Postoperative Mediastinitis Due to *Finegoldia magna* with Negative Blood Cultures

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We report a case of *Finegoldia magna* (formerly known as *Peptostreptococcus magnus*) mediastinitis following coronary artery bypass in a 50-year-old patient. Even if staphylococci remain the main causative organism of postoperative mediastinitis, the responsibility of anaerobic bacteria must be considered in cases of fever and sternal drainage with negative blood cultures.

CASE REPORT

A 50-year-old man was admitted to the cardiothoracic surgery department to undergo coronary bypass surgery. His medical history was notable for high blood pressure, dyslipidemia, and myocardial infarction 2 years earlier, treated by percutaneous angioplasty of the right coronary artery. He also had undergone two surgical interventions on both maxillary sinuses in the past 20 years for recurrent sinusitis. Because of persisting chest pain episodes 1 year after the myocardial infarction, a cardiac catheterization was performed, which disclosed double-vessel coronary atherosclerosis. The patient underwent a double internal mammary-coronary artery bypass on 15 October 2008. The prophylactic antibiotic protocol included intranasal application of mupirocin before and 4 days after the intervention and intravenous cefamandole during surgery. Neither intraoperative nor immediate postoperative complications were noted. Three days after surgery, the patient was febrile at 38.9°C, in association with dehiscence and instability of the sternum. Moderate fever persisted for 2 days, and the patient was afibrile at 38.9°C, in association with dehiscence and instability of the sternum. Moderate fever persisted for 2 days, and the patient was afibrile the day after, for which Gram stain and culture of the internal mammary-coronary artery bypass were performed. A sterile specimen was obtained by deep sternal puncture. Cultures of the mediastinal fluid were all negative except for a single enrichment medium, which grew *Finegoldia magna*. The strain was susceptible to amoxicillin (amoxicillin), vancomycin, and gentamicin on 21 October, and underwent extensive sternal and mediastinal debridement with placement of eight mediastinal drainage tubes on the same day. Blood cultures, all performed before administration of antibiotics, remained negative. However, all intraoperative cultures of mediastinal material grew within 48 h, and *Peptostreptococcus sp.* 16S RNA gene amplification and sequencing were carried out as described previously (11), leading to the identification of *Finegoldia magna* (formerly *Peptostreptococcus magnus*). The strain was susceptible to metronidazole and amoxicillin and resistant to clindamycin and erythromycin. Vancomycin and gentamicin were discontinued, and metronidazole was added to the amoxicillin. Apyrexia was obtained 2 days after surgery, and the patient completed a 6-week course of amoxicillin and metronidazole. On the last visit, 90 days after the first surgery, the patient was afibrile with satisfactory sternalotomy closure.

*Finegoldia magna* is a gram-positive anaerobic coccus, part of the normal flora of the human mucocutaneous surfaces. It is frequently isolated in infections of soft tissues and periosteal cavity, and a few cases of endocarditis and pericarditis have also been reported (2, 9, 12, 17). Poststernotomy mediastinitis due to *F. magna* is far more uncommon. To our knowledge, only five cases formally due to *F. magna* have been reported to date (Table 1) (4–8, 15).

As shown in the table, anaerobic mediastinitis following cardiothoracic surgery is often polymicrobial (Table). However, in our case the association with *Streptococcus oralis* was not considered significant, since the *S. oralis* strain had been cultured in only one specimen in enriched medium and was not recovered in intraoperative cultures. Since anaerobes are often isolated in deep wound infections, it is surprising that anaerobic mediastinitis has been reported infrequently. Considering the increased isolation of anaerobic bacteria observed discussed elsewhere (10), one can hypothesize that this due to...
Six specimens with anaerobic bacteria only and nine with mixed aerobic, facultative, and anaerobic bacteria over a series of 74 patients with postthoracotomy sternal wound infection.

