Aspergillus terreus Infection In A Patient With Cardiac Implantable Electronic Device

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Introduction

- Cardiac implantable electronic devices (CIED) include pacemakers, implantable cardioverter-defibrillators (ICDs), and cardiac resynchronization therapy (CRT) devices.
- CIED infections are generally considered in two categories i.e. pocket infections and systemic infections.
- The true incidence of CIED infection is not known but according to Eggimann et al, the rate of infection can range from 0.8 to 5.7%.
- The most common causative organisms to cause these infections are Staphylococcus aureus and coagulase negative Staphylococci.
- Other organisms implicated are Streptococcus species, Corynebacterium species, Cutibacterium acnes, Gram negative bacilli, Candida species and Aspergillus species.
- Among the Aspergillus species, Aspergillus fumigatus is the most common causative organism.

Case Report

- A 55 year old man presented in the emergency with fever for 7 days, redness and discharge from pacemaker pocket site.
- Past History
  - History of essential hypertension for 12 years on multiple antihypertensives.
  - 2001: Permanent pacemaker placed in view of complete heart block.
  - 2010: Pocket site infection with Staphylococcus aureus.
  - 2015: Bacterial endocarditis, causative organism being Staphylococcus aureus treated with Vancomycin.
- Present Admission
  - Chest X-ray: Cardiomegaly.
  - Transthoracic Echocardiogram: Restrictive cardiomyopathy with pulmonary artery thrombus with multiple vegetations.
  - The patient underwent pulmonary artery thrombectomy, pacemaker removal and necrosed tissue removal.

Microbiology Investigations

- The necrosed tissue and the pacemaker leads were sent to the Microbiology laboratory for bacterial and fungal culture.
- The sample was sent in wide mouth screw capped sterile container which contained black, necrosed, blood tinged tissue in saline.
- Bacterial culture: Negative.
- Calcofluor white-KOH mount: Septate hyphae was visualized.
- Culture on Sabouraud Dextrose Agar: White downy growth with white border was seen within 5 days which turned to cinnamon brown later, on further incubation.
- MALDI-TOF from the initial growth revealed Aspergillus terreus complex
- Serum galactomannan was 2.83.

Discussion

- Based on Calcofluor white-KOH Mount findings the patient was started on Intravenous Amphotericin-B.
- After the species was confirmed I.V. Amphotericin-B was stopped and Tab. Voriconazole 400mg B.D. was started.
- Patient was on the treatment for 6 weeks.
- The wound healed and repeat cultures were negative.
- Pacemaker implant was put for the patient.

Conclusion

- CIED pocket infection must be suspected when there is continuous fever and signs of inflammation over the pocket skin (e.g. reddish discoloration, purulent discharge) is seen.
- The most common causative organisms are Staphylococcus aureus and coagulase negative staphylococci.
- In the review of literature by Pincus et al, most pacemaker pocket infections due to fungi are caused by Aspergillus fumigatus.
- However, unusual organisms like Aspergillus terreus, as in the present case, may rarely cause infection.
- The importance of identifying till the species level is important since treatment of the patient changes as in our case.

References


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