

Relapsing brucellosis related to pacemaker infection

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Brucellosis;
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Infection is a serious complication following pacemaker implantation. Usually it results from normal flora of the skin or from *Enterobacteriaceae*, *Pseudomonas aeruginosa*, *Streptococcus* spp., *Enterococcus* spp. We report here a case suggesting that *Brucella melitensis* is able to persist around pacemaker device being a cause of relapsing brucellosis.

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Case report

On February 2004, a 70-year-old woman living in a small town near Foggia, Apulia, Southern Italy, was admitted to the hospital because of fever which had been going on for 1 month before admission. On June 2000 her first single-chamber pacemaker had been implanted in the right side of the thorax at the same hospital. In 2003 she had been hospitalized because of two episodes of brucellosis which were treated with rifampicin 600 mg/day and minocycline 100 mg bid for 12 weeks, and with rifampicin 600 mg/day and ciprofloxacin 500 mg bid for 6 weeks, respectively. On admission the patient complained of pain in the tissues around her pacemaker implantation. A physical examination revealed a mild hepatosplenomegaly. Laboratory findings showed a $4.0 \times 10^3/\mu\text{l}$ white blood cell count, with a differential count of 51% polymorphonuclear leukocytes, 39% lymphocytes, 8% monocytes, and 2% eosinophils. Platelets were $100 \times 10^3/\mu\text{l}$. A mild increase in gammaglobulin (47.27%) was detected. Serologic investigation showed anti-*Brucella* titers 1:320. Because of the infection of the generator pocket, the pacemaker along with the electrode was removed and a new single-chamber device was implanted in VDD mode in the left side of the thorax, without using a temporary pacemaker. The abscess was drawn and a specimen was processed using an automated monitoring system (Bactec 9050, Becton Dickinson, USA). After 3 days of incubation, the culture was positive for growth of a microorganism. The microscopic observa-

tion of the colonies revealed the presence of small faintly staining Gram-negative coccobacilli suggesting *Brucella* spp. Agglutination was observed when *Brucella* agglutinating sera (Murex, Biotech, UK) were used. After treatment with rifampicin 600 mg/day, trimethoprim-sulfamethoxazole 2 g i.v. bid, and minocycline 100 mg bid, the patient became afebrile and asymptomatic in a few days and was discharged. One month later the patient was again admitted to the hospital for a new febrile episode. While the pocket of the new pacemaker was in good conditions, skin infection with pus production from the surgical wound of the removed pacemaker was observed and a cutaneous swab was taken. Although this specimen gave negative results, in a few days the patient developed hyperpyrexia. The Wright agglutination test gave anti-*Brucella* titers 1:5120 and the blood culture was positive for *Brucella melitensis*. Treatment consisted of a 6-week regimen of rifampicin, ciprofloxacin, and minocycline. The patient was sent home in apparently good conditions without evidence of infection and from then on no recurrence of her illness has been reported.

Discussion

Brucellosis represents a systemic infection that can involve many organs and tissues¹. After pacemaker implantation, infection is a serious complication that results from normal bacterial flora of the skin and, at a less degree, from *Enterobacteriaceae*,

Pseudomonas aeruginosa, *Streptococcus* spp., *Enterococcus* spp.²⁻⁴. To the best of our knowledge until now only 3 cases of infection of a pacemaker by *Brucella* spp. have been reported⁵⁻⁷. Usually brucellosis is a zoonosis and the majority of cases require either the exposure to infected animals or the ingestion of unpasteurized milk. However, the absence of known risk factors has been described⁸. In this regard it is noteworthy that the patient is not living in a rural area and an occupational exposure cannot be hypothesized in order to explain the infection. In addition, we exclude lapses in her compliance with the antibiotic therapy. On the other hand the risk of relapse is an important parameter to be considered when a therapy for human brucellosis is being assessed. The notion that the relapse rate in patients treated with rifampicin-doxycycline association is 14%⁹ could help to explain at least in part the persistence of *Brucella* infection. In conclusion, the present report highlights the possibility of *Brucella* to be an agent complicating pacemaker implantation.

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