

Infection of a Pacemaker by *Brucella melitensis*

Anselmo de la Fuente, MD
J. Ramon Sanchez, MD
Javier Uriz, MD
Jesus Reparaz, MD
J. Luis Lopez-Coronado, MD
Ignacio Moriones, PhD

We report a case that, to the best of our knowledge, is the only published instance of infection of a pacemaker and its leads by *Brucella melitensis*. Furthermore, this case suggests that *B. melitensis* may be able to persist around pacemaker devices despite its having been eliminated from the rest of the body. The patient was a sheep shearer who had just undergone a 45-day course of antibiotic therapy for brucella and had been considered cured on the basis of negative blood cultures. (*Tex Heart Inst J* 1997;24:129-30)

The reported rates of pacemaker infection vary widely, in accordance with the source.^{1,2} The most common causes of infection are *Staphylococcus* species and *Enterobacteriaceae*. *Pseudomonas aeruginosa*, *Streptococcus* species, *Enterococcus* species, and fungi.³⁻¹⁰

We present what we believe is the 1st reported case of purulent infection of a pacemaker by *Brucella melitensis*.

Case Report

The patient was a 63-year-old man, a sheep shearer by occupation, whose dual-chamber endocavitary pacemaker (CPI Vista 940; St. Paul, Minn, USA) had been implanted in July of 1994. In December of 1995, he had been diagnosed with brucella and treated with doxycycline (200 mg/day for 45 days) and rifampin (900 mg/day for 45 days). On completion of the course of antibiotic treatment, blood cultures for brucella were negative and the patient was considered cured. However, a week later, in February 1996, he returned to the emergency department of our hospital with a temperature of 37.5 °C and an inflamed pacemaker sac from which there was spontaneous drainage of purulent material. We had no reason to suspect lapses in his compliance with the antibiotic regimen.

We proceeded to facilitate additional drainage of the pacemaker sac and to prepare the patient for surgical removal of the pacemaker and leads. We used a temporary pacemaker, a Swan-Ganz catheter, peripheral arterial pressure monitoring, electrocardiography, and fluoroscopic radiography as precautionary measures during surgery, which was conducted under general anesthesia. Furthermore, we prepared the surgical area for sternotomy in case it should become necessary due to difficulty in removing the leads, or to other complications. We fully exposed the pacemaker sac and cut free the embedded leads as far as the point at which they entered the subclavian vein. Then we gently pulled on the leads under fluoroscopic guidance, as we monitored peripheral and pulmonary arterial pressures. Seeing no adverse changes, we completed the extraction of both leads, then excised the pacemaker sac and all tissue that had the macroscopic appearance of infection. During the immediate postoperative phase, the patient was taken to the coronary unit for an echocardiogram to assure that there had been no pericardial effusion as a consequence of possible injury to the right atrium or ventricle during lead extraction.

B. melitensis was cultured from samples of pus and necrotic tissue from the pacemaker sac. *Brucella* was also cultured from the leads. The patient, while hospitalized, was given a temporary pacemaker and specific treatment for brucella with the following combination of drugs, administered orally: doxycycline (200 mg/day for 45 days), rifampin (900 mg/day for 45 days), and streptomycin (1 g/day for 21 days). One week after completion of antibiotic treatment, and

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From: The Cardiac Surgery Service (Drs. de la Fuente, Sanchez, Lopez-Coronado, and Moriones) and Infectious Diseases Service (Drs. Uriz and Reparaz), Hospital de Navarra, Pamplona 31008, Spain

Address for reprints: Anselmo de la Fuente, MD, Servicio de Cirugia Cardiaca, Hospital de Navarra, Pamplona 31008, Spain

subsequent to serologic tests and blood cultures that were negative for brucella, we implanted a new endocavitary pacemaker (Medtronic Prodigy SR; Kerkerde, Netherlands) in VVIR mode. After another 7 days, the patient was sent home in good condition and with no evidence of infection. He was advised to abandon sheep shearing; and to date there has been no recurrence of his illness.

Discussion

In our hospital, the infection rate for endocavitary pacemakers is 0.3%, but reported rates vary widely in accordance with institutional experience.^{1,2} The most frequent cause is *Staphylococcus aureus*.^{2,3} Conservative medical treatment without extraction of the leads is seldom effective¹¹ and carries a mortality rate of 25%.^{12,13} In our opinion, early extraction of the leads is imperative. We consider that the surgical management described here (using general anesthesia, monitoring peripheral and Swan-Ganz pressures, and preparing for a possible urgent sternotomy) controls the risk of applying direct traction to the leads.

We have not found other reports in the English medical literature of brucella as a cause of either early or late infections in association with pacemaker devices. Furthermore, this case suggests that *B. melitensis* may be able to persist around pacemaker devices despite its having been eliminated from the rest of the body, as indicated by blood cultures.

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