Constrictive Infectious Pericarditis Caused by Propionibacterium acnes

Pericarditis constrictiva por Propionibacterium acnes

To the Editor,

Propionibacterium acnes is a slow-growing Gram-positive anaerobic bacillus, which is part of the bacterial flora of the skin and is also present in mucous membranes. Isolated cases of pericarditis caused by *P. acnes* have been reported, but even though this microorganism is a frequent cause of the disease, its characteristics have not been described. We report the characteristics of 5 patients with constrictive infectious pericarditis caused by *P. acnes*—initially manifesting as constriction in 3 and as effusive-constrictive syndrome in 2—characterized by a torpid clinical course, minimal signs of infection, much inflammatory activity and the need for surgery and prolonged treatment with antibiotics, antiinflammatory drugs, and corticosteroids.

The 5 patients were attended between 2006 and 2011. All underwent transthoracic echocardiography and 3 underwent magnetic resonance imaging studies. For diagnostic purposes, the microbiology results were combined with the echocardiogram results in 4 patients and with the magnetic resonance imaging results in 1. Pathologic analysis was performed in 4 patients.

The mean age was 44.4 years; 4 were men. Possible predisposing factors are shown in the Table. The predominant symptoms were asthenia, chest pain and symptoms of heart failure with elevated venous pressure, dyspnea and edema of the lower limbs; 3 patients had pulsus paradoxus. One patient had fever and another had chylous ascites with tension. The mean diagnostic delay was 30 weeks. One patient had hypogammaglobulinemia, adenopathy and pulmonary infiltration caused by lymphangiectasia, which disappeared once pericardial constriction had been resolved. All electrocardiograms showed low voltage in precardial leads, with ST-segment depression and T wave inversion in 3 of them.

All chest X-rays showed cardiomegaly. Echocardiographic and magnetic resonance imaging studies are described in the Table. One patient had a calcified mass, with pericardial effusion and lateral myocardial hypokinesia. The Figure shows the surgical specimen, illustrating growth of *P. acnes*, together with an magnetic resonance imaging scan.

Medical treatment, microbiology and histology results are outlined in the Table. *P. acnes* grew in the samples between days 10 and 12. The results of blood cultures (3 patients) were negative. *P. acnes* was penicillin-sensitive in all patients. The 5 patients
received intravenous beta-lactam antibiotics, followed by oral antibiotics for a mean of 5.6 months. Four received corticosteroids and 3 received nonsteroidal antiinflammatory drugs (NSAIDs) plus colchicine. Surgical treatment and outcome are described in the Table.

Pericarditis caused by *P. acnes* is mainly found in men and is associated with cardiac surgery and immunosuppression. Iseki et al. describe a patient with comorbidity and a calcified mass containing caseous material, as found in 1 of our patients (Figure). Fever has only been described in 1 other case. Chest pain has also been described, as have signs of right heart failure and cardiac taponade.

Late growth has been described in other infections caused by *P. acnes* and, in the context of compatible symptoms, it should not

