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Case Report

Conjunctival Chemosis After Coronary Artery Bypass Surgery

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ABSTRACT

Postoperative conjunctival chemosis is an uncommon yet uncomfortable complication following non-ophthalmic surgery. Characterized by a blister-like or billowing swelling of the conjunctiva, typically in the lower eyelid, it arises primarily due to irritation and represents a form of ocular inflammation.

We herein describe a 59-year-old woman with a medical history of hypertension, hyperlipidemia, rheumatoid arthritis, allergies, and prior left-eye cataract surgery. She underwent coronary artery bypass graft (CABG) surgery using cardiopulmonary bypass (CPB), with a total CPB duration of 167 minutes. The procedure was completed without complications.

On the first postoperative day in the ICU, bilateral conjunctival chemosis was observed in the inferolateral region of the conjunctiva. After ophthalmologic consultation and treatment with medications in a head-up position, the chemosis resolved completely within 5 days.

This case highlights that postoperative conjunctival chemosis, albeit rare, particularly after non-ophthalmic procedures, has favorable early and long-term outcomes when promptly recognized and appropriately managed. ***(Iranian Heart Journal 2025; 26(3): 79-82)***

KEYWORDS: Cardiopulmonary bypass, Conjunctiva, Coronary artery bypass, postoperative period, Inflammation

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Postoperative conjunctival chemosis is an uncommon occurrence following general anesthesia and non-ophthalmic surgical procedures. This condition is characterized by a billowing or blister-like swelling of the conjunctiva, particularly noticeable in the lower eyelid. Patients may experience watery and yellowish eyes. The primary cause of this condition is irritation, and it is not contagious. Conjunctival chemosis can occur unilaterally or bilaterally. In severe cases, it may hinder eyelid closure. This type of eye inflammation can lead to patient discomfort, temporary reductions in visual acuity, and an increased risk of keratitis. [1,2] In this report, we present a case of conjunctival chemosis following coronary artery bypass surgery (CABG) that was successfully managed.

Case Presentation

A 59-year-old woman, scheduled for elective on-pump CABG for triple-vessel

coronary artery disease, had a medical history of hypertension, hyperlipidemia, rheumatoid arthritis, diclofenac allergy, and prior left-eye cataract surgery. Her medications included captopril, metoprolol, prednisolone, indomethacin, atorvastatin, and methotrexate.

Under general anesthesia with standard monitoring, a conventional median sternotomy was performed. The tracheal tube was secured with tape, and the patient's eyes were taped shut to prevent corneal ulceration. The surgery was conducted using cardiopulmonary bypass (CPB), with total CPB and aortic cross-clamp times of 167 minutes and 83 minutes, respectively. Throughout CPB, central venous pressure and mean blood pressure remained within normal ranges. The procedure was completed without complications, and the patient was transferred to the ICU.

Fluid intake and output during surgery and the first ICU day were approximately 3800 mL and 3400 mL, respectively. On the first postoperative day, bilateral conjunctival chemosis was observed in the inferolateral conjunctival region (Figure 1A & B). The patient reported no ocular itching.

Following an ophthalmology consultation, visual acuity and intraocular pressure were found to be normal. Treatment included ciprofloxacin 0.3% eye drops (Ciplex) and tetracycline eye ointment, along with a head-up position to promote venous and lymphatic drainage. The chemosis resolved completely within five days.

