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Erysipelothrix rhusopathiae causing infective endocarditis in a female patient requiring valve replacement

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We present a female with infective endocarditis due to *Erysipelothrix rhusopathiae*. Extensive aortic valve damage was present so she was treated surgically by aortic valve replacement. We present the case report and literature review.

E. rhusopathiae is a Gram-positive, non-spore forming catalase-negative bacillus. It affects swine, turkey, ducks, and sheep and is communicable from animals to humans. It causes an occupational disease (Rosenbach's disease in its mild cutaneous form or Klauder's syndrome in its severe systemic form), and is predominantly seen in men.[1] Treatment before 1945 with hyperimmune serum resulted in 100% mortality.[2]

Case report

A 63-year-old female was admitted in December, to the Doncaster Royal Infirmary, UK due to worsening shortness of breath. She was an ex-smoker, abstained from alcohol, and avoided animal contact due to eczema. On examination, she was afebrile, pulse 80/min, respiratory rate 16/min, and blood pressure 117/51 mmHg. Bilateral basal crepitations were present on auscultation of the lung fields. Chest X-ray showed an increased cardiothoracic ratio and prominent vascular markings. Chronic heart failure was diagnosed and anti-failure therapy including diuretics and ACE inhibitors was initiated.

In the ward, she developed a low-grade fever and early diastolic murmur in the aortic area. An echocardiogram revealed severe aortic regurgitation and a large vegetation on the aortic valve. Biventricular systolic function was good. Blood culture grew a Gram-positive bacillus presumed to be *Streptococcus*, and was highly sensitive to penicillin. A diagnosis of infective endocarditis was made, and treatment initiated with penicillin and gentamycin.

Her breathlessness responded to treatment. However, she continued to have a wide pulse pressure and low-grade fever. An oesophageal echocardiogram done 2 weeks later revealed large bulky vegetation on the aortic valve, left ventricular dilatation, and global systolic impairment. She was transferred to the cardiothoracic centre for an aortic valve replacement.

Pathological examination of the aortic valve showed signs of active inflammation. The organism grown from blood culture was sent to the reference laboratory in London and identified as *E. rhusopathiae* and confirmed by examination of 16srRNA.

Discussion

E. rhusopathiae was first isolated in 1880 by Koch and demonstrated to be a pathogen in humans by Rosenbach in 1909. It is a slightly curved, pleomorphic, catalase-negative bacillus.[1]

E. rhusopathiae causes Rosenbach's disease/Klauder's syndrome—an occupational disease affecting butchers, fishermen, farmers, and veterinarians. Alcohol abuse is the most commonly encountered underlying medical condition.[3] It presents during the summer and autumn months', with an incubation period of 1 to 4 days.

It is differentiated from bacillus species by the absence of spores. However, it is commonly misidentified as *Streptococcus viridans* and is often dismissed as a contamination.

The clinical presentation ranges from a mild cutaneous form (erysipeloid) to severe septicaemia. The septic form is usually associated with subacute endocarditis.[3] It causes extensive damage of the native valves with a predilection for the aortic valve. Despite appropriate therapy, the mortality rate for disease caused by *E. rhusopathiae* is 38%.

The organism is extremely sensitive to penicillin, and highly susceptible to cephalosporins, erythromycin and clindamycin[1]—but it is resistant to vancomycin. The recommended therapy for *E. rhusopathiae* endocarditis is 12–20 million units/day of intravenous penicillin in divided doses over 4 to 6 weeks.[5] Penicillin-sensitive patients can be treated with erythromycin or clindamycin.

Valve replacement is required in 36% of cases and relapses can occur. It should be considered in the presence of progressive congestive failure, recurrent emboli, persistent bacteraemia (despite therapy), development of heart block, and presence of large vegetations. Prevention of infection for those in high-risk occupations can be achieved by the use of preventive gear such as gloves. A live attenuated vaccine is available for veterinary use.[6]

Our case is unique because the infection is rarely seen in females or in the winter months. Furthermore, extensive valve destruction requiring surgery is not common and the patient was not an alcoholic and did not have extensive exposure to the organism.

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