

Case Report

A Rare Complication of MRSA Lid Abscess and Orbital Abscess Following Strabismus Surgery in a Child

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Abstract

Strabismus is one of the most common ocular problems affecting the preschool population and the aim of strabismus surgery is to correct abnormal alignment of the eyes. A 5-year-old girl with strabismus underwent an uneventful surgery and was discharged on the same day with topical medications. Two days later, she returned with a painful right lower eyelid swelling, eye discharge and fever which started 1 day post-surgery. She was admitted for intravenous (IV) antibiotic. Symptoms initially improved after 24 hours of treatment, but later she had worsening eyelid swelling. An urgent CT scan of the orbit showed a right lower lid abscess with orbital cellulitis. Subsequently an examination under anaesthesia (EUA) and incision and drainage (I&D) of the lower lid abscess were performed. Culture from the pus grew Community Acquired Methicillin-resistant Staphylococcus aureus (CA-MRSA), sensitive to Vancomycin. At day 2 post I&D she subsequently developed another episode of localised right lower lid swelling. Another EUA was done but showed the lower lid and wound was free of pus. She was later found to have a toxic reaction to topical Gentamicin and hence this medication was stopped. She responded well to treatment and was discharged after completing her IV antibiotics. At 14 months outpatient follow up, she was well and orthophoric in primary gaze. While treating a disease, we should be opened to all possibilities and not to treat with multiple antibiotics once susceptibility is known.

Keywords: Child, MRSA, orbital cellulitis, squint, strabismus

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Introduction

Strabismus is one of the most common ocular problems affecting the preschool population. A large Danish study found a 2.56% incidence of strabismus which was consistent with a few other studies done in Europe and America (1). However, a study in Singapore showed a prevalence rate of only 0.80% (2). Strabismus surgery is performed to correct abnormal alignment of the eyes. The aim of surgery includes preventing amblyopia, correcting diplopia, increasing stereoacuity, reducing abnormal head posture and to improve cosmesis.

Common complications of the surgery are mild conjunctival redness and scarring (3). There are several important uncommon complications include slipped, lost or incarcerated muscles, stretched scars, pulled-in-two syndrome, periocular infections, orbital cellulitis, scleral perforations, retinal detachments, endophthalmitis, anterior segment ischaemia, and surgical errors (2).

An unpublished hospital census showed that Hospital Kuala Lumpur performed a total of 96 cases of strabismus surgery in 2016.

Case Report

We report a case of a 5-year old girl diagnosed with intermittent alternating esotropia, bilateral dissociated vertical deviation (DVD) and inferior oblique overaction. She underwent an uneventful bilateral inferior oblique myomectomy and left medial rectus recession under general anaesthesia. All preoperative investigations including full blood count were normal. Lid examination prior to surgery was also normal and there was no atopy or known allergy. She was discharged home on the same day with routine topical medications, Guttae Ciprofloxacin and Guttae Dexamethasone 4 hourly to both eyes.

Two days later, she returned with a painful right lower eyelid swelling, eye discharge and fever which had started 1-day post-surgery. Assessment showed bilateral eyelid swelling and redness especially on the right side. She denied eye rubbing or poor hygiene. There was no pain or restriction on eye movement. Her visual acuity was good with no threatening sign of optic nerve involvement. A small amount of creamy yellowish discharge was noted in the right eye and a swab was taken for culture and sensitivity. She was admitted for suspected wound infection and started on an empirical course of intravenous Co-Amoxicillin/Clavulanate and intensive topical medication, Guttae Moxifloxacin and Guttae Gentamicin 0.9% every 2 hourly for the right eye. Topical steroids were withheld. The left eyelids were mildly swollen. Otherwise it was asymptomatic and was continued with the previous topical eye drops.

