An Unusual Case of Seizure: Staphylococcus Lugdunensis Associated AICD Lead Endocarditis

Gillian Belnavis [1], Jordan Gavin [1], Rosario Colombo [2]

[1] Division of Cardiovascular Medicine, Ohio State University, Columbus, OH.
[2] Division of Cardiovascular Medicine, Jackson Health System, Miami, FL.

Introduction

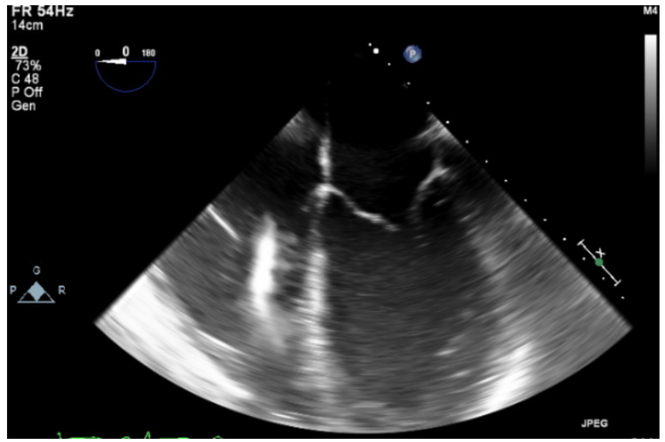
Infective endocarditis (IE) involving a cardiac implantable electronic device has a high mortality. While IE can precipitate neuro-embolic events, rarely does it present as a seizure. We describe a case of Staphylococcus lugdunensis IE involving an automatic implantable cardioverter defibrillator (AICD) presenting as focal seizures.

Case Presentation

A 21-year-old male with a history of HTN, T2DM, and idiopathic dilated cardiomyopathy with EF 32% s/p single-chamber AICD implantation on home inotropes presented with shaking of his left face and arm. The patient self-discontinued his milrinone prior to admission due to perceived side-effects. On physical exam, the patient was afebrile and hemodynamically stable. He had a right sided PICC, bibasilar crackles, lower extremity edema and shifting abdominal dullness. There were no focal neurological deficits. Initial labs revealed normal troponin levels, elevated pro-BNP of 5050 pg/mL and a normal white blood cell count. Blood cultures were drawn and the patient was restarted on milrinone infusion in addition to his prescribed medications: aspirin, carvedilol, metolazone and furosemide. Four out of four blood cultures were positive for Staphylococcus lugdunensis.

The patient was started on vancomycin, which was later de-escalated to oxacillin according to susceptibilities. Dedicated MRI with contrast, seizure protocol, was recommended for further assessment and showed an acute-on-subacute right middle cerebral artery infarction that was deemed by neurology to be the likely source of his focal seizures. A transesophageal echocardiogram demonstrated several filamentous masses attached to his AICD lead, the largest measuring 1.3 x 0.9 cm (see Image 1). The AICD was explanted and subsequently replaced once blood cultures were negative for > 72 hours. The patient was discharged home in stable condition to complete six weeks of oxacillin. Unfortunately, he was readmitted two weeks later with mixed septic and cardiogenic shock and subsequently expired.

Image 1: TEE showing several filamentous masses attached to right ventricular AICD lead



Discussion

Neurologic manifestations are among the most common extra-cardiac complications of IE, occurring in up to 20-55% of patients. These complications can include CVA, TIA, purulent or aseptic meningitis, intracranial hemorrhage, headache, seizure or encephalopathy and can be a major determinant of poor prognosis. S. lugdunensis is a coagulase negative staphylococcus that is an uncommon cause of IE with an aggressive clinical course and high rate of complications. The organism produces a biofilm by binding to von Willebrand factor through FbI, a fibrinogen-binding protein unique to S. lugdunensis. This enables it to tightly adhere to vessel walls, bioprosthetic material and native tissues. Although most Staphylococcus lugdunensis isolates are susceptible to oxacillin, as was with our case, the formation of biofilm plays a major role in its pathogenesis and impairs the efficacy of antibiotics.

Conclusion

Staphylococcus lugdunensis is a uncommon cause of IE. Due to proclivity to form biofilms patients with CIEDs are particularly susceptible. A high index of suspicion for IE is crucial when the only initial presenting sign is a neurologic manifestation.