

which have a recognized anti-inflammatory and antithrombotic action).

Furthermore, South Asians in our series presented a significantly lower prevalence of hypertension, smoking, and cocaine abuse than the white Spanish population, with similar values of low-density lipoprotein cholesterol, but a lower prevalence of previous treatments with statins. Studies performed in Britain have reported contradictory results regarding the presence of these risk factors in South Asian patients, and this has been related to the heterogeneity of the subgroups analyzed,⁴ which makes extrapolation to our setting difficult. For its part, the risk profile observed among the young Spaniards in our series is in keeping with previous findings,⁵ in which early infarction has been associated with high rates of smoking and hypercholesterolemia, and glucose metabolism disorders have a smaller role. Our study highlights the specific features of cardiovascular risk in South Asians in our setting and the differences with respect to the young Spanish population.

There were no significant differences between the 2 groups in the clinical presentation of AMI (with or without ST elevation). Nonetheless, among patients with ST elevation AMI, there was a significantly higher percentage of anterior AMI in South Asian patients. In addition, coronary angiography showed more severe disease in these patients, and a larger number were considered to have nonrevascularizable lesions. AMI without coronary lesions was more common in the white Spanish population. These observations indicate that coronary disease in South Asians is related more to accelerated atherosclerosis than to predominantly thrombotic or vasospastic processes.

Despite the differences described, the 2 groups presented a similar in-hospital clinical course with low complication rates and mortality, which was likely due to the young age of the patients, low prevalence of comorbidities, absence of significant differences in the treatment received, and the improved in-hospital prognosis of AMI observed in our setting.⁶

This series is the first in Spain to address ischemic heart disease in South Asian immigrant patients. Knowledge of the differential characteristics of this ethnic group can facilitate the development

of primary and secondary prevention strategies adapted to their risk profile.

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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^{1,2} but, even though this microorganism is a frequent cause of the disease,³ 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 precordial 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

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

	Man, 55 years	Man, 26 years	Man, 31 years	Man, 72 years	Woman, 38 years
<i>Predisposing factor</i>	Respiratory infection	Tonsillopharyngitis, dental caries	Dental infection	Not reported	2 week-long respiratory infection
<i>Symptoms and diagnostic delay</i>	Pleuritic pain, dyspnea, heart failure, 2 months	Chest pain, dyspnea, palpitations, syncope, 2 weeks	Dyspnea, chest pain, right heart failure, fever, 9 months	Asthenia, progressive dyspnea, right heart failure, 20 months	Chest pain, asthenia, dry cough, dyspnea, right heart failure, 1 month
<i>Echocardiogram</i>	Constrictive infectious pericarditis, mild pericardial effusion, bilateral pleural effusion	Constrictive infectious pericarditis with cardiac taponade, moderate-to-severe effusion of up to 21 mm	Increased intrapericardic space, solid/fluid material causing constriction	Performed at the onset of symptoms, without changes (1 year prior to surgery)	Pericardial thickening with mild effusion, effusive-constrictive syndrome
<i>Magnetic Resonance Imaging</i>			Substantial pericardial effusion, hypointense nodular areas	Pericardial thickening, dilated inferior vena cava	Pericardial thickening with associated effusion
<i>Pathology</i>					
Macroscopic	Pericardial thickening, whitish colored nodule	Pericardial thickening	First surgical intervention: pericardial thickening; second intervention: adhesions, calcified nodules with caseous appearance	Pericardial thickening	Pericardial fluid with hematic material
Microscopic	Chronic inflammation, reactive fibrosis	Acute inflammation, fibrillin deposit, mesothelial hyperplasia	Marked fibrosis and foci of lymphocytosis	Intense pericardial fibrosis	Not performed
<i>Biologic samples</i>	<i>P. acnes</i> + <i>Staphylococcus epidermidis</i> in pericardial tissue	<i>P. acnes</i> in pericardial fluid and pericardial tissue	<i>S. epidermidis</i> in fluid in first surgical intervention; <i>P. acnes</i> in pericardial tissue in second intervention	<i>P. acnes</i> in pericardial and ascitic fluid	<i>P. acnes</i> in pericardial fluid
<i>Surgical treatment</i>	Subtotal pericardiectomy with pericardial patching in right cavities	Pleuropericardial pericardial window-type surgical drainage	First subtotal pericardiectomy, second patched epicardiectomy and residual pericardiectomy	Total pericardiectomy with decortication	Subxiphoid pericardial drainage without surgery
<i>Medical treatment and outcome</i>	<ul style="list-style-type: none"> • 1 month ceftriaxone + amoxicillin-clavulanic acid 1 month + amoxicillin and corticosteroids 6 months more • 1 relapse, resolved in 1 year 	<ul style="list-style-type: none"> • Amoxicillin-clavulanic acid + amoxicillin 6 months + doxycycline 2 months, corticosteroids 3 months • 1 relapse requiring ASA + colchicine, resolved in 21 months 	<ul style="list-style-type: none"> • Post-second surgery, penicillin G sodium, amoxicillin 10 months + moxifloxacin 8 months, corticosteroids + colchicine + NSAID 10 months • Resolved at 3 years 	<ul style="list-style-type: none"> • Ceftriaxone 2 weeks + minocycline 2 months • Without relapse 	<ul style="list-style-type: none"> • Ceftriaxone + daptomycin 2 weeks, doxycycline 6 months • 2 relapses, current treatment with corticosteroids + colchicine + NSAID 12 months