### Table

**Characteristics of the 5 Patients With Constrictive Infectious Pericarditis Caused by *Propionibacterium acnes***

<table>
<thead>
<tr>
<th>Man, 55 years</th>
<th>Man, 26 years</th>
<th>Man, 31 years</th>
<th>Man, 72 years</th>
<th>Woman, 38 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predisposing factor</strong></td>
<td>Respiratory infection</td>
<td>Tonsillitis</td>
<td>Dental infection</td>
<td>Not reported</td>
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<tr>
<td><strong>Symptoms and diagnostic delay</strong></td>
<td>Pleuritic pain, dyspnea, heart failure, 2 months</td>
<td>Chest pain, dyspnea, palpitations, syncope, 2 weeks</td>
<td>Dyspnea, chest pain, right heart failure, fever, 9 months</td>
<td>Asthenia, progressive dyspnea, right heart failure, 20 months</td>
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<tr>
<td><strong>Echocardiogram</strong></td>
<td>Constrictive infectious pericarditis, mild pericardial effusion, bilateral pleural effusion</td>
<td>Constrictive infectious pericarditis with cardiac taponade, moderate-to-severe effusion of up to 21 mm</td>
<td>Increased intrapericardial space, solid/liquid material causing constriction</td>
<td>Pericardial thickening with mild effusion, effusive-constrictive syndrome</td>
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<tr>
<td><strong>Magnetic Resonance Imaging</strong></td>
<td>Substantial pericardial effusion, hypointense nodular areas</td>
<td>Pericardial thickening, dilated inferior vena cava</td>
<td>Pericardial thickening with associated effusion</td>
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<tr>
<td><strong>Pathology</strong></td>
<td>Pericardial thickening, whitish colored nodule</td>
<td>Pericardial thickening</td>
<td>First surgical intervention: pericardial thickening; second intervention: adhesions, calcified nodules with caseous appearance</td>
<td>Pericardial thickening</td>
</tr>
<tr>
<td><strong>Microscopic</strong></td>
<td>Chronic inflammation, reactive fibrosis</td>
<td>Acute inflammation, fibrillin deposit, mesothelial hyperplasia</td>
<td>Marked fibrosis and foci of lymphocytosis</td>
<td>Intense pericardial fibrosis</td>
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<td><strong>Biologic samples</strong></td>
<td><em>P. acnes</em> + <em>Staphylococcus epidermidis</em> in pericardial tissue</td>
<td><em>P. acnes</em> in pericardial fluid and pericardial tissue</td>
<td><em>S. epidermidis</em> in fluid in first surgical intervention; <em>P. acnes</em> in pericardial tissue in second intervention</td>
<td><em>P. acnes</em> in pericardial fluid and ascitic fluid</td>
</tr>
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<td><strong>Surgical treatment</strong></td>
<td>Subtotal pericardietomy with pericardial patching in right cavities</td>
<td>Pleuropericardietomy with pericardial window-type surgical drainage</td>
<td>First subtotal pericardietomy, second patched epicardietomy and residual pericardietomy</td>
<td>Total pericardietomy with decortication</td>
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<td><strong>Medical treatment and outcome</strong></td>
<td>- 1 month ceftriaxone + amoxicillin-clavulanic acid 1 month + amoxicillin and corticosteroids 6 months more</td>
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<tr>
<td></td>
<td>- Amoxicillin-clavulanic acid + amoxicillin 6 months + doxycycline 2 months, corticosteroids 3 months</td>
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<td>- 1 relapse requiring ASA + colchicine, resolved in 21 months</td>
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<td>- Post-second surgery, penicillin G sodium, amoxicillin 10 months + moxifloxacin 8 months, corticosteroids + colchicine + NSAID 10 months</td>
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<td>- Resolved at 3 years</td>
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<td>- Ceftriaxone 2 weeks + minocycline 2 months</td>
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<td>- Without relapse</td>
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<td></td>
<td>- Ceftriaxone 2 weeks + daptomycin 2 weeks, doxycycline 6 months</td>
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<td>- 2 relapses, current treatment with corticosteroids + colchicine + NSAID 12 months</td>
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</table>

ASA, acetylsalicylic acid; NSAID, nonsteroid antiinflammatory drugs; *P. acnes*, *Propionibacterium acnes*; *S. epidermidis*, *Staphylococcus epidermidis*.