Symptoms initially improved after 24 hours of treatment, but later she had worsening eyelid swelling associated with purulent yellowish discharge from lower eyelid despite the treatment given (Fig. 1). Reassessment of her right eye later showed presence of chemosis but no obvious proptosis, and reduced ocular motility on up gaze and down gaze, suggestive of orbital cellulitis. At this moment the child was not co-operative for visual assessment. An urgent CT scan of the orbit and brain was done and showed evidence of right eye orbital cellulitis with large lower lid abscess measuring 2.0 x 3.6 x 3.4 cm³ in size (Fig. 2).

Subsequently an examination under anaesthesia (EUA) and incision and drainage (I&D) of the lower lid abscess were performed. The previous surgical site was explored and found to be clean. Culture from the pus aspirate grew Community Acquired Methicillin-resistant *Staphylococcus aureus* (CA-MRSA), sensitive to Vancomycin. Culture sampling taken from



Figure 1: Shows orbital cellulitis with pus discharging from the right eye during presentation day 3 post strabismus surgery. The left eye also showed erythema and swelling but less than right eye.

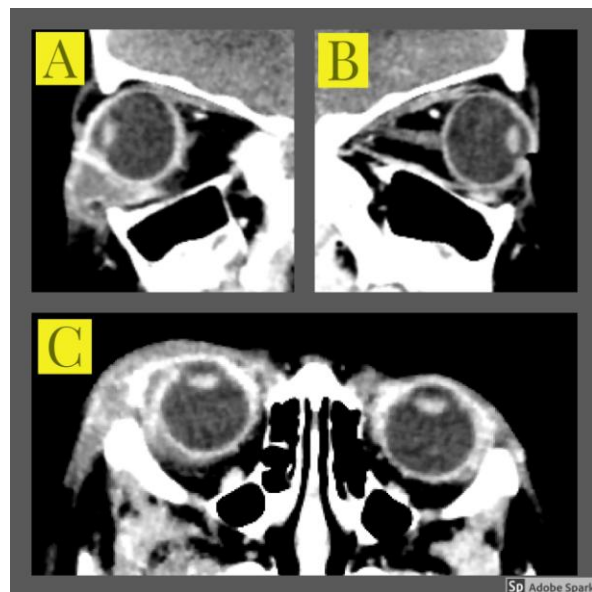


Figure 2: CT Orbit showing (A) a large abscess of the right lower lid, (B) minimal haematoma inferior to the left globe and (C) early signs of right orbital cellulitis.

the patient's caretaker, healthcare personnel and surgical room did not isolate any MRSA.

As a follow up to the sensitivity results, the systemic antibiotic was changed to intravenous Vancomycin 225mg (15mg/kg) 8 hourly and Ceftriaxone 375mg 12 hourly and was planned for 14 days. At day 2 post I&D she subsequently developed another episode of localised right lower lid swelling. Another EUA was done and showed that the lower lid and wound was free of pus. A toxic reaction to topical Gentamicin was suspected and hence the medication was stopped. She responded well to treatment and was discharged 2 weeks later after completing her IV antibiotics. In the latest outpatient follow up at 14 months, the eyes were orthophoric in primary gaze with no more evidence of infection.

Discussion

MRSA is a more pathogenic form of *Staphylococcus aureus* due to its multidrug resistance. It accounts for 1.3% of ocular and periocular infections and the trend is increasing (4). One third of these cases involve paediatric population (5). There are 2 strains: Community-Acquired MRSA (CA-MRSA) and Hospital-Acquired MRSA (HA-MRSA) which slightly differs in presentation.

Around 58%-70% of the cases are caused by CA-MRSA and they affect younger patients (4,5). CA-MRSA mainly causes infection of the lids and lacrimal system, whereas HA-MRSA commonly causes corneal infection such as keratitis (6). The most common manifestation of ophthalmic MRSA is preseptal cellulitis, orbital cellulitis or abscess and conjunctivitis (4,5), but sight-threatening infections, including corneal ulcers, endophthalmitis, and blebitis can occur (4). Most patients develop symptoms early postoperatively, however, in some cases initial symptoms of MRSA infection can present much later or even after the initial postoperative visit (7). Therefore, patients should be advised to return if there are worsening of symptoms for urgent assessment and treatment if warranted.

