CASE REPORT

Periocular hematoma secondary to subperiosteal injury by a short needle

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ABSTRACT

Bleeding and intraorbital hematoma is one of the most common complications of needle block for ophthalmic local anesthesia. We describe an unusual presentation of hematoma that originated in the subperiosteal space and extended to the subconjunctival and periocular area after a peribulbar block for phacoemulsification in a 55-year-old lady. It required an urgent surgical evacuation in order to reduce the intraocular pressure and save the eye. Detailed management to improve the outcome is discussed.

Key words: *Local anesthesia, periocular hematoma, phacoemulsification, short needle, subperiosteal injury*

INTRODUCTION

Peribulbar anesthesia with a short needle is now a well-accepted technique for intraocular surgery.[1-3] It is considered to be a minimally invasive approach that is less likely associated with block-related complications. We report a case of subperiosteal hemorrhage that led to a subperiosteal and periocular hematoma as a complication of peribulbar block with a short needle.

CASE REPORT

A 55-year-old obese woman (body mass index 35 kg/m^2) with cataract in her left eye, was scheduled to undergo phacoemulsification with posterior chamber intraocular lens implantation, under local anesthesia. The preoperative assessment revealed long-standing history of diabetes, hypertension and hyperlipidemia that was poorly controlled. She also had residual right-sided hemiparesis for the last 4 years after an episode of cerebrovascular accident. She was also on medical therapy for degenerative joint disease.

Access this article online	
Quick Response Code:	Website: www.saudija.org
	DOI: 10.4103/1658-354X.105891

Her medications included amlodipine 10 mg/day, metformin 500 mg/day, simvastatin 20 mg, diclofenac 50 mg/day and aspirin 81 mg/day. Preoperative B- scan of the operating eye showed a normal axial length (21.23 mm) without staphayloma.

Peribulbar block was performed by a senior anaesthesiologist using 25-G needle with a length of 16 mm (BD Microlane Drogheda, Ireland) by an inferotemporal approach. Ten milliters mixture of local anesthetics (lidocaine 2% and bupivicaine 0.5% in a 2:3 volume ratio respectively) together with hyaluronidase 5 IU/ml was used for the block. The patient was cooperative and did not feel any major discomfort in her eye during injection. A Honan-cuff balloon was applied after the block as a pressure reducing device for 10 minutes.

The patient began complaining of intense pain in the eye after 5 minutes. The Honan cuff balloon was removed immediately. The globe was proptotic with severe tension in the upper and lower eyelids. It was difficult to open the palpebral fissure. A subconjunctival hematoma was noted after forceful opening of the eyelids. A provisional diagnosis of intraorbital hematoma was made. The surgeon was consulted immediately and he performed an emergency lateral canthotomy. The conjunctiva was incised laterally and the hematoma was drained with the help of a canula. Twenty-five percent mannitol in a dose of 50 ml was given intravenously during the procedure and the cataract surgery was postponed.

Intraocular pressure was measured 2 hours later and was found to be 35 mmHg (16 mmHg, base line examination).

