
A case of panophthalmitis with orbital cellulitis related to *Erysipelothrix rhusiopathiae* infection: a rare ocular infection

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Abstract

Erysipelothrix rhusiopathiae is a zoonotic pathogen that rarely causes infection in humans. Human infection occurs as a result of either contact with animals, their meat products, or waste. The septicaemic form of *Erysipelothrix rhusiopathiae* infection can subsequently lead to complications which include endocarditis, intracranial abscess, liver abscess, and in this case, panophthalmitis. The incidence of *Erysipelothrix rhusiopathiae* infection however, may be under-diagnosed due the resemblance it bears to other bacteria. Here we report a case of panophthalmitis in a 57-year-old Malay woman with no previous medical illness caused by *Erysipelothrix rhusiopathiae*, which rarely causes ocular infection.

Keywords: *Erysipelothrix rhusiopathiae*, orbital cellulitis, panophthalmitis, zoonotic pathogen

Kes panoftalmitis berserta selulitis orbit akibat jangkitan *Erysipelothrix rhusiopathiae*: jangkitan okular yang jarang ditemui

Abstrak

Erysipelothrix rhusiopathiae adalah patogen zoonotik yang jarang sekali menyebabkan jangkitan pada manusia. Jangkitan kepada manusia boleh berlaku akibat daripada kontak dengan haiwan, produk daging, atau bahan buangan. Jangkitan septikemik akibat *Erysipelothrix rhusiopathiae* boleh menyebabkan komplikasi seperti endokarditis, abses intrakranial, abses hati, dan dalam kes ini, panoftalmitis. Insiden jangkitan *Erysipelothrix rhusiopathiae*, bagaimanapun, mungkin kurang didiagnos akibat kemiripan gejalanya dengan bakteria lain. Di sini kami melaporkan kes panoftalmitis akibat daripada jangkitan *Erysipelothrix rhusiopathiae* yang jarang menyebabkan jangkitan okular, pada seorang wanita Melayu berusia 57 tahun yang tidak mengalami sebarang penyakit sebelumnya.,

Kata kunci: *Erysipelothrix rhusiopathiae*, selulitis orbit, panoftalmitis, patogen zoonotik

Introduction

Erysipelothrix rhusiopathiae is a non-sporulating, gram-positive bacillus, first described in 1886 as a causative agent of swine erysipelas.¹ Human infection, although rare, can originate from animal or environmental sources.¹ Human infection is classified into three forms: a localized cutaneous form (erysipeloid), a generalized cutaneous form, and a septicaemic form. The septicaemic type of infection is associated with a high incidence of infective endocarditis. It was reported that 90% of *E. rhusiopathiae* septicaemia results in infective endocarditis.² Other complications from the septicaemic form that have been published include diffuse glomerular nephritis, meningitis, intracranial abscess, liver abscess, endocarditis, septic arthritis, and endophthalmitis.³ We describe a case of panophthalmitis caused by *Erysipelothrix rhusiopathiae*, which is a zoonotic pathogen, rarely causing ocular infection.

Case report

A 57-year old Malay woman with no previous medical illness presented to the eye casualty with a 3-day history of painful loss of vision affecting her right eye. Visual

acuity for her right eye was no light perception, with 6/9 for her left eye. There was relative afferent pupillary defect on her right eye. There was limitation of movement on all gazes (frozen eye), with proptosis and erythematous lid swelling causing complete ptosis in her right eye (Fig. 1). The conjunctiva was markedly injected and chemotic with a scleral abscess forming infero-temporally (Figs. 2 and 3). The anterior chamber was full of hypopyon and there was a lot of eye discharge, but no corneal infiltrate seen.

Intraocular pressure in the right eye was 50 mmHg. The left eye was normal. She had no fever or any symptoms suggestive of infection prior to the onset of eye symptoms. She is a housewife who handles fish and meat for daily cooking. There was no history of farming or consuming uncooked meat. In the ward, she was afebrile with no skin rash or lesions.



Fig. 1. Right eye proptosis and erythematous lid swelling causing complete ptosis before treatment.



Fig. 2. Right eye hyperaemia, extensive chemosis, and anterior chamber full of hypopyon before treatment.

