CASE REPORT

Unusual cause of infective endocarditis in an elderly patient with a rare condition

Amin Abdurahman Abukar,¹ Michael Michail,² Maurice A Smith,¹ Liyanagae SP Wickramasinghe¹

¹Department of Acute Elderly Care, Queen's Hospital, Romford, UK

²Department of Cardiology, Queen's Hospital, London, UK

Correspondence to

Dr Amin Abdurahman Abukar, amin_abukar@hotmail.co.uk

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SUMMARY

A 77-year-old woman presented to the emergency department with a 1-week history of anorexia, fatigue, general malaise and a 3-day history of fever. Clinical examination revealed livedo reticularis across the anterior aspect of her knees and a pansystolic murmur. Laboratory evaluation found neutrophil leucocytosis; elevated C reactive protein and blood cultures grew *Streptococcus acidominimus*. Transthoracic echocardiography displayed vegetation on the mitral valve and a left atrial myxoma. She was treated with intravenous benzylpenicillin and erythromycin for the infective endocarditis (IE) and remains well 3 months post-treatment. *S. acidominimus* is considered a common veterinary pathogen rarely found in humans. To the best of our knowledge, only two prior reports of IE due to this organism exist in the literature. This case highlights how rare pathogens can cause unusual presentation and the importance of IE as a differential even in the absence of classical signs, if fever and new murmur are present.

BACKGROUND

Infective endocarditis (IE) is associated with a high rate of mortality (approximately 30%) and morbidity, despite advances in diagnosis and treatment.¹ In recent years, reports in the literature reveal a widening pool of causative microorganisms and a variation in clinical presentation of IE than that classically described.² Nonetheless, *Staphylococcus aureus* and viridans group streptococci still remain the most common causative agents. We report a case of a 77-year-old woman with left atrial myxoma and livedo reticularis who was diagnosed with *Streptococcus acidominimus* endocarditis. To the best of our knowledge, only two prior reports of IE due to this organism in humans exist in the literature.²

CASE PRESENTATION

A 77-year-old woman presented to the emergency department with a 1-week history of anorexia, fatigue and general malaise. She also had a 3-day history of fever. She did not have any associated symptoms of cough, chest pain, headache, abdominal pain or changes in bowel habits or lower urinary tract symptoms. She had a background of hypertension, hypothyroidism and mild dementia. The patient lived in a residential home and did not smoke or abuse alcohol.

Physical examination revealed bilateral mottled discoloration on the anterior aspect of her knees (figure 1). On admission, the patient was tachycardic (heart rate: 165 bpm), hypotensive (blood pressure:

89/50 mm Hg), tachypnoeic (respiratory rate: 28 breaths/min) and febrile (temperature: 38.5°C), with oxygen saturation of 94% on air. Cardiac auscultation revealed a grade 2/6 pansystolic murmur loudest at the apex. The remainder of the physical examination was unremarkable.

INVESTIGATIONS

Laboratory evaluation revealed a raised white cell count of $15.7 \times 10^9/L$ (reference range: $3.8\text{--}11 \times 10^9/L$) with 95% neutrophils, haemoglobin of 127 g/L (reference range: 115–155 g/L) and platelets at $306 \times 10^9/L$ (reference range: $150\text{--}400 \times 10^9/L$). C reactive protein was raised at 73 (reference range: 0–5 mg/L). Apart from mildly elevated urea and creatinine, other laboratory parameters were within the normal range. Autoantibody screen was negative. Urinalysis was unremarkable. ECG showed sinus tachycardia without PR prolongation. Chest radiograph was also unremarkable. Blood cultures grew *S. acidominimus* sensitive to penicillin and erythromycin. Transthoracic echocardiography (TTE) was performed, which incidentally revealed longitudinally dilated left atrium with a large round echogenic partially mobile structure measuring 2.8×3.2 cm attached to the interatrial septum (figures 2 and 3; video 1). TTE also showed vegetation on the mitral valve (figure 3; video 1).

DIFFERENTIAL DIAGNOSIS

IE due to *S. acidominimus* in the presence of a left atrial myxoma.

