Aspergillus Osteochondritis after Median Sternotomy. Combined Operative Treatment and Drug Therapy with Amphotericin B

F. Wellens, C. Potvliege, F.E. Deuvaert, and G. Primo

Department of Cardiac Surgery and Department of Bacteriology, University Brugmann Hospital Brussels, Belgium

Summary
A case of Aspergillus fumigatus osteochondritis after median sternotomy for open heart surgery is presented. To the best of our knowledge, it is the second well documented case that has been reported in the literature.

Successful healing was obtained with combined operative treatment (consisting of a large resection of the 8th, 9th and 10th right costal cartilages and surrounding soft tissues), and systemic drug therapy with Amphotericin B.

Repeated serologic studies and bone scans were used for both the diagnosis and monitoring of the evolution of the infection; these 2 tools are recommended in cases of mycotic infections in that area.

Key-Words: Aspergillus fumigatus — Osteochondritis — Treatment

Introduction
The tremendous increase of open cardiac surgical procedures, mainly aimed at treatment of coronary artery disease, carries a proportional load of surgical complications. Among these, chronic osteitis of the sternum and osteochondritis of the ribs are tenacious complications, demanding a great deal of patience from the patient and the surgeon.

The systemic use of powerful antibiotics provides an efficient prophylaxis against perioperative contamination; mainly by staphylococci. Unfortunately however, it favors the occasional growth of opportunistic organisms such as Pseudomonas, Serratia and mycotic organisms such as Candida and Aspergillus etc. These opportunistic organisms have caused systemic infections, sternal osteitis and mediastinitis, after cardiac surgery (CS) (1–5, 7, 8, 9).

Nevertheless only one documented case of Aspergillus osteomyelitis after cardiac surgery has appeared in the recent literature. Repeated combined debridement and local instillation of Amphotericin were applied in that case (1).

The case reported here presented with Aspergillus fumigatus osteochondritis after CS and was successfully treated by surgery combined with parenteral drug therapy using Amphotericin B.

Case report
A 59-year-old white woman had uneventful aortocoronary bypass performed to the LAD for severe angina pectoris on April 10, 1979 and was discharged 10 days later. She was readmitted 2 months later with a 3 cm dehiscence of the proximal aspect of the sternal incision. No cultures were obtained and the wound was surgically closed.

A third admission was necessary 8 months later. This time the patient presented with 2 painful granulomas, one in the proximal part of the sternal incision and the second in the xyphoid area. Both granulomas were excised and the underlying sternal wires removed.

The patient was readmitted a fourth time 6 months later (16 months after the initial procedure). She presented again with a granuloma on the lower part of the sternal incision and complained of some tenderness on the right costal margin. There was no draining sinus.

A surgical exploration revealed the presence of a small sternal sequester apparently without any other active infectious process. An area of 2 cm in diameter was rongued and the wound was surgically closed.

Local healing was excellent but the patient continued to experience local tenderness in the xyphoid area and at the right costal margin. Because of absence of any common sign of local or systemic infection, the patient was not seen at the hospital for 11 months. During that period local treatment of the pain was attempted by physical therapy, numerous local injections of corticosteroids and acupuncture. The local tenderness and pain worsened and when some swelling on the right costal margin appeared, she came back to our outpatients clinic.

Clinical examination revealed a moderate soft tissue swelling and some local tenderness over the 8th, 9th and 10th right costal cartilage. Coughing, sneezing and abdominal muscle tension triggered pain in the same area. Laboratory tests were normal except for a sedimentation rate of 35 mm/h. The roentgenogram of that area was suspect for osteochondritis. The bone scans with pyrophosphate and Gallium confirmed the diagnosis of osteochondritis of the 9th and 10th ribs.

A few days later the patient underwent a large surgical exploration via a slight oblique incision over the 9th right rib from the sternal border to the anterior axillary line. This revealed a necrotizing osteochondritis of the 8th, 9th and 10th rib with presence of a very small localized abscess on the 9th rib. The cartilages were somewhat lique-
Aspergillus Osteochondritis after Median Sternotomy

The port of entry for Aspergillus fumigatus in our patient remains obscure. Neither the occupation, nor the environment of the patient, nor the systemic search for a localized source were conclusive.

As a completely isolated case in our series of 6000 operated cardiac patients, we suppose that contamination occurred during one of the repeated surgical procedures, even in the absence of a specific localized hospital source of Aspergillus (4).

Except for the manubrium, all the wires were placed around the sternum (2, 8). The role of repeated injections of corticosteroids in the affected area also remains unanswered.

Following the recommendation of several authors (2, 5, 8, 9) in cases of osteochondritis, large surgical exploration and debridement were performed. The surgical findings were very close to the description of the findings for Candida infection in the patients of Williams and co-workers (8). The large surgical debridement and treatment with oxacillin of the concomitant Staphylococcus epidermidis infection was thought to be sufficient for total cure.

However, the persistence of the symptoms and clinical signs together with the positive serologic tests for anti-Aspergillus antibodies soon changed our attitude.

Local treatment with Amphotericin B, unsuccessful in the case of Attah and co-workers (1) was even impossible in our patient because of the extension of the involved area and its communication with the right pleura.

Clinical and serologic response to the systemic treatment was excellent. The Amphotericin B was well tolerated by the patient. The dosage had to be modified because of variations of renal function.

As stated already by several authors (3, 5, 8, 10) once the diagnosis of osteochondritis is made and the etiologic organisms identified early radical debridement is mandatory.

The few results of systemic therapy with Amphotericin B in fungal infections of bone are not conclusive (6, 8, 10).

Combined systemic Amphotericin B therapy and surgery in cases of Aspergillus infection is probably recommendable in view of the excellent response of our patient. When clinical signs of rib osteochondritis are few in a patient with a previous median sternotomy, bone scans are valuable both for the establishment of the diagnosis and for the evolution of the healing process.

In every case of late infection in the area of a sternal incision, a systemic search for common bacterial organisms, and also for Mycobacteria and fungi is advisable. In these cases repeated serologic studies for fungi help in establishing a presumptive diagnosis. They are also important in the follow-up of the treatment of opportunistic organisms (6). Progressive reduction of the serologic response to the responsible organism is a good indicator of successful therapy.

References


Prof. G. Primo, Division of Cardiac Surgery, University Brugmann Hospital, Place A. Van Gehuchten 4, B-1020 Brussels, Belgium