Periorbital necrotising fasciitis: Rare cases with complex diagnosis and surgical treatment-case series

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Abstract

Introduction: Necrotising fasciitis (NF) is a severe and aggressive pathology with a rapid progression and high mortality risk. Periocular NF is a rare condition associated with a lower mortality risk but significantly higher disabling sequelae. The infection can follow local blunt trauma, penetrating injuries and facial surgery, but in some cases no cause is identified. Non-specific erythema and localised painful swelling of the eyelids characterise the earliest manifestation of the disease, followed by formation of blisters and necrosis of the periorbital skin and subcutaneous tissues. The causative organism in periorbital infection is mainly β-haemolytic Streptococcus alone, occasionally in combination with staphylococcus aureus.

Cases report: We present two cases of NF. A 33-year-old male patient, a victim of accidental glass prick from a glass window while in a vehicle, with a delayed diagnosis of periocular necrotising fasciitis. Additionally, we report a case of a 1-year-old female patient, a victim of acute dacryocystitis, which complicated to deep tissue necrosis with medial canthal defect and lacrimal drainage system necrosis. Both patients underwent surgical and medical treatment.

The patient's survival outcomes were favourable; the sequelae were not disabling. The rarity of such cases and the peculiarities of the cases dictate that prompt clinical examination and aggressive surgical and medical management are key to preventing NF.

Conclusions: Understanding the signs, symptoms, and predisposing factors, as well as the potential rare localisations of NF, including the periocular region, can lead to the early diagnosis and treatment with good functional and aesthetic outcomes, minimising significant disabilities.

Key word: Periocular, necrotising, fasciitis.

Introduction

Necrotising fasciitis (NF) is a rapidly progressive and serious infection of the subcutaneous tissue and superficial fascia with secondary necrosis of the overlying skin. Although periorbital NF is uncommon, as a result of an excellent blood supply, it can result in visual loss or even death. The most common organism responsible for necrotising fasciitis is Group A beta hemolytic Streptococcus (GAS) which has been linked to 50% of cases (1). Early recognition and initiation of treatment are essential to decrease morbidity and mortality (2). Surgical debridement and high-dose intravenous antibiotic therapy are usually combined in the treatment (3).
We present two rare cases of periorbital NF.

Case reports

Case 1

A 33-year-old male patient, a victim of a road traffic accident, was pricked by glass on the right upper eyelid, while in a public transport vehicle. He presented with a 3-day history of right periorbital swelling and hotness of the body.

He initially sought treatment at a hospital on the same day of the injury and was given medication but noted no improvement after two days. The swelling gradually increased. He decided to seek medical attention at Kenyatta National Hospital. His past medical and ocular history was unremarkable.

The clinical examination at consultation showed he was sick-looking, febrile (38 degrees Celsius), with non-tender preauricular lymphadenopathy. The ophthalmological examination of the right eye could not be assessed due to massive periorbital oedema; however, he had a necrotic upper lid from the lid crease to the lid margin. Examination of the left eye revealed that visual acuity, pupils, motility

and intraocular pressures were normal. A total blood count showed mild leukocytosis (total white cell count: 10.5x103 /µL with 90% neutrophilia).

A head and orbit CT scan was performed, which revealed right periocular soft tissue swelling with areas of air fluid levels. There was no intra-orbital extension. The patient underwent incision and drainage of a right pre-septal abscess with debridement of the anterior lamella.

The patient was reviewed the following day post-debridement, and the wound was clean. He was admitted for 14 days, where he was on intravenous antibiotics (ceftriaxone 1 gram twice daily and metronidazole 500mg thrice daily). The patient was satisfied and comfortable; however, was noted to have ptosis on the right eye. He was discharged for follow-up in the oculoplastic clinic.

