Emergency management for Orbital Compartment Syndrome - How important is decompression?

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Abstract

Current guidelines in the urgent management of orbital compartment syndrome (OCS) includes immediate lateral canthotomy and cantholysis, followed by open surgical decompression, medical treatment is also advocated to be performed just in time while preparing the patient for theatre. This consists of high dose steroids and mannitol and acetazolamide diuretics to reduce swelling and orbital pressures. It is generally recognised that late or delayed intervention is associated with poor outcomes, including blindness. With early presentation, the potential risk to sight, it is generally a low threshold for treating suspected cases. However, whether or not to treat late cases is more controversial, partly because clinicians could face accusations of medical negligence if they do nothing.

We present a case of a patient who sustained orbital trauma to his only seeing eye, which resulted in acute proptosis and loss of vision. He received no treatment at all for what appeared to be an orbital compartment syndrome secondary to retrobulbar haemorrhage, but surprisingly made a full recovery of vision within 48 hours. In contrast to the current literature, this case would appear to cast some doubt over the understanding of the role of OCS / RBH in the aetiology of blindness.

Case report

Mr S, a 76 year old gentleman, presented to A+E of a fall at home. He was referred to the maxillofacial team 4 hours later (approximately 5 hours after his injury, when an ED doctor noticed he was blind in his left eye and his CT head showed a bleed into the left orbit with an associated proptosis.

Medical history:
- Pre-existing blindness in the opposite eye
- Chronic renal failure requiring twice weekly renal dialysis
- History of peptic ulcers

The following features were noted:
1. Acute tense and painful proptosis of the left eye, with a "stoney hard" feel to the globe.
2. Fixed dilated left pupil
3. Blindness in left eye - no perception to light
4. Ophthalmoplegia
5. Pre-existing blindness to the right eye

Orbital compartment syndrome. Axial and sagittal CT imaging confirmed a true proptosis with the left optic nerve on stretch, the so-called "balloon on a string" appearance. This was secondary to orbital oedema and a small amount of blood (arrows).

Clinical evidence of proptosis and periorbital swelling

Progress following injury

<table>
<thead>
<tr>
<th>Injury Day</th>
<th>Management option</th>
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</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Lateral canthotomy and cantholysis</td>
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<tr>
<td>Day 2</td>
<td>Decompression under GA</td>
</tr>
<tr>
<td>Day 6</td>
<td>Continued normal vision with no relapse</td>
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Contraindication

- High dose steroids: GI bleed risk due to peptic ulcer disease
- Decompression under GA: Age, comorbidities, total loss of vision and time delay
- Lateral canthotomy and cantholysis: Refused by patient in view of comorbidities

Discussion

What confounds this topic is the role of other pathological processes in the traumatized orbit. Specifically, cases of suspected OCS following trauma have an element of traumatic optic neuropathy (TON) which contributes to the visual loss. High energy impacts to the upper face are well known to result in varying degrees of traumatic optic neuropathy or associated with some degree of optic neuropathy. Current guidelines in the urgent management of orbital compartment syndrome (OCS) includes immediate lateral canthotomy and cantholysis, followed by open surgical decompression, medical treatment is also advocated to be performed just in time while preparing the patient for theatre. This consists of high dose steroids and mannitol and acetazolamide diuretics to reduce swelling and orbital pressures. It is generally recognised that late or delayed intervention is associated with poor outcomes, including blindness. With early presentation, the potential risk to sight, it is generally a low threshold for treating suspected cases. However, whether or not to treat late cases is more controversial, partly because clinicians could face accusations of medical negligence if they do nothing.

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