

# *Erysipelothrix rhusiopathiae*: A rare and important pathogen

## Authors

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## Introduction

*Erysipelothrix rhusiopathiae* is an established zoonotic infection, with a variety of animal species as carriers<sup>1</sup>. Pigs are the main reservoir, with swine erysipelas a well recognised<sup>2</sup> disease with widespread economic implications.

Humans can become accidental hosts when they come into contact with infected or colonised animals, primarily through occupational exposure. Although usually a self-limiting skin and soft tissue infection, it has the ability to cause severe, destructive infections once bacteraemia and distal spread occurs, especially in an immunocompromised host. The features within the clinical history, examination and laboratory diagnosis are important to allow early suspicion.

We present a case to the Glasgow Royal Infirmary with a compatible occupational history on the background of immunosuppression, where the isolation of the organism from blood cultures led to a diagnosis of infective endocarditis. This warranted treatment with long term targeted antibiotics and regular specialist follow up.

## Case Report

A 51 year old lady with a background of poly-arthritis, on immunosuppressive therapy, presented on the background of two weeks of generalised weakness. She was admitted following worsening breathlessness, fever and a non-productive cough.

On examination, she was tachycardic, had reduced air entry at the left base with a left sided pleural effusion (Fig 1).



Fig 1 Chest X-ray on admission



Fig 2 CT CAP during admission

Admission blood tests showed a normal white cell count of 8.4 units/L with a lymphopenia of 0.9 units/L and a CRP of 304. She was a slightly coagulopathic, with a prothrombin time of 19, a prolonged APTT of 80 and APTT ratio of 2.4. She was hyponatraemic at 128mmol/L with normal renal and liver function tests. She was treated as a community acquired pneumonia with intravenous Amoxicillin and oral Clarithromycin as per the empirical guidance in our trust.

Three days later, due to a lack of clinical response, she had CT imaging of her chest, abdomen and pelvis which revealed bilateral pleural effusions with extensive ground-glass opacity (Fig 2).

Her admission blood cultures flagged two days into her admission with gram positive bacilli in both bottles. On day 1 of incubation alpha haemolytic colonies were present and biochemically were catalase negative (Fig 3).

The MALDI-TOF identification and secondary confirmation with Vitek confirmed the organism as an *Erysipelothrix rhusiopathiae*. Additionally, the antibiogram also aided confirmation by showing a large zone to penicillin and no zone to Vancomycin.



Fig 3

This identification of the organism and its specific disease associations, in particular native valve endocarditis, prompted a review of her history. This revealed her occupation as a chef but no obvious skin breaks or evidence of skin and soft tissue infection. However, given the bacteraemia and specific association with endocarditis, a trans thoracic echocardiogram was recommended. This showed a suspicious mass on her native aortic valve. The resulting trans-oesophageal echocardiogram reaffirmed the bacterial endocarditis diagnosis with no associated abscess.

Her antibiotic treatment was subsequently changed to Benzylpenicillin 1.2g four times a day with a plan of 6 weeks therapy. However a once daily outpatient dosing regimen was preferred a month into treatment and she was changed to Ceftriaxone 2g once a day.

On completion of treatment her repeat trans-thoracic echocardiogram showed resolution of the valvular mass and her biochemical markers normalised. Unfortunately, her aortic valve was left with severe incompetence resulting in the need for an aortic valve replacement. She went on to have the replacement followed by 6 weeks of intravenous Amoxicillin and on follow-up was making good progress clinically.

## Discussion

*Erysipelothrix rhusiopathiae* is a non-sporulating gram positive bacillus within the environment able to survive adverse conditions. This case highlights its significance as a pathogenic organism capable of causing severe disease.

Unfortunately at time of presentation the patient was already bacteraemic with a likely established endocarditis. Intravenous antibiotic therapy alone was not enough to prevent the valvular damage which required surgical intervention.

Although it is a rare infection, if bacteraemia is established the incidence of endocarditis can be as high as 90% based on literature reviews<sup>3</sup>. Recent case reports have highlighted the association of septicaemia with native valve endocarditis but to a lesser extent. Additionally bacteraemia without endocarditis can also occur and more likely in the immunocompetent host.

Due to limited systemic infections reported, antibiotic susceptibility testing has been limited. Intrinsic resistance is shown to vancomycin and aminoglycosides,, in contrast to other gram positive bacilli, with the former indicative as a pointer to detection. Of the few studies analysing susceptibility data<sup>4</sup> the most active agents were penicillin and imipenem achieving MICs of <0.01. Following these, ciprofloxacin, cefotaxime and piperacillin were the most active.

A key feature to raise awareness would be a delayed presentation of a patient with an occupational risk, of which these organisms contaminate from the environment. Although localised skin lesions are commoner, systemic infections leading to distal spread can occur, with native aortic valve endocarditis a particular complication especially in the immunosuppressed host.

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## References

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