



Persistent Bacteraemia in a Cirrhotic Patient With an Endovascular Device and Severe Antimicrobial Hypersensitivity

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Introduction

Persistent bacteraemia presents significant diagnostic and therapeutic challenges, particularly in patients with cirrhosis, intracardiac devices and restricted antimicrobial options due to hypersensitivity. This case illustrates the complexity of evaluating recurrent bacteraemia when conventional imaging fails to localise a source.

Presentation

- A woman in her 70s presented after an unwitnessed fall and long lie. On admission she was febrile, disorientated, and unable to recall the event.
- She reported several weeks of fatigue, abdominal discomfort, reduced appetite, bloating, and intermittent nausea and diarrhoea.
- Past medical history included cirrhosis with portal hypertension and oesophageal varices, type 2 diabetes mellitus, and atrial fibrillation managed with a left atrial appendage occlusion device.
- Initial labs showed AKI (Cr 156 from baseline 94), CRP 117, WCC 13×10^9 , deranged LFTs, and elevated troponin 720 ng/L.
- Blood and urine cultures were positive for *Escherichia coli*, presumed urinary in origin despite lack of urinary symptoms.
- Given her background of cirrhosis she was at increased risk of bacterial infections and atypical presentations (1).
- She received empirical piperacillin–tazobactam, which was then switched to cefuroxime based on susceptibilities. After first dose of cephalosporin she developed respiratory arrest requiring intubation and ICU admission, necessitating strict beta-lactam avoidance.

Clinical Course

- Following ICU admission, antimicrobials were escalated to meropenem, then transitioned to aztreonam and metronidazole. Recurrent *E. coli* bacteraemia persisted with minor susceptibility variation.
- CT imaging suggested possible acute cholecystitis managed conservatively. Later imaging showed ground-glass pulmonary changes, bilateral effusions, and colonic inflammation without abscess formation.
- Suspected hospital-acquired pneumonia prompted re-introduction of meropenem and addition of linezolid.
- Two transoesophageal echocardiograms showed no vegetations, peri-device leak, or evidence of infective endocarditis. TOE is first-line for suspected device-related infection but has imperfect sensitivity for non-valvular devices (4,5).
- Despite negative imaging, the patient continued to spike fevers. Repeat cultures later grew *Corynebacterium striatum* on multiple samples. Repeated positive cultures support true bacteraemia rather than contamination (2,3).
- PET-CT demonstrated no FDG-avid focus of infection.
- She also developed rectal bleeding while inpatient. Endoscopy revealed oesophageal and gastric varices, diverticulosis, and haemorrhoids.
- A multidisciplinary endocarditis meeting concluded that an occult infection involving the left atrial appendage occlusion device was the most plausible source despite negative imaging.
- Vancomycin was added for *C. striatum*, and a prolonged course of daptomycin was initiated for presumed device-related infection.
- Over time, inflammatory markers, renal function, and liver tests improved. She remained clinically stable and cognitively intact.
- She was discharged to a supervised facility to complete outpatient parenteral antimicrobial therapy (OPAT), which is safe and effective for prolonged treatment courses (6)