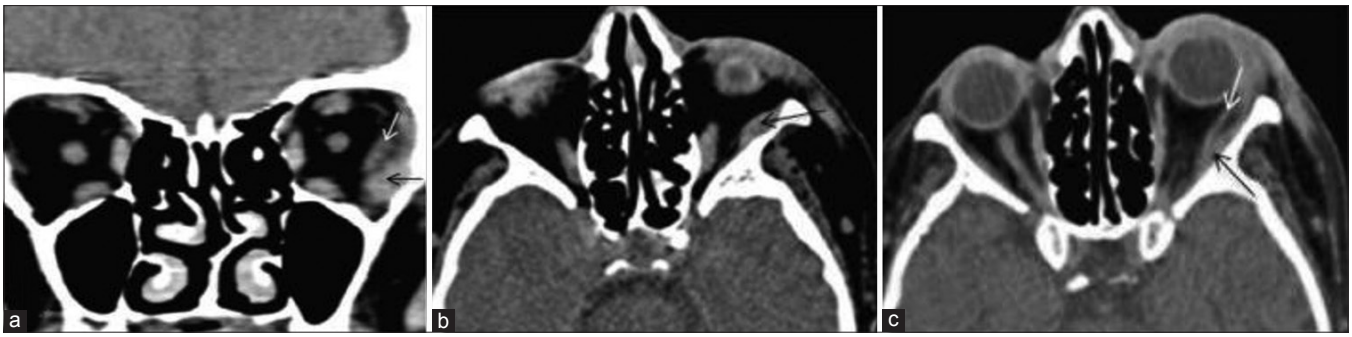

Figure 1: Coronal (a) and Axial (b and c) computed tomography of the orbits revealed a well-circumscribed subperiosteal hematoma (black arrow) between the lateral rectus muscle (white arrow) and along the lateral wall of the left orbit measuring 2.1 × 0.5 cm with no bone discontinuity or fracture. There is very little space between these structures and little room for the blood to spread, so it forms a more localized lump under the periosteum

Patient was prescribed oral acetazolamide 250 mg four times a day. Ultrasound B-scan of left orbit after 6 hours showed posterior pole within normal limits with no evidence of intra-conal/orbital hemorrhage or signs of optic nerve avulsion. Computed tomography of the orbit showed a left periorbital soft tissue swelling with abnormal extraconal density in close proximity to the left lateral rectus muscle. The initial density was approximately 18-40 Hounsfield units with a length of approximately 2.9 cm and width of 0.6 cm. These features suggested an organized subperiostal hematoma in the left extraconal space.

The patient was discharged on the 3rd day of the incident and was seen again after 6 weeks for follow up. The periorbital swelling and bruising subsided significantly. The visual acuity was similar to the presenting acuity prior to the incident.

DISCUSSION

Peribulbar or retrobulbar hemorrhage is more likely in patients on long-term aspirin and nonsteroidal anti-inflammatory drugs[4] but subperiostal hematoma is a rare complication that can be expected with needle trauma. In our case, the hematoma developed by a short needle that unintentionally violated the orbital periosteium, while performing minimally invasive peribulbar block.

It remains unclear whether antiplatelet therapy is a risk factor for retrobulbar/peribulbar hemorrhage following orbital injection. Kallio *et al.* studied 1383 consecutive retrobulbar and peribulbar blocks and found no increased risk of eyelid or orbital hemorrhage in patients taking aspirin, NSAIDs or Coumadin.[5]

The periosteum is firmly attached to the orbital bone at foramina, arcus marginalis, fissures, suture lines and the posterior lacrimal crest but is loosely adherent in between these firm attachments, creating a potential space for accumulation of blood.[6] Subperiosteal hemorrhage may occur after sudden increase in venous pressure during a variety of activities or by iatrogenic injury to numerous venous collaterals connecting the superior and inferior drainage systems. The proposed mechanism to develop subperiosteal orbital hematoma is bleeding from subgaleal vessels that enlarges and dissects the subgaleal space, extending to the orbit. In our case, it is more likely that the blood might have dissected the subperiosteal space coming from the inferolateral subgaleal space.[7]

The coronal and axial computed tomography (CT) of the orbits [Figure 1a, b and c) showed left periorbital soft tissue swelling with extended abnormal extraconal density in close proximity to the left lateral rectus muscle, which suggests an organized subperiostal hematoma in the left extraconal space. The characteristic CT appearance of an acute subperiosteal hematoma is a broad-based extraconal mass that abuts the bony orbit and displaces orbital contents centrally.[8]

Our patient developed an increased orbital pressure associated with pain, proptosis, ecchymosis around the eye, bloody conjunctival chemosis, and increased intraocular pressure. We performed an emergency lateral canthotomy to decompress the intraocular chamber, otherwise, irreversible visual loss could have been caused, because it is known that increased intraorbital pressure for as little as 90-120 minutes may lead to irreversible visual loss.[9] We managed to save the patient's eye and vision by prompt surgical intervention, because the visual acuity was similar before and after the complication on follow-up visits. This case highlights the need for fast diagnosis and timely intervention in cases of severe pain and proptosis immediately after peribulbar block.

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How to cite this article: Ahmad N, Zahoor A, ElKhamary SM. Periocular hematoma secondary to subperiosteal injury by a short needle. Saudi J Anaesth 2012;6:412-4.
Source of Support: Nil, **Conflict of Interest:** None declared.