Infection of Epicardial Pacemaker Wires Due to Mycobacterium abscessus

\textit{Mycobacterium abscessus} is a member of the Runyon group IV mycobacteria. Formerly classified as a subspecies of \textit{Mycobacterium chelonae}, it is now accorded the status of a distinct species on the basis of DNA studies \cite{1}. Mycobacteria of Runyon group IV have been isolated from soil and water as well as from the hospital environment (water baths, ice machines, and water supplies) and hospital equipment \cite{2}. This group, which also includes \textit{Mycobacterium fortuitum} and \textit{M. chelonae}, causes a range of diseases, from superficial skin and soft-tissue infection to catheter-related sepsis, bacteremia, and endocarditis. To our knowledge, we report the first case of epicardiac pacemaker pocket and pacemaker wire infection due to \textit{M. abscessus}.

A 68-year-old man with coronary artery disease, diabetes, peripheral neuropathy, peripheral vascular disease, dementia, and Parkinson's disease was admitted to our hospital in March 1997 for evaluation and removal of an infected pacemaker. He had had epicardial pacing leads and a pocket without a battery placed during coronary artery bypass surgery in August 1977. He had been living in a nursing home since May 1996 and was in his usual state of health until 4 months before admission, when serosanguinous discharge was noted from the pacing lead pocket in the anterior abdominal wall. Routine bacterial cultures from the site yielded no growth. The patient was treated empirically with ciprofloxacin for ~1 month, followed by treatment with clindamycin for 2 weeks, without improvement. He was afebrile throughout this period.

On admission in March 1997, a tender 2-cm ulcerated area on the anterior abdominal wall, with a pacemaker wire tip at its base, was noted. Purulent discharge with erythema of the surrounding area was noted. Initial blood and superficial wound cultures yielded no growth. The patient started receiving ampicillin/sulbactam. Five days after admission, he underwent debridement of the pacing lead pocket and removal of the epicardial leads. Copious purulent material was found within the pacing lead pocket and along the pacemaker wires to the point of attachment to the heart. The antibiotic regimen was changed to vancomycin and gentamicin. One week later, cultures of the debrided material and wires yielded an organism initially reported to be a diphtheroid resistant to multiple antibiotics. This microorganism was later found to be acid fast. Therapy with vancomycin and gentamicin was discontinued and empirical treatment with clarithromycin and cefoxitin was initiated. The microorganism was identified as \textit{M. abscessus} by use of PCR with a sequence of the 65-kD heat shock protein gene, followed by restriction enzyme analysis. The isolate was determined to be susceptible to clarithromycin, cefoxitin, and amikacin, but not to ciprofloxacin. The MICs were 0.5 \textmu{g}/mL, 16 \textmu{g}/mL (breakpoint, 32 \textmu{g}/mL), 4 \textmu{g}/mL, and 8 \textmu{g}/mL, respectively \cite{3}. Amikacin was added to the patient's medications but was discontinued after 1 week because of concern over the patient's deteriorating renal function. His hospitalization was complicated by renal insufficiency and later by oliguric renal failure that eventually required hemodialysis. A good clinical response was observed during the subsequent 5 weeks of the patient's hospital stay, with resolution of the inflammation and purulence around the pacemaker pocket and surgical wound. However, the patient's kidney function did not improve. After 1 month of hemodialysis, his family refused further dialysis as well as any resuscitative measures. The patient died soon thereafter.

\textit{M. abscessus} is an acid-fast bacillus that may be mistaken for a diphtheroid on gram staining. It grows on standard bacteriologic culture media such as chocolate agar and BACTEC (BBL, Sparks, MD) broth as well as on specialized mycobacterial culture media. Growth may be apparent as soon as 3–5 days. \textit{M. abscessus} was first reported as a pathogen in 1953, when it was cultured from synovial fluid in a case of posttraumatic arthritis and gluteal abscesses in the same patient \cite{4}. Since then, it has been described as the cause of postinjection abscesses, pulmonary disease, surgical-wound infections, superficial skin infections mimicking cellulitis, osteomyelitis, bacteremia, and disseminated disease \cite{1, 5–7}. Disease may be underdiagnosed to this organism because the techniques required to identify and differentiate it from other group IV mycobacteria, especially \textit{M. chelonae}, are time-consuming and not always readily available. These techniques include biochemical testing, characteristic antimicrobial susceptibility patterns, high-performance liquid chromatography, DNA probes, and DNA-PCR studies \cite{1}.

