CASE REPORT

Streptococcus agalactiae endocarditis presenting as acalculous cholecystitis in a previously well womanLinda Brewer,¹ Amanda Hanora Lavan,² Laura Cullen,¹ Joseph Duggan¹¹Medicine for the Older Person, Mater Hospital, Dublin, Ireland²Department of Geriatric Medicine, RCSI, Dublin, Ireland**Correspondence to**

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SUMMARY

This case report describes the unusual presentation of a previously very well woman with *Streptococcus agalactiae* endocarditis in the emergency department. History, examination and preliminary laboratory and radiological investigations supported a diagnosis of acalculous cholecystitis, for which she was given intravenous broad spectrum antimicrobial therapy. One day following admission, the patient deteriorated and became unresponsive. Subsequent MRI of the brain revealed multiple bihemispheric cerebral emboli and a large, mobile mitral valve thrombus was visualised on her transoesophageal echocardiogram. *S agalactiae* was cultured from venous blood samples and her antimicrobial cover was adjusted accordingly. Despite her presumed guarded prognosis, this patient made a remarkable recovery. To our knowledge, the association of *S agalactiae* endocarditis with acalculous cholecystitis has not been previously described.

BACKGROUND

Despite advances in medical interventions, infective endocarditis (IE) remains a disease with considerable morbidity and mortality. It is still relatively rare, particularly in native valves, with an estimated incidence of 1.7–6.2 cases/100 000 patient-years.¹ Well-known predisposing factors include underlying valvulopathies, intracardiac devices, intravenous drug usage and healthcare-associated procedures,² and typical presenting features include a new onset murmur and fever.² *Streptococcus agalactiae* remains as a rare cause of endocarditis and is typically associated with neonates and gynaecological procedures. It has an aggressive course and high mortality and often requires surgical intervention.³

We present the rare case of a previously well woman who developed native valve endocarditis associated with community-acquired *S agalactiae*. This patient did not present to emergency services with typical features of endocarditis but instead showed signs of biliary sepsis. A high index of suspicion is required to diagnose endocarditis in patients with atypical presentations.

CASE PRESENTATION

A previously well 73-year-old woman from the deaf community presented to the emergency department (ED) with confusion and drowsiness. Her medical history was positive for hypercholesterolaemia and hypertension and her medications

included rosuvastatin, bisoprolol and aspirin. She had presented to her general practitioner 4 days prior to this complaining of lower back pain and was prescribed diclofenac gel for a presumed diagnosis of musculoskeletal pain. Otherwise, she was considered well during this consultation. On arrival at the ED, she was jaundiced and drowsy but haemodynamically stable and had no fever. She was poorly coherent and, in combination with her restricted communication, interaction with medical staff was limited. Auscultation of her praecordium in the ED revealed no murmurs and her lung fields were clear. When we examined her abdomen, there was tenderness in the right hypochondrium, but overt signs of peritonism were absent. Neurological examination revealed brisk reflexes of her lower limbs. We did not identify any rash on examination of her skin.

INVESTIGATIONS

Full blood count revealed thrombocytopenia ($45 \times 10^9/l$) and mild leukocytosis ($13 \times 10^9/l$). Erythrocyte sedimentation rate was 77 mm/h (1–20), C reactive protein was 369 mg/l (0.5–5) and liver enzymes were elevated (alanine aminotransferase 62 IU/l (5–40); γ -glutamyltransferase 218 IU/l (5–40); alkaline phosphatase 213 IU/l (35–130) and bilirubin 128 μ mol/l (0–20)). Renal and bone profiles, amylase, arterial pH and urinalysis were normal on admission. Chest radiography revealed mild cardiac decompensation and ECG was normal. Non-contrast CT of the brain was normal and liver ultrasound ruled out a structural abnormality in the hepatobiliary tree. However, subsequent magnetic resonance cholangiopancreatography revealed a thickened gallbladder wall and pericholecystic fluid (with no gallstones), findings consistent with acute acalculous cholecystitis.

DIFFERENTIAL DIAGNOSIS

We made a provisional diagnosis of acute hepatobiliary sepsis (acalculous cholecystitis) with coexistent metabolic encephalopathy based on the patient's clinical and radiological findings.

TREATMENT

We started hydration therapy (0.9% saline), performed a full septic screen and started empirical treatment with intravenous broad spectrum antimicrobial therapy (piperacillin/tazobactam 4.5 g every 8 h). The patient was continuously monitored in a high dependency location.