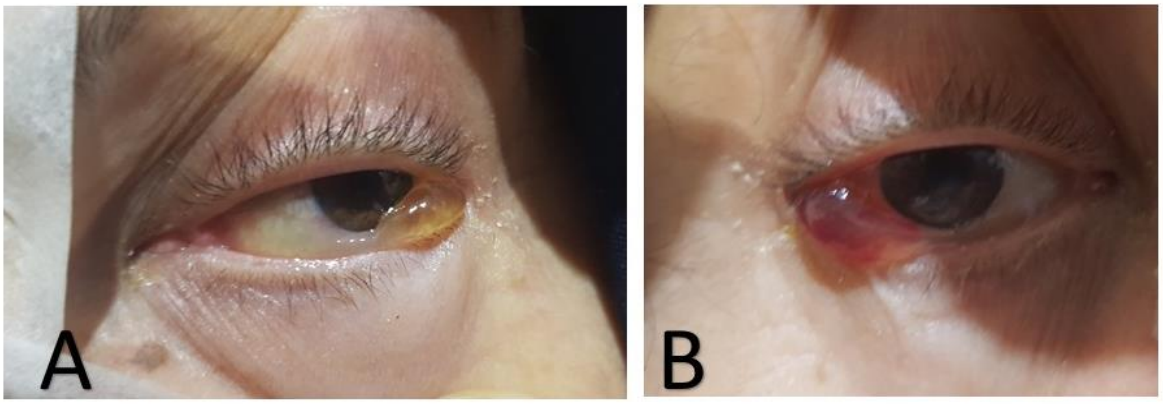

Figure 1. The images show conjunctival chemosis in the inferolateral region of the conjunctiva in the left eye (A) and the right eye (B).

DISCUSSION

Ophthalmic complications can occur following prolonged non-ocular surgeries performed under general anesthesia. Among these, postoperative conjunctival chemosis is an uncommon yet distressing complication of non-ophthalmic procedures. This condition develops when excess fluid accumulates in the conjunctival interstitium, resulting in visible swelling that typically appears most prominently in the lower eyelid. Conjunctival chemosis typically manifests with watery eyes as its primary symptom, accompanied by various ocular changes including eyelid swelling, conjunctival edema, excessive tearing, and visual disturbances such as diplopia or blurred vision. Patients often experience additional discomforts like ocular discharge, conjunctival hyperemia, eyelid erythema, and a persistent foreign body sensation. While allergic reactions constitute the most common etiology, this condition may also arise from trauma or ocular infections of bacterial or viral origin. Importantly, chemosis can develop secondary to diverse ocular pathologies including corneal ulcers,

conjunctivitis, uveitis, panophthalmitis, acute angle-closure glaucoma, orbital venous stasis, and orbital cellulitis. Systemic conditions such as nephritis, congestive heart failure, thyroid disorders, and hypoproteinemia may similarly precipitate chemosis through various pathophysiological mechanisms.

Some case reports have documented an association between conjunctival chemosis and certain medications, including amlodipine besylate (Norvasc) and crizotinib. Predisposing factors for chemosis include inflammation, venous congestion, and impaired lymphatic drainage. Notably, conjunctival edema (also referred to as "ventilator eye") has been observed in 9% to 60% of mechanically ventilated patients with prolonged ICU stays.

The risk factors in the ICU include increased jugular venous pressure and reduced venous return from ocular vessels owing to prolonged tight endotracheal tube taping and positive pressure from mechanical ventilation; sodium and water retention resulting from prolonged high PEEP (positive end-expiratory pressure) during mechanical ventilation; venous pooling in dependent areas caused by gravitational force during extended periods in the prone position; and impairment of the blink reflex and eyelid muscle tone owing to prolonged use of muscle relaxants and sedation.

Proper eye protection is essential during general anesthesia to prevent corneal injuries. This can be achieved through various methods, including hypoallergenic tape, passive eyelid closure, eye patches, or saline-soaked pads. The use of protective ointment represents another optional approach. These protective measures should be implemented immediately after anesthesia induction and maintained throughout the entire surgical procedure.

In cardiac surgery, hemodynamic alterations during CPB, particularly prolonged periods of elevated central venous pressure or reduced perfusion pressure, may compromise ocular circulation. These changes can potentially lead to diminished perfusion of the retinal, optic nerve, and choroidal vasculature.

CPB triggers a generalized inflammatory response that involves activation of the complement system and the kallikrein, coagulation, and fibrinolytic cascades. In the case presented herein, conjunctival chemosis may have resulted from several factors, including improper placement of eyelid tape, inflammation caused by CPB, prolonged CPB duration (> 90 min), microvascular changes owing to blood contact with the foreign surfaces of the CPB machine, allergy, infection, rheumatoid arthritis, and sustained positive pressure during mechanical ventilation in surgery and the ICU.

The primary approach to postoperative conjunctival chemosis involves conservative management. 1-5 This complication, though uncommon, particularly following non-ophthalmic procedures, demonstrates favorable both immediate and long-term prognoses when promptly identified and appropriately treated.

Conflict of Interest

The authors have no conflicts of interest.

Informed Consent

A consent form was obtained from the patient for publication.

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