Erysipelothrix rhuseopathiae Septicaemia with Prolonged Hypotension: A Case Report

Dear Editor,

Erysipelothrix sp. is a gram-positive, non-spore forming bacterium that was first isolated by Robert Koch. It has the unusual ability to infect a large variety of vertebrate and invertebrate animals, including various species of domestic and wild animals, mainly swine, cattle, fish and birds. Human infections are rather rare.[1] Veterinary surgeons, people involved in the breeding of pigs and other farm animals, as well as those handling fish and crustaceans, are at particular risk of being infected.[2] The pathogenic strains are *E. rhuseopathiae* and *E. tonsillarum*. *E. rhuseopathiae* is the only strain that causes disease in humans.

A 67-year-old woman was admitted with a 4-day history of redness and swelling of the dorsum of the left foot, associated with fever and chills. She had diabetes mellitus, hyperlipidaemia, hypertension, all well controlled on medication, and ischaemic heart disease which required a coronary angioplasty. A few days prior to her illness she went to a fish market wearing slippers.

On examination, she was toxic looking, febrile and mildly dehydrated. She was conscious and answered questions coherently. The temperature was 38.8^{0}C, pulse was 76 per minute and blood pressure was 81/45 mm Hg. There was a small, round, tender blister of 1 cm in diameter on the dorsum of the left foot containing clear fluid, with surrounding erythema. The peripheral pulses were normal and there were no peripheral stigmata of infective endocarditis. There was no regional lymphadenopathy. The rest of the systemic examination was normal.

The haematological tests showed a total white cell count of 21.59 x 10^9/L, neutrophils 90.0% and lymphocytes 4.0%. The serum urea and electrolytes, liver function tests, troponin T, chest radiograph, electrocardiogram (ECG) and 2D echocardiogram were normal. Blood samples were taken for culture and sensitivity testing.

The initial diagnosis was cellulitis with septic shock. An intravenous line was secured and plasma expanders were infused; an intravenous injection of ceftriaxone 2 gm was administered along with 500 mg of cloxacillin. Ceftriaxone was repeated daily and cloxacillin every 4 hours. She improved rapidly, symptomatically and clinically, with the blood pressure going up to 95/60 mm Hg. Over the next 18 hours the systolic blood pressure hovered around 92 to 95 mm, without inotropes. There was no deterioration in the mental state, urinary output was adequate, renal and liver function tests remained normal. The blood pressure then rose up to 140/80 mm Hg and there was no further episode of hypotension. Two days later the total white cell count had decreased to 6.9 x 10^9/L, neutrophils 70.0% and lymphocytes 21.6%. The alpha fetoprotein, carcino-embryonic antigen, the CA 125, CA 153 and CA 19-9 levels were all normal, and DsDNA antibody was absent. The blister on the foot healed without scarring, the cellulitis regressed and she made an uneventful recovery. The blood culture later grew *E. rhuseopathiae* sensitive to penicillin but resistant to vancomycin. The septicaemia cleared with the antibiotics prescribed. The final diagnosis was *E. rhuseopathiae* septicaemia with prolonged hypotension. The patient made an uneventful recovery. On review a few weeks later, the patient was asymptomatic and the clinical examination was unremarkable. The total white cell count and the differential count were normal.

E. rhuseopathiae grows well in sheep blood agar, where a weak α-haemolytic reaction may be noted. It is gram-positive, catalase negative and non-motile. Significant features include characteristic "bottle-brush" growth appearance in stab inoculation of tube gelatin agar, and hydrogen sulphide production in Klingler iron agar (Fig. 1). *E. tonsillarum* can be differentiated from *E. rhusiopathiae* by sugar fermentation test, in which the former will produce acid from the fermentation of sucrose.[3] Patients with *E. rhuseopathiae* infections usually present with either cellulitis or disseminated skin infection or septicaemia with infective endocarditis.[1,3] Other forms of

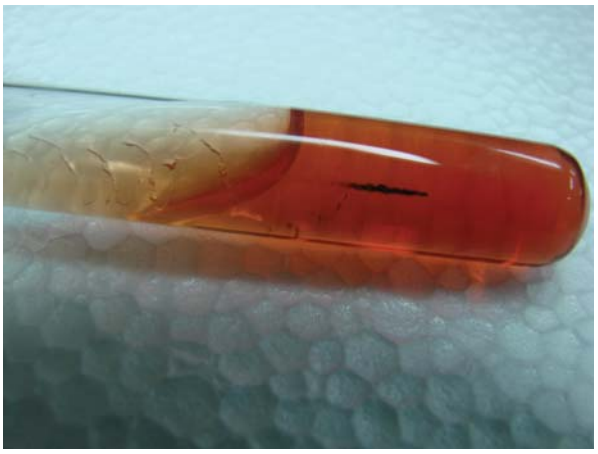

Fig. 1. Stab culture of Klingler iron agar medium showing black linear deposits of ferrous sulphide formed by hydrogen sulphide liberated during the growth of *Erysipelothrix rhuseopathiae.*

presentation such as persistent bacteraemia in immunocompromised or immunocompetent persons, enlarging cutaneous plaques or prolonged fever, have also been described.[4] *E. rhuseopathiae* septicaemia was thought to be associated with infective endocarditis. Our patient who presented with septicaemia and prolonged hypotension did not have infective endocarditis. There was no tachycardia as she had taken her usual 50 mg of atenolol. Total white blood cells were raised and there was neutrophilia. Tumour markers were not elevated and DsDNA was negative. After she responded to antibiotics the total white cell count and the differential count came back to normal. Repeated white cell and differential counts were normal on review. These facts suggested that she was probably immunocompetent. Initial presentation of *E. rhuseopathiae* septicaemia with prolonged hypotension, without endocarditis in an immunocompetent host, is rare.[5]

As the organism was sensitive to penicillin, ceftriaxone and cloxacillin prescribed empirically were adequate to control the septicaemia. The blister peeled off and healed without scarring, the cellulitis regressed and she made an uneventful recovery. We postulated that she might have been infected either in the fish market, though it is known that even without exposure to animals, people may somehow become infected with *E. rhuseopathiae*.

E. rhuseopathiae is primarily a zoonosis and rarely infects human beings. *E. rhuseopathiae* infection causing septicaemia leading to prolonged hypotension, in an immunocompetent host without endocarditis, is a rare clinical event.

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