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Image-guided system endoscopic drainage of orbital abscess caused by methicillin-resistant *Staphylococcus aureus* in an infant



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ABSTRACT

INTRODUCTION: The management of orbital abscesses in neonates and infants is very challenging. Surgical drainage of the abscess is aimed at removing the pus and preventing blindness. We describe a case of orbital abscess in an infant that was caused by methicillin-resistant *Staphylococcus aureus* and that was successfully drained with image-guided endoscopic surgery.

PRESENTATION OF CASE: A 39-day-old infant presented with progressive right maxillary swelling complicated by methicillin-resistant *Staphylococcus aureus* orbital abscess. Tooth bud abscess was the most likely primary cause and a combination of intravenous antibiotics was initially prescribed. The collection of intra-orbital pus was removed using image-guided system-aided endoscopic surgical drainage.

DISCUSSION: Prompt diagnosis and management are very crucial. Endoscopic drainage of these abscesses in children has been described. Image-guided drainage of the orbital abscess is a newer technique that has been reported in a teenager and in adult patients. This is the first reported case of endoscopic orbital drainage surgery in an infant. The procedure was performed successfully. This approach provides for better identification of the anatomical structures in a very young patient. Injuries to the medial rectus, globe and optic nerve can be avoided with this technique.

CONCLUSION: Aggressive management of orbital abscesses in infants is mandatory. Image-guided endoscopic orbital drainage offers precise visualization and a safer technique in a relatively smaller orbit.

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1. Introduction

Orbital abscess is an extremely rare ocular infection in neonates and infants. Recently, there have been numerous published cases of *Staphylococcus aureus* and methicillin-resistant *Staphylococcus aureus* (MRSA) infections causing orbital abscess in neonates and infants [1–9]. This condition usually responds to appropriate antimicrobial therapy.

Surgical drainage of the pus is aimed at preventing visual loss by releasing the orbital pressure and obtaining pus for bacterial isolation and antibiotic sensitivity testing. Surgical drainage of orbital abscesses under endoscopy was reported by Rogers et al. [1]. We describe a case of orbital abscess in an infant due to MRSA infection that was successfully drained with the assistance of this image-guided system. This work has been reported in accordance with the SCARE criteria [10].

2. Presentation of case

A 39-day-old previously healthy, full-term male infant presented with a history of progressive right maxillary swelling that extended to the right periorbital region for three days and was preceded by fever and poor feeding. The patient's mother reported no history of upper respiratory tract infection, eye discharge, or recent trauma or hospitalization.

Physical examination revealed a febrile (38 °C) but hemodynamically stable infant. The right maxillary area was diffusely swollen and indurated, and the swelling extended to the zygoma and periorbital region (Fig. 1a). There was mild proptosis with chemosis at the temporal conjunctiva. The pupillary response was normal. No restriction of extraocular movements was observed. The retinal examination was normal. Examination of the fellow eye was essentially normal. Oro-nasal examination revealed multiple oral ulcers on the right upper alveolus at the molar region. No signs of rhinitis or respiratory tract infection were noted on flexible nasal endoscopy. Examinations of other systems were unremarkable.

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Fig. 1. a Right facial abscess causes swelling and extension to zygoma and periorbital area. b Thick purulent pus was drained via subciliary incision. c Persistent fullness of upper eyelid suggestive of non-resolving orbital abscess. d Resolved orbital abscess after endoscopic drainage.

The total white blood cell count ($12,870 \text{ cells/mm}^3$), platelet count ($554,000 \text{ cells/mm}^3$) and C-reactive protein (more than 200 mg/L) were elevated. A swab and blood culture of the right eye grew MRSA. Contrast-enhanced computed tomography (CE-CT) of the orbit and brain revealed a pre-masseteric muscle abscess extending into the right orbital cavity. Orbital abscess collection was noted in the extraconal retrobulbar and infero-medial areas with displacement of the medial rectus muscle (Fig. 2a and b). No subperiosteal collection, intracranial extension or intra-oral pathology was observed.

The patient was treated with intravenous cloxacillin 10 mg/kg and metronidazole 7.5 mg/kg every 8 h. The patient became afebrile on dual antibiotics. Daily oral care was performed for the oral ulcers. Intravenous ceftazidime 100 mg every 8 h was started, but vancomycin 10 mg/kg every 8 h was later used based on culture sensitivity. CE-CT of the orbits and brain was performed due to the persistent proptosis of the right eye and the slow clinical improvement of the right maxillary swelling. Urgent incision and drainage of the pre-masseteric muscle and periorbital abscess were performed using a right subciliary incision. Intra-operatively, a large

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