**Figure.** Cardiac magnetic resonance image of a patient with constrictive infectious pericarditis. A: cine echo image of short-axis plane gradient; pericardial effusion (*), pericardial thickening (**), and 1.5 cm diameter hypointense nodule image (arrow), corresponding to mass full of material, in which *Propionibacterium acnes* was cultivated (B). LP, left posterior; MRN, magnetic resonance nuclear; RA, right anterior.
be considered contamination. The electrocardiographic and X-ray studies showed abnormalities similar to those described elsewhere. Echocardiograms have only previously been described in 2 patients with infectious pericarditis caused by P. acnes; both had pericardial effusion. Mookadam et al. reported that 34 of 49 cases of pericarditis caused by P. acnes needed surgery. However, these authors did not specify the type of surgery performed. The only report specifying the type of surgery describes a partial pericardiectomy. Three of our patients needed a wide pericardial resection and patch epicardectomy. Inflammatory infiltration and fibrosis confirmed that despite minimal virulence, P. acnes has an immunostimulatory effect on the mononuclear phagocyte system, which produces inflammatory mediators such as metalloproteases and tumor necrosis factor alpha. This microorganism has been associated with inflammatory diseases such as sarcoidosis, which would explain the need for a combined NSAID, colchicine and corticosteroid regimen. Doxycycline was selected as the maintenance antimicrobial treatment of choice, due to its ability to inhibit the metalloproteases of P. acnes.

The antibiotic treatment was prolonged since P. acnes resists phagocytosis as an intracellular microorganism. Length of treatment has not been defined but we consider that a minimum of 4 weeks are needed, which should be extended to several months in patients who relapse.

The pericardial response to infection caused by P. acnes is similar to that of tuberculous pericarditis, with a tendency to constriction. We would include P. acnes in the differential diagnosis of constrictive infectious pericarditis or idiopathic, viral and postsurgical effusive-constrictive syndrome, which has become increasingly frequent in recent years. The incubation time of surgical samples should be lengthened or polymerase chain reaction techniques be used to rule out infection caused by P. acnes.

CoreValve® Aortic Bioprosthesis Implantation in a Patient With Situs Inversus Totalis With Dextrocardia

Implante de bioprótesis aórtica CoreValve® en un paciente con situs inversus totalis con dextrocardia

To the Editor,

Dextrocardia occurs in 1/12 000 pregnancies, of which approximately a third are associated with inversion (mirror imaging) of the other visceral organs (situs inversus totalis). In these cases, inversion of the normal anatomy can hamper the performance of fluoroscopy-guided interventional procedures.

We describe a 78-year-old man with situs inversus totalis and symptomatic severe aortic stenosis who was referred to our hospital for transcatheter implantation of an aortic valve. The patient had previously been considered ineligible for conventional aortic valve replacement due to high surgical risk (EuroSCORE logistic, 21%: porcine aorta). The procedure was performed using a right femoral approach but was complex due to inversion of the cardiac anatomy. Classic ventriculography with 5 segments was performed using a 30° left oblique projection (the usual view is a 30° right oblique projection); a 10° caudal and a 10° right oblique projection were used to align the 3 Valsalva sinuses. Following aortic valvuoplasty with ventricular override pacing, a 29-mm CoreValve® self-expanding aortic valve prosthesis (Medtronic, Irvine, California, United States) was successfully implanted.

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Dextrocardia is a rare anomaly of the heart position. Most cases with situs solitus are associated with other cardiac or noncardiac malformations. However, patients with situs inversus totalis (as in our patient) rarely have other associated malformations and, therefore, it is not unusual them to reach older ages in which degenerative aortic stenosis is common.

Inversion of cardiovascular structures is an added procedural difficulty for percutaneous aortic valve implantation. The most important difficulties are related to stable positioning of the temporary pacemaker when crossing the aortic valve with the straight guidewire or attempting to align the 3 Valsalva sinuses to assess correct positioning of the prosthesis. In fact, our patient experienced late perforation by the pacemaker leads, possibly related to malpositioning. In cases such ours, in which the abnormal cardiac anatomy can affect the operator’s spatial orientation, we recommend careful catheter handling and conscientious selection of the angiographic projections (usually opposite to those seen in a patient with levocardia). To our knowledge, this is the first case of the implantation of a CoreValve aortic valve prosthesis in a patient with situs inversus totalis.