A review of the English-language literature did not reveal other reports of epicardial lead or pacemaker pocket infection associated with \textit{M. abscessus}. In one case of native tricuspid-valve endocarditis due to \textit{M. chelonae}, a ventricular pacemaker was present but was not reported to be infected \cite{8}. Wound infections due to rapidly growing mycobacteria appear to be associated with surgery of the anterior chest wall and the presence of indwelling medical devices. Outbreaks of surgical wound infections associated with rapidly growing mycobacteria commonly involve sternotomy and mammaplasties \cite{2, 5}. Spontaneous breast abscesses associated with \textit{M. chelonae} have been reported as well \cite{9}. Contaminated tap water used to rinse instruments and in cardioplegia solutions has been implicated in most recent cases of surgical wound infections and postinjection abscesses due to \textit{M. abscessus} \cite{1, 2, 7}. There may be a geographic predilection, given that most reported cases come from the southern states \cite{2}. In a review of 58 cases of disseminated infection due to rapidly growing mycobacteria, immunocompromised patients were more likely to present with disseminated disease and to have a poorer response to therapy. Such patients included those with connective tissue disease or hematologic malignancies, recipients of kidney transplants, and patients.
receiving corticosteroids or cytotoxic chemotherapy. Diabetic patients, such as our patient, were not identified as being at particular risk for disseminated disease [10].

Other than ethambutol, the common antituberculous agents are not effective against the rapidly growing mycobacteria. Within Runyon group IV, the various species have characteristic susceptibility patterns that may aid in their identification [1]. Clarithromycin administered for 6 months appears to be the most useful regimen against M. abscessus [2, 7]. Because of reports of resistance to clarithromycin monotherapy in M. chelonae, the use of combination therapy for treatment of disseminated infections due to rapidly growing mycobacteria has been advocated [8, 10]. Surgical debridement is essential for a good treatment outcome [7].

In conclusion, the rapidly growing mycobacteria are clinically important pathogens in the setting of surgical wound infections or infections associated with indwelling medical devices including, in our case, epicardial pacing leads. When slower-growing organisms resembling diphtheroids with unusual antibiograms are isolated in these settings, infection with rapidly growing mycobacteria should be suspected. Specific identification and susceptibility testing will allow the timely institution of appropriate antibiotic therapy.

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References

Basidiobolomycosis of the Rectum Masquerading as Crohn’s Disease: Case Report and Review

Basidiobolomycosis caused by Basidiobolus ranarum Eidam, is a chronic inflammatory disease that is generally restricted to the subcutaneous tissue. Gastrointestinal zygomycosis due to Entomophthorales is a rare entity [1, 2], which can be distinguished from infections caused by Mucorales on the basis of mycological features of the etiologic agent and by characteristic histopathologic findings [3]. We describe the first culture-proven case of basidiobolomycosis of the rectum in a Bangladeshi male who apparently had no predisposing factors.

In January 1996, a 30-year-old Bangladeshi male was admitted to Al-Amiri Hospital, Kuwait, with a complaint of rectal bleeding often associated with constipation. On physical examination, a large polyoid mass was noted in the rectum, starting from the dentate line and extending ~10 cm into the lower third of the rectum. The circumferential mass appeared to involve the entire rectal wall as well as the perirectal tissues, and palpation of the mass revealed a very firm consistency and tightness around the examining finger.

A sigmoidoscopy was performed and revealed intact mucosa that was inflamed with many tiny ulcers that bled easily to touch. The preliminary diagnosis was carcinoma of the rectum. The results of laboratory studies, including a complete blood count, were normal except for persistent leukocytosis (WBCs, 18–22 × 109/L). Serological studies for HIV, hepatitis B surface antigen, hepatitis C virus, and syphilis were negative. There was a polyclonal increase in the γ-globulin level, consistent with chronic inflammation.

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An ultrasonogram of the rectum revealed a tumor-like lesion; this was confirmed by a CT scan of the pelvis and lower abdomen, which showed a circumferential lesion ~17 cm in diameter. Abdominal radiographs obtained after administration of a barium enema showed narrowing of the rectal passage that extended down to the anal orifice. The rectal lesion was also seen on colonoscopy; the remainder of the colon was normal. Histopathologic examination of the first biopsy specimen of the rectal lesion showed epithelioid cell granulomas infiltrated with eosinophils, a few neutrophils, and lymphoplasmocytic cells. These findings led to the provisional diagnosis of active Crohn’s disease.

Initially, treatment for Crohn’s disease was instituted, and later an antituberculous treatment regimen was added. However, despite