

Rare cause of subarachnoid haemorrhage

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DESCRIPTION

A 56-year-old man with a medical history of permanent pacemaker implantation presented to our institution with progressive lethargy and dyspnea. Vitals were significant for fever (39.3°C), persistent hypotension, tachypnea (30/min) and hypoxia (90% saturation on 6L/min). Physical exam was pertinent for altered mental status, increased work of breathing and diminished breath sounds on the left side. Cardiovascular exam was unremarkable for murmur, rubs or gallop. Labs revealed leucocytosis at $26 \times 10^9/L$ and creatinine of 2.9 mg/dL (GFR 22 mL/min). A computed chest tomography showed left lower lung infiltrates. A transthoracic echocardiogram was unremarkable. The patient required intubation and vasopressor support. Subsequently, he was transferred to the intensive care unit with a diagnosis of pneumonia with septic shock. The patient's clinical status substantially improved with antibiotics. The initial two sets of blood cultures were reported positive for *Haemophilus parainfluenza*. Three days later the patient developed worsening neurological status. A ruptured subarachnoid aneurysm (Grade 3 by Hunt & Hess) was recognised and emergently embolised with Onyx (figure 1A-C). His further clinical course was significant for rapidly worsening haemodynamic status and refractory hypoxia. A transoesophageal echocardiogram (TEE) revealed severe acute mitral regurgitation (1), severe pulmonary valve insufficiency and moderate tricuspid insufficiency with multiple moderate sized vegetations on all aforementioned valves and pacemaker leads.

This case presents a diagnostic challenge and failure of medical treatment of infectious endocarditis (IE) associated with a cardiac implantable device (CID), caused by a rare pathogen. *H. parainfluenza*, a member of the HACEK group, is a gram-negative bacterium commonly causing respiratory infection and sporadically IE. Further characteristics include inhabitancy of oropharyngeal flora, fastidious growth and special culture requirements.

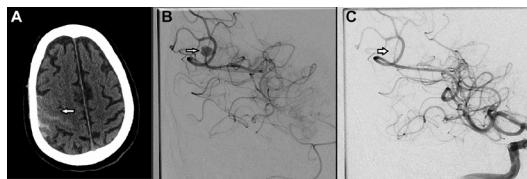
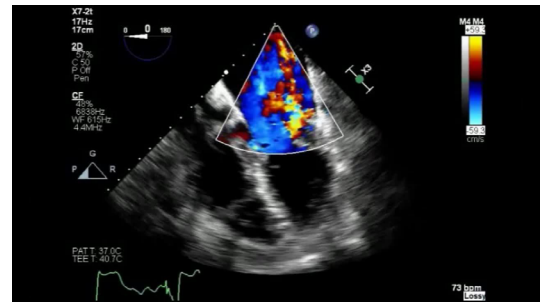


Figure 1 (A) Head CT. New subarachnoid haemorrhage in the posterior right sylvian fissure and right parietal and right frontal region. (B) Cerebral angiography. An irregularly contoured fusiform distal right MCA mycotic aneurysm before the embolisation (arrow). (C) Successful Onyx embolisation of the distal right MCA mycotic aneurysm and the parent vessel sacrifice (arrow).



Video 1 Transoesophageal echocardiogram. Acute severe mitral insufficiency caused by infective endocarditis.

H. parainfluenza IE is most commonly associated with native valve involvement, subacute presentation and favourable prognosis.¹ For suspected CID associated IE, TEE is a recommended diagnostic imaging modality. The treatment comprises complete hardware removal followed by prolonged antibiotic therapy.²

In our case, the suspicion of IE was initially low, as the patient had a localised source of infection, fever resolved within 48 hours of treatment, and there was no evidence of new onset left sided regurgitation.³ Once the blood cultures resulted positive for a typical microorganism and the patient developed a complication in the form of ruptured mycotic aneurysm, IE became a presumed diagnosis. This was confirmed by TEE findings, with the application of modified Duke criteria. Deemed high operative risk, the patient was not qualified for surgical treatment. An interdisciplinary meeting was conducted and a decision was made to withdraw care. This case report highlights the importance of an enhanced clinical awareness about endocarditis in a septic patient with an implantable cardiac device.

Learning points

- ▶ Importance of keeping high index of suspicion of infectious complications related to cardiac devices in septic patients.
- ▶ Transoesophageal echocardiogram as a modality of choice to visualise pacemaker leads.
- ▶ The necessity to remove the whole hardware as the part of the treatment of cardiac device related IE.

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