Predisposing factors for MRSA infections include unsuspected sinusitis, eye rubbing and poor hygiene (7). It was also reported in a case where ophthalmic MRSA infection may have seeded from a distant skin infection (8). This suggests that a thorough pre-operative assessment is vital to reduce the risk of post-operative infection. Counselling and advice on post-operative care is also important to prevent infection. However, this patient was well and fit for surgery under general anaesthesia and her mother claimed she had followed the post-operative care advice strictly.

Orbital cellulitis/abscess requires emergency assessment, imaging and treatment under care of various specialties. High index of suspicion and early diagnosis is crucial in preventing severe infection such as orbital cellulitis as it may cause blindness and even death. Imaging modalities such as CT scan proves to be a valuable tool to differentiate orbital cellulitis from the much more limited preseptal cellulitis.

This child did not have any symptoms of sinusitis or skin infection. CT orbit and brain imaging did not show any air-fluid level or mucosal thickening in the paranasal sinuses. Swab was also taken from the caretaker, healthcare workers and operation room but was negative for MRSA. Therefore, the exposure to the exact source is unknown. One possible explanation

would be direct contact with a carrier/infected person after discharge. Hence it would be a good practice to avoid contact with people who are unwell or symptomatic.

Urgent ward admission for commencement of antibiotics and monitoring is warranted once diagnosis is made. MRSA demonstrates very high susceptibility to Vancomycin followed by sulfamethaxazole, bacitracin, trimethoprim and gentamicin (9,10). However, administration of vancomycin should be monitored for therapeutic dosing. Although less susceptible with fluoroquinolone (10), CA-MRSA shows a higher susceptibility compared to HA-MRSA (6). While most cases of orbital or periorbital infection resolve with topical, oral and intravenous antibiotics, cases which present with lid abscess would require surgical intervention such as I&D (5).

In the discussion, our patient most probably contracted MRSA after the squint surgery. Surgical trauma may have given the opportunity for the inoculation and spread of MRSA. Blomquist et al mentioned that the most common manifestation of ophthalmic MRSA infection was preseptal cellulitis and/or lid abscess followed by other more uncommon conditions such as orbital cellulitis (4). CT orbit showed a right periorbital collection/infected haematoma with intraconal extension and surrounding cellulitis.

Clinically she did not show improvement after 3 days of IV antibiotics and hence a surgical approach was made to drain the collection. Operative findings noted that 3cc pus was drained from the lower lid palpebral conjunctiva. The surgical site and muscle area was free from pus. Delay in treatment in orbital cellulitis may result in blindness, cavernous sinus thrombosis, cranial neuropathy, brain abscess, and death (11)

Particular to this case, the child showed initial improvement after the surgery but the right lower lid swelled up again 2 days later and she had to undergo a second examination under anaesthesia. She was later suspected to have toxic reaction to the fortified topical Gentamycin instead. The true prevalence of antibiotic allergy is unknown. In some prospective studies, the incidence of adverse drug reactions ranges from 0.75% to 4.5%. When suspecting an allergic adverse drug reaction in a child taking antimicrobial agents, a careful clinical assessment must be performed to determine whether the clinical event is an adverse drug reaction and whether it is potentially allergic in nature (12). This important learning point reminds us that while we are treating a disease, we should be opened to other possibilities and not to treat with multiple antibiotics once susceptibility is known.

With the right treatment, the condition of this child improved and was discharged well.

Conclusion

MRSA orbital cellulitis following strabismus surgery is a rare complication. However, aggressive treatment with close monitoring and multidisciplinary action can prevent subsequent serious ocular and systemic complications from occurring.

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