supply of oxygen to the reticular formation due to non-pulsatile flow during CPB [2]. In addition, mannitol is known to lower IOP [2], suggesting

that this agent might partially account for the corneal depression.

However, low perfusion pressure and mannitol administration during CPB are not rare in cardiac surgery. Many other factors have also been suggested to reduce intraoperative IOP and aqueous humor volume including hypocapnia, anesthetics, narcotics, and non-depolarizing muscle relaxants [1]. Therefore, it is difficult to identify the precise cause of the corneal depression seen in our patients. Further studies are needed to elucidate the causes of reductions in aqueous humor in cardiac surgery.

Conflict of interest None.

References

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