A Paediatric Case of Central Retinal Artery Occlusion Following Antibiotics and Decompression Surgery for Orbital Cellulitis

Saad M. Khan[1], Nadia Azad[1]
[1]Royal Berkshire NHS Foundation Trust, Reading, United Kingdom

Royal Berkshire NHS Foundation Trust

Objectives:

Orbital cellulitis is an ophthalmic emergency that warrants urgent management in the hospital setting (1). This occurs more frequently in the paediatric population where it is often secondary to sinus infections. Delay in treatment could result in severe complications including vision loss, abscess formation and intracranial infections. Albeit rare, several cases of central retinal artery occlusion (CRAO) have also been reported in patients with orbital cellulitis, many of which have resulted in permanent loss in visual acuity (2,3). CRAO itself requires immediate management as longer ischaemic times result in increased death of retinal nerve cells (4). Several mechanisms have been proposed by which CRAO develops in the setting of orbital cellulitis (Figure 1), however, no clear pathophysiology has been identified. Most cases have been reported in adult patients who had deterioration in visual acuity at presentation. We report here the youngest case of a paediatric patient who developed reduction in visual acuity and CRAO post decompressive surgery for orbital cellulitis.

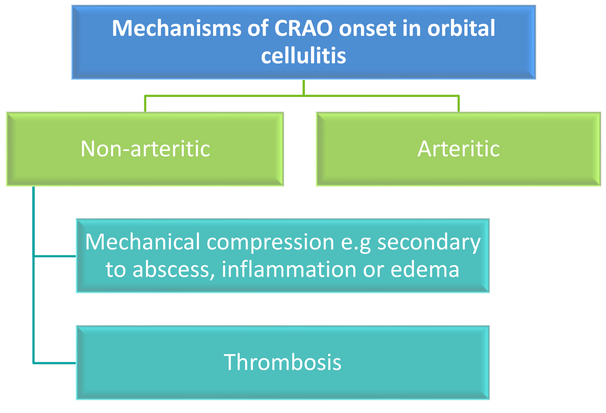

Figure 1: Possible mechanisms behind the onset of central retinal artery occlusion in the setting of orbital cellulitis

Methods:

Verbal informed consent for patient information and images was obtained. The patient demographics and clinical details were obtained from the Medisoft (Medisoft Limited, United Kingdom) application. The patient images were obtained from the IMAGEnet (Topcon Corporation, Japan) data capturing system.

Case Description:

A 13-year-old presented with coryzal symptoms, right eye ophthalmalgia and periorbital swelling. His visual acuity was 6/9 OD and 6/5 OS unaided with normal intraocular pressures. On examination, there was right eye chemosis and limited ocular movements. He was commenced on antibiotics and underwent decompressive surgery for a right sided sinus abscess. Immediately post-surgery, his VA and IOP remained unchanged. The right eye extraocular movement was globally restricted particularly temporally and inferiorly.

Day one post-operatively, he developed a RAPD with no change in VA. Colour vision was intact bilaterally. On examination, there was pallor of the optic disc and retina. A CT head and orbit with contrast showed improved appearances post drainage, and no evidence of optic nerve compression.

Figure 2: The **a)** fundus image of the right eye post-operatively along with the close-up view of the optic disc of the **b)** right eye and **c)** left eye

The following day, there was painless deterioration in the right eye VA to no perception of light with persistent RAPD. This was diagnosed as a central retinal artery occlusion, likely secondary to ongoing inflammation. No systemic cause for a central retinal artery occlusion was identified.

Learning Points:

Close patient follow-up including **regular ocular examinations** are necessary until signs of inflammation completely resolve

Fundus fluorescein angiogram can act as a **useful diagnostic aid** to identify an underlying central retinal artery occlusion

Careful examination and **patient compliance** necessary especially in paediatric patients to obtain an accurate visual assessment

Steroids may have a role to play in **reducing inflammation** in cases where there is **loss of visual acuity** from baseline

Conclusions:

Central retinal artery occlusion is a rare but serious complication of orbital cellulitis. Clinicians should have a high suspicion if fundus imaging indicates underlying ischaemia or there is an acute painless deterioration in visual acuity. Fundus fluorescein angiography can help confirm the diagnosis when there is uncertainty. Prompt treatment with antibiotics +/- surgery can help reduce the risk of developing complications secondary to orbital cellulitis but close monitoring is still needed until the inflammation has settled. Steroids may have a role to play in reducing inflammation in cases where there is loss of visual acuity from baseline.

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