Clostridium perfringens Endophthalmitis and Orbital Cellulitis

Ahmed A. Assaf, Khalid F. Tabbara

Endogenous endophthalmitis in healthy adults is extremely uncommon. Moreover, endogenous Clostridium perfringens infection of the intraocular structures is rare. We report a healthy adult male who developed sudden loss of vision. Eye examination revealed evidence of endophthalmitis. The clinical course was complicated by orbital cellulitis. Blood cultures grew C. perfringens. This case confirms the fact that endogenous endophthalmitis may rarely occur in healthy adults. Prompt diagnosis and early treatment may prevent loss of vision and other serious complications.

Clostridium perfringens is a rare cause of ocular infections and usually follows a penetrating injury. We report, herewith, a case of suspected endogenous C. perfringens endophthalmitis in a healthy adult male. Blood cultures revealed C. perfringens. Laboratory and medical investigations revealed no other clinical findings and no predisposing factors.

Case Report
A 39-year-old male truck driver was admitted to the hospital with a history of fever, headache, vomiting and sudden onset of severe pain in his left eye associated with complete loss of vision of one day's duration. The patient's general health was good with no history of drug intake or allergies. The patient was a non-smoker and had several pets at home (dogs, a rabbit and a guinea pig).

On eye examination his vision was 6/6 in the right eye and no light perception in the left eye. The right eye was normal. The left eye showed injection of the conjunctiva with corneal oedema. The anterior chamber was almost flat with hyphema and the intraocular pressure (IOP) in that eye was 70 mmHg by applanation tonometry. The pupil was dilated and fixed, but the lens and the posterior pole were not visualized. Generalized physical examination was normal except for his ocular findings and a temperature of 38°C. The patient was admitted to hospital and given topical pilocarpine and eserine and intravenous and oral acetylsalicylic. On the second admission day the patient was given oral glycerol and intravenous mannitol.

Three days after admission the left eye showed extensive conjunctival chemosis and hyperemia. The globe was frozen and the patient could not move his left eye. His total white blood cell count on admission was 18.8 K/mm$^3$ with 90% neutrophils. The sedimentation rate was 2 mm/h, haemoglobin was 15.7 g/dl, and platelets and urinalysis were normal. X-ray of the chest and orbit were normal. Blood cultures and computerized tomography of the left orbit were ordered. The patient was started on intravenous ampicillin and gentamicin. An anterior
Chamber tap was not performed because of the very shallow anterior chamber. The patient felt better 24 hours after the initiation of antibiotics therapy with a decrease in his ocular pain. Hyphema persisted but there was no hypopyon. The patient was continued on intravenous antibiotics.

The patient continued to improve, but developed evidence of hypopyon with hyphema. The blood cultures grew *Clostridium perfringens*. The organism was sensitive to penicillin. The patient continued to improve and by the ninth hospital day the hypopyon was less, but the conjunctival chemosis with corneal oedema persisted. Repeat of the blood culture was negative.

An orbital CT scan showed proptosis of the left eye with soft tissue swelling and no tumour or space-occupying lesion.

The patient's improvement was maintained and he was discharged on antibiotics and steroid therapy.

Over the next few weeks the left eye of the patient continued to improve in that the inflammation subsided. Six months later the left eye became phthisical with no light perception. The patient remained symptom free and had a cosmetically acceptable globe. No further procedure was performed.

**Discussion**

*Clostridium perfringens* is a Gram-positive and strictly anaerobic bacillus. The other two most common *Clostridium* pathogenic strains are *C. botulinum* and *C. tetani*. They are present in soil or the intestinal tract of man and animals. They become pathogenic after tissue injury, producing toxin and rapid putrefaction of protein.

Endogenous *C. perfringens* ocular infections are rare. Most of the cases reported in the literature followed penetrating injury. Our patient developed an endogenous *C. perfringens* endophthalmitis and orbital cellulitis without an identifiable source of infection and his injection did not follow any perforating injury.

Crock and co-workers² reviewed 68 cases of *C. perfringens* infection of the eyes and adnexa reported in the literature. All except one, were of exogenous origin. This case of endogenous *C. perfringens* endophthalmitis was reported by Frantz and associates.³ In this case the patient had abdominal pain in addition to his ocular problem. On abdominal surgery he was found to have a perforated gall-bladder. The patient expired and both eyes were enucleated. The left eye was found to have evidence of clostridium endophthalmitis. Endogenous bacterial endophthalmitis is rare. To our knowledge, this is the second case of endogenous endophthalmitis caused by *C. perfringens* to be reported beside that reported by Frantz and associates described above.

Endogenous endophthalmitis caused by *C. perfringens* is a serious life- and vision-threatening condition. Early diagnosis and prompt management may prevent damage to the ocular structures and loss of life.

**References**