TREATMENT

Following initial resuscitation, the patient was managed with intravenous benzylpenicillin (1.2 g

Figure 1 Bilateral mottled appearance of anterior aspect of knees consistent with livedo reticularis.

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Figure 2 Transthoracic two-dimensional echocardiography (apical four-chamber view) in systole. Arrow showing atrial myxoma in the left atrium.

Figure 3 Transthoracic two-dimensional echocardiography (apical four-chamber view) in diastole. Arrow showing vegetation on the mitral valve.

Video 1 Transthoracic two-dimensional moving echocardiography with colour flow mapping displaying left atrial myxoma and vegetations on the mitral valve.

every 4 h) and erythromycin (12.5 mg/kg every 6 h). Cardiac surgery was offered. However, a shared decision-making process between the patient, family members and the multidisciplinary team led to a decision against surgery for the atrial myxoma in view of patient and family wishes, her comorbidities and frailty.

OUTCOME AND FOLLOW-UP

The patient remained in hospital for 6 weeks to receive the intravenous antibiotic therapy. She made a good recovery from the infection and the livedo reticularis disappeared. She was subsequently discharged and remains well 3 months after treatment.

DISCUSSION

S. acidominimus, a member of the viridans group streptococci, is considered a common pathogen in veterinary medicine and is rarely found in humans. *S. acidominimus* was first isolated from bovine sources in 1922 by Ayers and Mudge.^{2 3} It is a normal inhabitant of bovine skin, vagina and raw milk. Limited cases causing infections of wounds, cysts, external abscess, pericarditis, pneumonia, meningitis and urethral infection have been reported in humans.^{3 4} To date, only two cases of *S. acidominimus* endocarditis have been reported in the literature,^{2 3} thus the clinical and epidemiological significance of this pathogen remain uncertain. The diagnosis of IE is based on the Duke criteria comprising clinical signs, positive blood cultures and presence of vegetation on echocardiography, the imaging of choice. Our patient had positive blood cultures and the presence of vegetation on TTE (figure 3; video 1). Classical signs of IE such as splinter haemorrhages, Janeway lesions, Osler's nodes or Roth spots have been noted to occur less frequently in IE^{2 5} and were also absent in our patient. The variety of clinical presentations of IE could be related to an increase in unusual causative microorganisms. It has been suggested in the literature that classical peripheral signs of IE may not be evident in IE caused by

unusual microorganisms.² Interestingly, our patient presented with asymmetrical livedo reticularis across the anterior aspect of both knees (figure 1). This cutaneous manifestation may represent peripheral emboli from the vegetation, an association that has previously been reported in the literature.^{6 7} Although, in rare cases, atrial myxoma is also thought to be associated with livedo reticularis.⁸ Both variations in the microbiological cause, especially unusual organisms, and subsequently clinical presentation of IE, demand appropriate diagnostic screening. In view of increasing antibiotic resistance, initiation of new treatment regimens with broader antimicrobial coverage may initially become necessary to incorporate uncommon organisms. Treatment regimens would then require modification tailored to the sus-

ceptibility patterns of rare microorganisms. We started our patient on intravenous benzylpenicillin (1.2 g every 4 h) and erythromycin (12.5 mg/kg every 6 h) due to bacterial sensitivity to these agents.

Our case occurred in a 77-year-old woman without the classical peripheral manifestations and was caused by an unusual microorganism. This highlights the need for a high index of suspicion of IE in febrile patients with a new murmur, livedo reticularis or atrial myxoma.

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Competing interests None.

Patient consent Obtained.

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Learning points

- In the absence of classical peripheral manifestations, a high index of suspicion for infective endocarditis is emphasised in patients with fever in the presence of new murmur, livedo reticularis or an atrial myxoma.
- Atrial myxoma and infective endocarditis can occur together, hence in the presence of fever in patients with known atrial myxoma, infective endocarditis should be excluded.
- Unusual presentation of infective endocarditis can arise in association with unusual causative microorganisms.
- Echocardiography is the imaging of choice and blood cultures should ideally be taken prior to initiation of antibiotics.

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