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

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.^{2,3} Iseki et

al.¹ 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.¹ Chest pain has also been described, as have signs of right heart failure and cardiac taponade.^{1,3}

Late growth has been described in other infections caused by *P. acnes*⁴ and, in the context of compatible symptoms, it should not

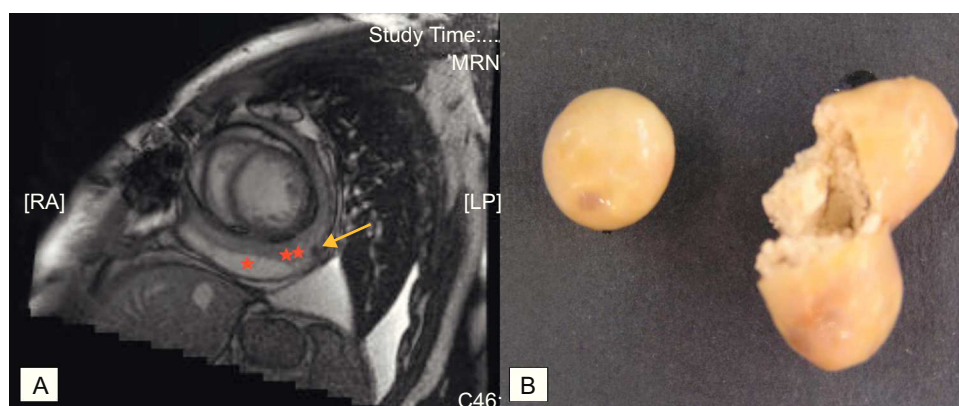


Figure. Cardiac magnetic resonance image of a patient with constrictive infectious pericarditis. A: cine echo image of short-axis plane gradient; pericardial effusion (*), pericardial thickening (**) and 1.5 cm diameter hypointense nodule image (arrow), corresponding to mass full of material, in which *Propionibacterium acnes* was cultivated (B). LP, left posterior; MRN, magnetic resonance nuclear; RA, right anterior.

be considered contamination.⁵ The electrocardiographic and X-ray studies showed abnormalities similar to those described elsewhere.^{1,2} Echocardiograms have only previously been described in 2 patients with infectious pericarditis caused by *P. acnes*; both had pericardial effusion.^{1,2} Mookadam et al.³ 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.¹ Three of our patients needed a wide pericardial resection and patch epicardiectomy. 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.⁶ 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*.⁶

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 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*.⁴

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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*).¹ 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%; porcelain 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 valvuloplasty with ventricular overdrive pacing, a 29-mm CoreValve® self-expanding aortic valve prosthesis (Medtronic, Irvine, California, United States) was successfully implanted. The

patient was stable and asymptomatic when returned to the coronary unit. However, 24 h later he experienced cardiac tamponade secondary to right ventricular free wall perforation by the temporary pacemaker lead and required surgery. Three days later the patient experienced high-grade atrioventricular block and consequently a permanent dual-chamber pacemaker was implanted. The patient was discharged 10 days later, with no further incidents (Figure).

Dextrocardia is a rare abnormality of the heart position.² 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^{1–3} 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.⁴ 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 as 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 levocardia⁵). To our knowledge, this is the first case of the implantation of a CoreValve aortic valve prosthesis in a patient with *situs inversus totalis*.