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OUTCOME AND FOLLOW-UP

One day after admission she suddenly deteriorated, becoming haemodynamically unstable and obtunded. She was transferred to the intensive care unit (ICU) where her treatment was escalated to invasive ventilation and inotropic support. Diffusion-weighted MRI of the brain was performed which revealed multiple, diffuse acute lesions involving the territory of the anterior and posterior circulation in both the hemispheres, consistent with embolic foci (figure 1). Contrast was withheld during this study owing to the sudden deterioration in the patient's renal function. We repeated a skin examination which revealed erythematous macules on the palmar surfaces of her hands and feet, consistent with Janeway lesions (figure 2). We also noted periungual splinter haemorrhages. We suspected a diagnosis of IE and requested an urgent bedside transoesophageal echocardiogram (TEE). This revealed a large, mobile, echodense, serpiginous lesion on the posterior leaflet of the mitral valve (PMVL), measuring 3.4 cm (figure 3, video), associated with mild mitral regurgitation. *S agalactiae* was subsequently identified from admission in the blood culture samples using the VITEK automated system. We started high-dose intravenous penicillin G (1.2 g, 6 times daily) and gentamicin (80 mg twice daily). The patient remained in a comatose condition (off sedation) in the ICU where she received intensive supportive care. At this point, we informed her relatives of her guarded prognosis.

After subsequent weeks, she began to improve neurologically, becoming more alert and interactive gradually, and we eventually weaned her off ventilatory support. On completion of her course of intravenous antibiotics, she was considered for mitral valve replacement by our cardiothoracic colleagues. However, repeat TEE showed a 0.3 cm residual lesion on the PMVL with no valvular destruction. Rehabilitation was gradually intensified by the multidisciplinary team and, despite the development of a profound critical care neuromyopathy, she was later discharged home following a full neurological recovery. This prolonged course of in-hospital rehabilitation was difficult, due to the fact that the patient had lost the fine motor function of her hands

Figure 2 Palmar Janeway lesions.

(and therefore her ability to perform sign language). During her recovery, an interpreter was employed at regular intervals to facilitate more effective communication between the patient and the multidisciplinary team members. At 1-year follow-up (at the outpatient clinic), she was cognitively and functionally well without any cardiac complication.

DISCUSSION

S agalactiae is a Gram-positive encapsulated toxin-producing diplococcus that commonly colonises in healthy humans. Although infections with *S agalactiae* are typically reported

Figure 1 Diffusion-weighted MRI brain showing multiple, diffuse bilateral ischaemic foci in the anterior and posterior circulation territories.

Figure 3 Vegetation of 3.4 cm in length on the posterior mitral valve leaflet on TEE.

during pregnancy, after gynaecological procedures or in the neonatal period, the incidence of invasive disease in non-pregnant adults has increased in recent years.⁴ There is speculation that this increased incidence in non-pregnant adults may be related to increase in the prevalence of underlying medical conditions, such as diabetes or malignancy, or to an ageing population.⁴ A large population-based analysis of the epidemiology of invasive group B streptococcal disease reported that almost 90% of patients had at least one underlying debilitating condition.⁴ Recent reports have described the important role of immunosuppression in the pathogenesis of group B streptococcal disease.⁵ Despite this increase in *S agalactiae* infections, endocarditis remains a very uncommon but important manifestation. Typically, it has an acute onset and an aggressive course, and mortality of up to 50% is reported.^{3 6 7} It can result in severe valvular destruction, and early cardiac surgery is often advised.^{7 8} Multiple large case series of *S agalactiae* endocarditis describe almost all cases in immunocompromised patients with cardiac defects or with an underlying debilitating illness.^{3 6 7 9–11} Although considerable rates of embolism (central and peripheral) have been associated with *S agalactiae* endocarditis in the case series (20–50%),^{3 6 7 9} we are unaware of other reports of *S agalactiae* endocarditis presenting in association with acalculous cholecystitis. Previous isolated reports of this association have involved *Staphylococcus aureus*.¹²

At baseline, our patient was well, immunocompetent and non-pregnant with a structurally normal heart, and a meticulous collateral history revealed no identifiable predisposing septic source. A recent large international prospective cohort study¹³ of hospitalised cases of IE over 5 years reported the incidence of classic clinical findings on admission, including fever >38° (96%), murmur (48%) and microscopic haematuria (26%). Our case reminds us that these typical signs, often considered diagnostic for IE, may be absent on presentation, which can lead to inaccurate early diagnosis. Despite the development of coma owing to the presence of widespread cerebral septic emboli in this case, the early introduction of high dose intravenous antimicrobial therapy produced a dramatic neurological and echocardiographic recovery without the need for valve replacement. This patient's course of rehabilitation was prolonged and challenging for all involved owing to communication difficulties, which impacted on the delivery of instruction and feedback from therapists and nursing staff. Following the delivery of a well structured rehabilitation programme involving sign language interpretation, our patient made an unexpected and excellent recovery.

Learning points

- ▶ Infective endocarditis often presents as a non-specific illness, and clinicians should maintain a high index of suspicion for this condition, even in low-risk patients with atypical presentations.
- ▶ *Streptococcus agalactiae* endocarditis is rarely described in healthy individuals and can result in high rates of morbidity and mortality.
- ▶ Acute acalculous cholecystitis is rarely associated with endocarditis, but the presence of biliary sepsis (without gallstones) should prompt a full assessment for the underlying cause.
- ▶ Well coordinated, focused, intensive rehabilitation may deliver excellent results in cases of endocarditis with severe neurological deficit, despite the presence of communication barriers.

Competing interests None.

Patient consent Obtained.

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