Aspergillus flavus-infection of a pacemaker wire: continuing evidence for active management of infected pacemakers

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A rare case of fungal endocarditis (Aspergillus flavus) on a permanent pacemaker is described. Owing to negative blood culture and non-specific echocardiographic findings, a complete diagnosis was made only on histologic examination of the surgically removed material. In our opinion this case supports an active management of infected pacemakers.

Key Words: Endocarditis, Pacemaker.

The incidence of infection after pacemaker transvenous implantation is 1-3%, the most common presentation being the abscess of the generator site. Right heart endocarditis or infection of the pacemaker wire are rare events and usually the causative agent is a bacter. Fungal infections of the internal wire are extremely rare events and only few cases have been reported. In all cases the infective agent was a Candida and the patient died. To our knowledge, this is the first report of Aspergillus Flavus-infection of a permanent pacemaker wire detected in life and associated with a good outcome for the patient.

Case report

In January 1986 came to our observation a 60 years old man, M.B., with the diagnosis of 'infective endocarditis with negative blood cultures in patient with permanent pacemaker'. In 1978 he had the first pacemaker implantation (TELELECTRONICS 150L) for an high degree atrioventricular block. In 1980 a new pacemaker (CPI MICROTHERIN 0522) was inserted after the occurrence of numerous infections of the left subclavian pocket unsuccessfully treated with medical therapy and surgical drainage. As manual withdrawal of the old pacemaker failed, the new system was parallelly inserted and the pocket was placed in right subclavian position. In 1984 a Staphilococcus septicemia was successfully treated with antibiotic therapy but in 1985 a mild, persistent fever forced the patient to a new hospitalization in another Institute. As his clinical state worsed, he was referred to us for further management. On admission, physical examination showed a pale and suffering man with jaundice, fever and signs of right heart failure. He was receiving a general, broad-spectrum antibiotic therapy. Blood cultures were still negative. While x-rays, electrocardiography and phonocardiography were unconclusive, echocardiography revealed a large, shaggy mass extended across the tricuspid valve into the right ventricle and probably involving the right side of interventricular septum (Fig. 1). Pulsed-wave Doppler showed tricuspid insufficiency. An open-heart explantation of the electrodes and the insertion of a new epicardial pacing system (CORDIS 334) were decided. A large mass (4x8 cm) was removed: it was strongly attached to the wire (Fig. 2) but only partially to tricuspid leaflets and so it was possible to perform a surgical toilet of the valve leaving it in place. Finally, vegetations involved also the interventricular septum and an abscess of this site was drained. Histological examination of the removed material demonstrated the presence of large fungal colonies (Aspergillus Flavus). An antymycotic therapy with flucytosine (500mg x 4/day) was started and the patient left our Institute ten days after surgery in good conditions. After six months he was asymptomatic and well.

Conclusions

The finding of septicemia in a patient with permanent pacemaker has to be regarded as evidence of...
endocarditis\textsuperscript{5}. Repeated blood cultures and a complete echocardiographic examination (2D, M-mode, Doppler) are necessary for diagnosis. Both examination may be negative, blood cultures depending on the infective agent and echo in case of small or microscopic vegetations\textsuperscript{6}. Fungal endocarditis has frequently larger vegetations than bacterial endocarditis, but it is not the rule and blood cultures are positive only in 54\% of patients with Candida infection and almost never with Aspergillus endocarditis\textsuperscript{7}. The occurrence of embolization is not clear and septic pulmonary emboli from an infected pacemaker have been reported\textsuperscript{3}. So, accordingly to many Authors\textsuperscript{1}, explantation of the pacing system, usually with open-heart surgery, is the treatment of choice. This is our opinion too and the good outcome in our patient supports this active approach in similar cases. Moreover, Aspergillus is more invasive than Candida and the interventricular septum’s abscess of our patient is consistent with this finding.

Finally, histological examination of the removed material may be the only way of making a correct diagnosis.

Riassunto

Descriviamo un raro caso di endocardite fungina (Aspergillus flavus) complicante un PM permanente. A causa della negatività delle emocolture e della aspecificità del reperto ecocardiografico di vegetazioni intracavitarie, la diagnosi è stata posta in maniera completa e corretta solo grazie all’esame istologico del materiale asportato chirurgicamente. A nostro parere questo caso evidenzia ancora una volta la necessità dell’espianto del PM, preferibilmente in CEC, in caso di endocardite del sistema elettrostimolatore.

References