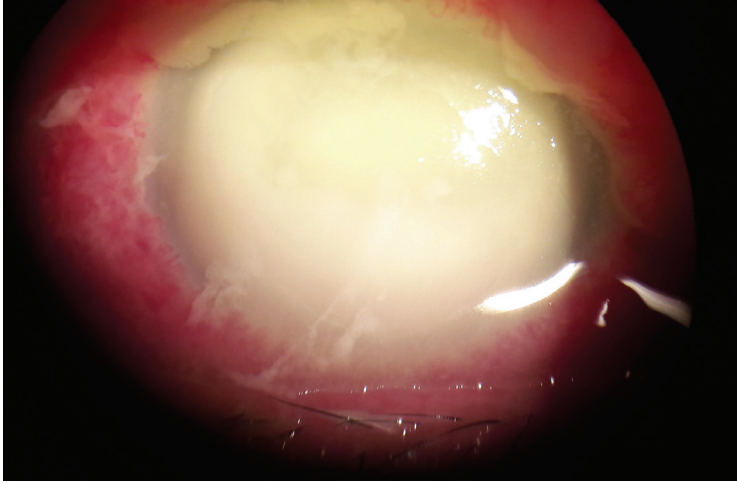


Fig. 3. Scleral abscess at the infero-temporal area before treatment.

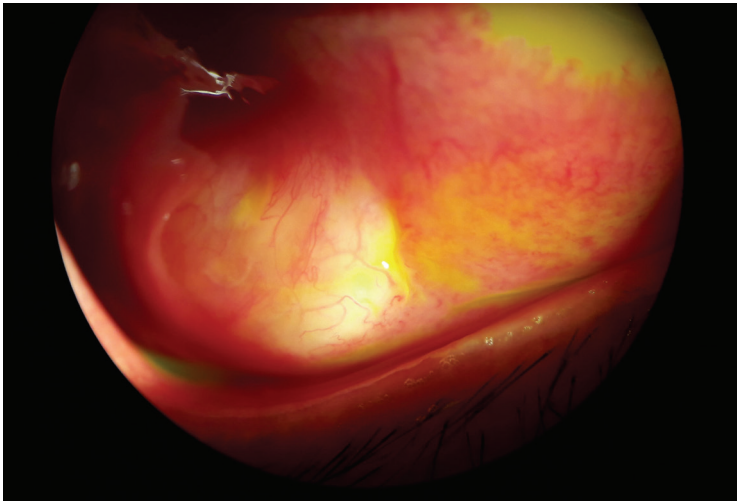


Fig. 4. The CECT brain and orbit showed findings that are suggestive of inflammatory process of right orbit (panophthalmitis).

Samples taken from both the eye discharge and pus from the scleral abscess showed *Streptococcus pneumoniae*. An immediate vitreous tap and intravitreal injection of vancomycin and ceftazidime was performed. Vitreous culture revealed *E. rhusiopathiae* sensitive to vancomycin and ceftriaxone but resistant to penicillin. Urine and blood cultures showed no growth. Her peripheral white cell count was $23.3 \times 10^9/L$ with predominant neutrophils and her fasting blood sugar was 5.2mmol/L. The contrast-enhanced computed tomography (CECT) orbit showed findings that were suggestive of panophthalmitis with suspected orbital apex syndrome (Fig. 4). Based on the clinical and radiographical findings, a diagnosis of panophthalmitis with orbital cellulitis and orbital apex syndrome was made.

The patient was treated with topical ceftazidime 5% and fortified gentamycin 0.9% together with systemic ciprofloxacin. Based on organism susceptibility, systemic ceftriaxone was added. One week after treatment, there was regression of orbital cellulitis and subsequent improvement of panophthalmitis (Fig. 5). However, her right eye vision remained with no light perception and became phthisical, with remaining ptosis and mild ophthalmoplegia (Fig. 6).