**TABLE 1. Reported cases of anaerobic poststernotomy wound infection**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (yr)</th>
<th>Gender</th>
<th>Type of surgery</th>
<th>Prophylaxis</th>
<th>Medical Fluid</th>
<th>Bacteriological Findings</th>
<th>Antimicrobial Therapy</th>
<th>Outcome</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988 (1)</td>
<td>48/Male</td>
<td>Coronary bypass</td>
<td>Cefamandole</td>
<td>Clindamycin, nafcillin, gentamicin</td>
<td>Cured</td>
<td>Peptostreptococcus prevotii, Bacteroides fragilis</td>
<td>Cured</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1988 (2)</td>
<td>65/Male</td>
<td>Coronary bypass</td>
<td>Cephapirin</td>
<td>Clindamycin</td>
<td>Cured</td>
<td>Prevotella intermedia, Bacteroides fragilis</td>
<td>Cured</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>1985 (2)</td>
<td>65/Male</td>
<td>Coronary bypass</td>
<td>Cephalotin</td>
<td>Clindamycin</td>
<td>Cured</td>
<td>Prevotella intermedia, Bacteroides fragilis</td>
<td>Cured</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>1976 (1)</td>
<td>65/Male</td>
<td>Coronary bypass</td>
<td>Unknown</td>
<td>Clindamycin</td>
<td>Cured</td>
<td>Peptostreptococcus prevotii, Bacteroides fragilis</td>
<td>Cured</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>1996 (2)</td>
<td>5/Female</td>
<td>Fallot's tetralogy</td>
<td>1st-generation cephalosporin</td>
<td>Unknown</td>
<td>Cured</td>
<td>Penicillin</td>
<td>Cured</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2001 (4)</td>
<td>50/Male</td>
<td>Coronary bypass</td>
<td>Gentamicin</td>
<td>Clindamycin</td>
<td>Cured</td>
<td>Finegoldia magnac</td>
<td>Cured</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>2008 (1)</td>
<td>50/Male</td>
<td>Coronary bypass</td>
<td>Vancomycin</td>
<td>Clindamycin</td>
<td>Cured</td>
<td>Peptostreptococcus magnus</td>
<td>Cured</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Antimicrobial therapy**

**Outcome**

- Cured
- Not detailed
- 5
- 6
- 7
- 8
- 15

**Reference**

1. No funding was obtained for this study.
2. Since clinical examination and imaging techniques have shown low sensitivity and specificity in early diagnosis of postsurgical mediastinitis, blood cultures are frequently used as a diagnostic test. In the retrospective analysis of 266 patients displaying poststernotomy mediastinitis within the 60-day postsurgical period, blood culture seemed to be most accurate for patients with *Staphylococcus aureus* bacteremia (14). However, among patients with mediastinitis due to other infectious agents, 67% had negative blood cultures, like our patient. In general, reasons for negative blood cultures can be the following: (i) technical, (ii) linked to the type and/or site of infection, (iii) due to the nature of the microorganism, and/or (iv) caused by prior administration of antibiotics. In our case, all blood cultures had been drawn before administration of antibiotics. However, we cannot exclude that the blood culture system explains why blood cultures remained negative. Indeed, Bassetti et al. (2; these authors also cite reference 17) reported that a *Finegoldia magna* strain causing endocarditis did not grow in the BacT/AlertT and Bactec 9240 systems but grew in other systems, i.e., Septi-Chek BHI-S and the Isolator system. Complicated skin and skin structure infections with anaerobes are also classically not associated with positive blood cultures (13, 16), and gram-positive anaerobic cocci are difficult to grow.

As illustrated in our case, a diagnosis of bacterial mediastinitis is highly plausible for a patient with fever and sternal pain, drainage, or dehiscence following cardiothoracic surgery, even in the presence of negative repeated blood cultures. More-invasive procedures for confirmation of diagnosis (e.g., mediastinal puncture) are very helpful (3). In the review by Brook, the high rate of recovery of anaerobic bacteria (23%) in cases of postsurgical wound sternal infections was probably due to the systematic use of deep wound puncture (4). Mediastinal puncture contributes to earlier diagnosis and consequently reduces the length of mechanical ventilation and hospital stay, but its use is unfortunately not generalized (3).

In conclusion, anaerobic agents can be responsible for postoperative mediastinitis even if staphylococci remain the main causative organisms. This should particularly be kept in mind when facing a patient with fever and sternal drainage with negative blood cultures in the days following cardiothoracic surgery and should encourage the use of deep sternal puncture and anaerobic culture media for all microbiological samples. Appropriate sampling and culturing can probably lead to increased isolation of anaerobic pathogens in this postoperative complication.
REFERENCES