Case Reports of Orbital Hematoma: Surgical Intervention or Observation

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Abstract

We are reporting two cases of orbital hematoma, one who underwent surgical intervention and another case was observed. A 14-year-old boy presented to us with proptosis and features of optic nerve compression following trauma. Imaging revealed globe tenting, and the patient underwent hematoma aspiration with canthotomy. After 6 weeks, proptosis resolved with 6/6 vision and full extraocular rectus muscles (EOM). An 11-year-old girl presented to us with proptosis and diplopia following a trivial fall. Computed tomography orbit revealed a large variable dense lesion located at the intraconal and medial aspect of extraconal space. Since there were no features of optic nerve compression, the child was treated with oral steroids and was observed. After 2 weeks, proptosis resolved with full EOM.

Keywords: Hematoma, proptosis, steroids

Introduction

Orbital hematomas can be caused by trauma and can be classified as intraorbital or subperiosteal. Clinical features include sudden onset of proptosis, severe orbital pain, downward or lateral displacement of the affected eyeball (most commonly), decreased visual acuity, and restricted ocular movement. Diagnosis can be established by either computed tomography (CT) or Magnetic resonance imaging. Depending on the location and size of hematoma, optic nerve function can be compromised. The management of orbital hematoma is based on the clinical assessment of optic nerve function with imaging studies if available.[1-3]

Case Reports

Case 1

A 14-year-old boy presented with a history of protrusion of the right eyeball for 3 days following fall from two-wheeler. History of defective vision in the right eye associated with pain, photophobia, and watering was present. The patient is a known case of Factor XIII deficiency. His vision in the right eye was 1/60 and left eye was 6/6. Ocular examination of the right eye revealed eccentric proptosis, periorbital edema and ecchymosis, mechanical restriction of all extraocular movements, conjunctival chemosis and subconjunctival hemorrhage, inferior exposure keratopathy involving the lower two-thirds of cornea, pupil sluggishly reacting with Grade 1 Relative Afferent Pupillary Defect [Figure 1]. Anterior segment of the left eye was found to be normal. Fundus examination was normal in both the eyes. Since the patient is a known case of Factor XIII deficiency, Clot retraction and Factor XIII screening were done and found to be within normal limits.

CT orbit revealed proptosis of the right eye, globe tenting, and isodense lesion between the optic nerve and medial wall suggestive of hematoma. Coronal section revealed superomedial compression of the globe and minimal cystic changes [Figure 2]. In view of optic nerve compression signs and symptoms, the patient was taken up for hematoma evacuation, under general anesthesia 6 ml of blood was aspirated from the superomedial aspect of right orbit with lateral canthotomy and cantholysis. Six units of cryoprecipitates were given pre- and post-procedure as per hematologist advice [Figure 3].

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On the fifth postoperative day, proptosis and chemosis were reduced and the visual acuity improved to 4/60. After 6 weeks, visual acuity was 6/6, there was complete resolution of proptosis and chemosis and the extraocular movements were full [Figure 4].

**Case 2**

An 11-year-old girl reported to us with a history of trivial fall when climbing downstairs and sustained injury to the right eye. The child presented with protrusion of the right eye ball and diplopia. Her visual acuity in the right eye was 6/9 and in the left eye was 6/6. Examination of right eye revealed eccentric proptosis with restriction of all extraocular movements. Fundus of the right eye revealed choroidal folds and was otherwise normal. The left eye was within normal limits [Figure 5]. Color vision and fields in both the eyes were normal. Diplopia charting revealed varying diplopia in all positions of gaze more in the superior gaze. Intraocular pressure in the right eye was 24 mmHg and in the left eye 14 mmHg. CT orbit showed large variable dense lesion located at intraconal and medial aspect of extraconal space [Figure 6]. A differential diagnosis of traumatic hematoma/rhabdomyosarcoma/metastatic lesion was suggested by radiologist.

The child was referred to the Institute of Child Health to rule out bleeding diathesis and malignancies, and the diagnosis of traumatic orbital hematoma was made. Since there were no features of optic nerve compression, the child was treated with tablet prednisolone 1 mg/kg body weight and tablet acetazolamide 250 mg twice daily. After 2 weeks of observation, there was reduction in proptosis and the extraocular movements started improving [Figure 7].

**Discussion**

The orbital space comprised of three compartments, namely, subperiosteal space, intraconal space, and extraconal space. Hematoma can occur in any of these compartments and intraconal hematomas are more common. Trauma remains the most common cause of orbital hematoma; however, it can occur spontaneously. Both of our patients presented with unilateral proptosis following trauma.
CT is the best diagnostic tool, as it delineates the size and extent of the hematoma and demonstrates any associated orbital wall fractures. Signs on a CT scan include (a) sharply defined, high-attenuation mass (blood density) with a broad base abutting the superior orbital roof, (b) inferior displacement of the orbital contents, and (c) optic nerve stretching. The differential diagnosis includes neoplasms and inflammation. However, when the clinical presentation is combined with the CT, a diagnosis should be easily established. Conservative management is generally recommended, but severe visual disturbance requires surgical intervention. Management options include observation, needle aspiration, and surgical evacuation. Patients who present with visual compromise as in our Case 1 or patients with associated fracture roof of orbit or subgaleal hematoma can be directly taken for surgical drainage. Drainage has been performed successfully through needle aspiration or surgical evacuation. Patients with no optic nerve compression can be started on oral steroids and can be observed as in our second case, which resulted in resolution of all the symptoms within 2 weeks. It is possible that the steroid therapy was dramatically effective in early resolution of the hematoma. The mechanism is due to the reduction of edema and the suppression of cytotoxic humoral factors such as free radicals and cytokines.\cite{5,6}

**CONCLUSION**

The diagnosis of an orbital hematoma should be made as quickly as possible to permit adequate early therapy. Orbital hemorrhage must be considered in the differential diagnosis of unilateral proptosis following trauma. Prompt evaluation and determination of etiology help the clinician in deciding whether to intervene or to observe. The radiographic features, in the proper clinical setting, can lead to early diagnosis and prevent late sequelae. Steroids form an important tool in early resolution of hematoma, especially when there is a delayed presentation. Canthotomy and cantholysis should be readily performed whenever required because it is much easier to repair a detached canthus than to treat complications due to orbital compartment syndrome.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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