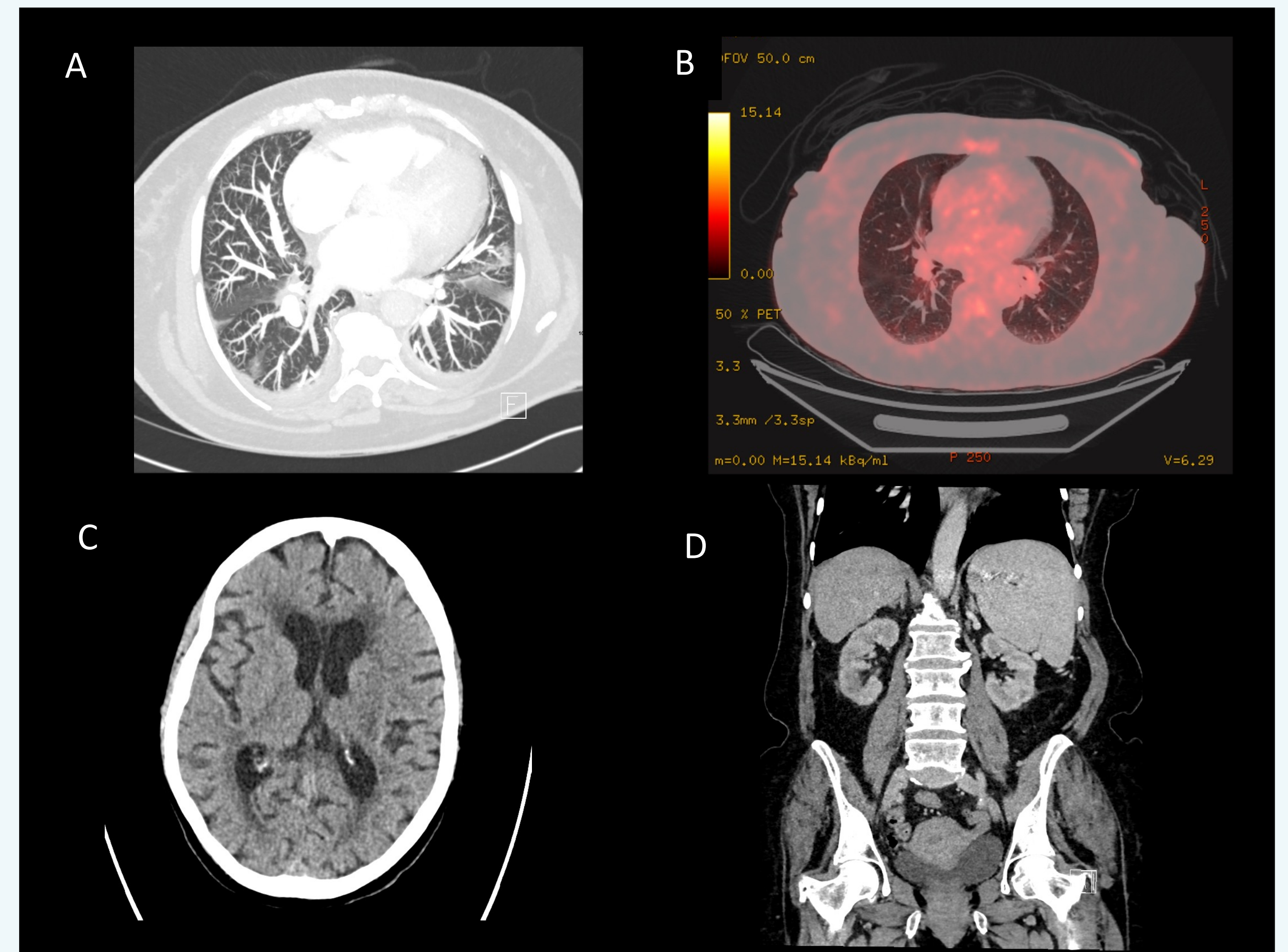


Figure 1. Radiological Investigations. (A) Atelectasis. (B) Normal PET-CT (C) No intracranial events. (D) No drainable abscess

Discussion

- Persistent bacteraemia in cirrhotic patients requires broad diagnostic consideration, including biliary, intra-abdominal, pulmonary, and endovascular sources (1).
- *Corynebacterium striatum* is often dismissed as a contaminant, but repeated positive cultures in immunocompromised or cirrhotic patients strongly support true pathogenicity (2,3).
- Echocardiography remains first-line for suspected device-related infection, but its sensitivity for non-valvular devices is imperfect; negative imaging does not exclude an occult endovascular source (4,5).
- Severe beta-lactam hypersensitivity significantly restricted antimicrobial options, complicating management and necessitating careful stewardship and multidisciplinary coordination.

Conclusion

- This case illustrates the complexity of managing persistent bacteraemia in a patient with cirrhosis, an intracardiac device, and life-threatening antimicrobial hypersensitivity.
- Despite repeatedly negative imaging, clinical suspicion for device-related infection remained high and guided management.
- Multidisciplinary collaboration and supported OPAT were essential to achieving clinical stability and safe discharge.

References

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