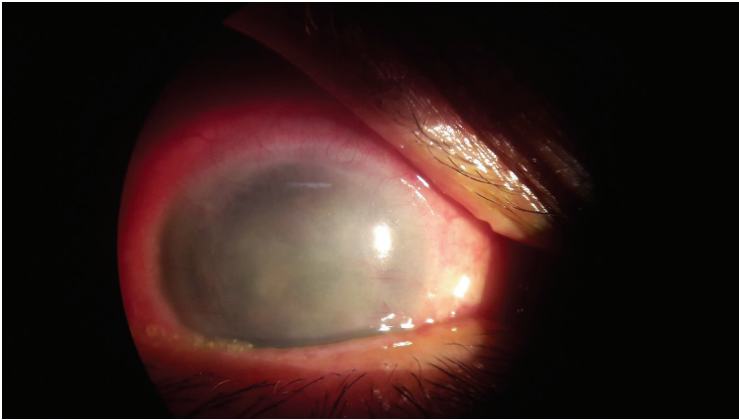


Fig. 5. Right eye ptosis with phthisical eye after treatment.



Fig. 6. The CECT of brain and orbit showed findings that are suggestive of inflammatory process of right orbit (panophthalmitis).

Discussion

Ocular infection caused by *E. rhusiopathiae* is extremely rare. So far, there is only one reported case of *E. rhusiopathiae* causing ocular infection in 2008. Elvy and colleagues reported a case of bilateral endogenous endophthalmitis caused by *E. rhusiopathiae* infection where the patient had underlying ulcerative colitis and had been on regular oral prednisolone.⁴ The source of infection was from ingestion of undercooked meat that subsequently caused liver abscess formation and haematogenous spread to the eyes. The patient responded well to systemic penicillin G.

The route of entry for *E. rhusiopathiae* is usually through a skin abrasion when handling infected meat, fish, or soil. However, there are two reported cases from Elvy *et al.*⁴ and Kichloo *et al.*⁵ that recorded septicaemia due to *E. rhusiopathiae* infection following ingestion of infected undercooked meat. Additionally, immunosuppression and chronic alcohol abuse are also frequently found in reported cases of *E. rhusiopathiae* infections.⁶ This patient is a housewife who regularly handles raw meat and fish for cooking. However, she had no skin lesions or bacteraemia. An alternative explanation to the source of infection may be from direct exposure of *E. rhusiopathiae* to the eye from touching her eyes with her unwashed hands. However, the conjunctival swab and pus from the scleral abscess grew a different pathogen, *Streptococcus pneumoniae*. There is a possibility that the cultures from the conjunctiva and pus were contaminated samples.

The organism on blood agar culture showed a non-motile, non-sporulating gram-positive rod which was further identified as *E. rhusiopathiae* by the Vitek system. *E. rhusiopathiae* is usually highly susceptible to penicillin and cephalosporin, but resistant to vancomycin.⁴ However, in this case, the vitreous culture and sensitivity showed resistance to penicillin and ampicillin, but sensitivity to vancomycin and ceftriaxone. The patient responded well to systemic ceftriaxone and ciprofloxacin together with topical ceftazidime and fortified gentamicin. This case is unique as it adds to the scarce literature on ocular *E. rhusiopathiae* infection causing endophthalmitis without septicaemia. However, *E. rhusiopathiae* has an intrinsic resistance to vancomycin; thus, for this case, there is a possibility of transcription error of the bacterial sensitivity during reporting or error in bacterial identification.

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References

1. Brooke CJ, Riley TV. *Erysipelothrix rhusiopathiae*: bacteriology, epidemiology and clinical manifestations of an occupational pathogen. J Med Microbiol. 1999;48:789-799.
2. Gorby GL, Peacock JE Jr. *Erysipelothrix rhusiopathiae* endocarditis: microbiologic, epidemiologic and clinical features of an occupational disease. Rev Infect Dis. 1988;10:317-325
3. Luigi P, Silvia B, Carola M, Silvia T, Beatrice P, Francesco L. *Erysipelothrix rhusiopathiae* bacteremia without endocarditis. Infect Dis. 2016;8:6368
4. Elvy J, Hanspal I, Simcock P. A case of *Erysipelothrix rhusiopathiae* causing bilateral endogenous endophthalmitis. J Clin Pathol. 2008;61:1223-1224.
5. Kichloo AA, Hallac A, Mousavi B, Hirekhan O. Nonspecific *Erysipelothrix rhusiopathiae* bacteremia in a patient with subclinical alcoholic liver disease. Case Rep Infect Dis. 2013;2013:474593
6. Reboli AC, Farrar WE. *Erysipelothrix rhusiopathiae*: an occupational pathogen. Clin Microbiol Rev. 1989;2:354-359.