Figure 1: Right upper lid necrosis at presentation. (© Dr. Mary Gikonyo)

Figure 2: Right upper lid anterior lamellar defect post incision and drainage. (© Dr. Mary Gikonyo)

Case 2

A 1-year-old female child presented with complaints of right eye periorbital swelling and pus discharge for 2 weeks. A week earlier, she presented to a level 3 hospital with swelling around the right lacrimal sac region. She was given eye drops to use, but noted no improvement. During treatment, the swelling around the lacrimal sac area ruptured with profuse discharge and necrosis around the region. She was admitted to the facility and administered intravenous antibiotics (ceftriaxone)for one week, and later on was referred to our department at Kenyatta National Hospital for further management.

Figure 3: Right Lacrimal sac region necrosis at admission. (© Dr. Griffins Atika)

At presentation, she was looking sick, febrile, with non-tender preauricular lymphadenopathy. The visual acuity, pupils, motility and intraocular pressures in both were normal. She was noted to have a necrotic fistula extending from the right medial canthus to the right malar region, discharging pus. She underwent daily cleaning and dressing and was put on antibiotics (intravenous ceftazidime 350mg and gentamycin 17.5mg thrice daily) as guided by pus swab culture and sensitivity where by pseudomonas species was identified. She was later noted to have a right medial canthal defect with a lower lid lamellar defect and lacrimal sac necrosis. Right dacryocystorhinostomy, glabellar flap and primary closure of the remnant defects was successfully done one week after daily cleaning and dressing.

Figure 4: Right medial canthal defect with lower lid lamellar defect post cleaning and dressing. (© Dr. Griffins Atika)

The patient was reviewed postoperatively, and the wound was clean. She was discharged a week later, to be followed up at the oculoplastic clinic.

Figure 5: Photograph 1 week post-dacryocystorhinostomy and glabellar flap. (© Dr. Tshegofatso Mabaka)

Discussion

Necrotising fasciitis (NF) usually develops secondary to trauma or surgery (2). Some predisposing factors include immunosuppression, malignancy, diabetes mellitus, and alcoholism (4,5). Periorbital NF has been reported after

trauma and surgical operations, such as blepharoplasty and dacryocystorhinostomy (6).

The initial clinical appearance of periorbital NF is usually oedema and redness in the region, resembling pre-septal cellulitis or erysipelas (7). After the appearance of the initial signs, the skin then becomes more dusky and grey-blue in colour, eventually becoming blackish with a crust forming as a result of the progressive thrombosis of blood vessels (2).

Computed tomography and magnetic resonance imaging help in making an early diagnosis and differentiating NF from orbital cellulitis and mucormycosis. Imaging scans can be used to guide surgical debridement (8,9).

The most commonly observed causative microorganisms are Streptococcus pyogenes, Staphylococcus aureus, or a combination of facultative and anaerobic organisms, including Group C, G, and H Streptococci, Haemophilus influenzae type B, Bacteroides and Clostridia(1,2,4). In one of our cases, the causative microorganism identified was pseudomonas species. Early recognition and initiation of intravenous high-dose antibiotics combined with tissue debridement helps to decrease morbidity and mortality(3). Surgical debridement decreases the bacterial load and helps with the transmission of antibiotics through the infected area (10). Repeated debridement may be necessary if the response to treatment is slow (8).

The major morbidity risk is orbital spread and loss of vision. cosmetic disfigurement and functional problems of the eyelids may also be seen (11).

Early recognition and effective treatment are the most important factors to reduce the risk of morbidity and mortality (11,12). Although surgical debridement and high-dose intravenous antibiotic therapy are usually essential in cases of periorbital NF, a successful outcome may be obtained in mild cases with antibiotic therapy alone.

Conclusion

Necrotising fasciitis is a severe and aggressive pathology with a rapid progression and high mortality risk. Understanding the signs, symptoms, and predisposing factors, as well as the potential rare localisations of NF, including the periocular region, can lead to the early diagnosis and treatment with good functional and aesthetic outcomes, minimising significant disabilities.

Ethical consideration

Patient particulars and facial appearance were not disclosed. The patient gave consent for the photographs to be taken and for publication of this case series

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