

A deadly aversion to pork

Pierre-Edouard Fournier, Franck Thuny, Dominique Grisoli, Hubert Lepidi, Joanna Vitte, Jean-Paul Casalta, Pierre-Jean Weiller, Gilbert Habib, Didier Raoult

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Unité de Recherche sur les Maladies Infectieuses et Tropicales Emergentes, Faculté de Médecine, Université de la Méditerranée, Marseille, France

(Prof P-E Fournier MD, H Lepidi MD, Prof D Raoult MD); Pôle de Maladies Infectieuses (Prof P-E Fournier MD, J-P Casalta MD,

Prof D Raoult MD), Service de Cardiologie (F Thuny MD, Prof G Habib MD), Laboratoire d'Anatomo-Pathologie (H Lepidi MD), Service de Chirurgie Cardiaque

(D Grisoli MD), and Service de Médecine Interne (Prof P-J Weiller MD), Hôpital de la Timone, Marseille, France;

and Laboratoire d'Immunologie, Hôpital de la Conception, Marseille, France (J Vitte MD)

Correspondence to: Prof Didier Raoult, Unité de Recherche sur les Maladies Infectieuses et Tropicales Emergentes, CNRS IRD UMR 6236, Faculté de Médecine, Université de la Méditerranée, Marseille, 13385 France didier.raoult@gmail.com

See Online for webappendix

On August 3, 2006, a 53-year-old man with penicillin allergy presented with afebrile blood-culture-negative endocarditis (BCNE). He lived in an urban area near Marseille and had never travelled abroad. He did not report any specific food allergies. 4 months earlier, he had had a mitral valve replacement with a bioprosthetic valve (porcine Hancock II, Medtronic, Minneapolis, USA). Transoesophageal echocardiography identified vegetation on the bioprosthesis. Although blood cultures and serological test results were negative, empirical anti-staphylococcal therapy was started. The vegetation increased in size and caused valvular obstruction, necessitating a replacement with the same type of Hancock II valve. Our patient experienced two further relapses of afebrile BCNE necessitating mitral valve replacements, with Hancock II bioprostheses, in October and December, 2006. In June, 2007, he had a third relapse and died. Each removed valve showed inflammatory infiltrates and a vegetation, which led to diagnoses of endocarditis. At each episode, we tested blood samples and the removed valves using a comprehensive diagnostic procedure previously reported to identify the aetiology of BCNE.¹ In each episode, all test results were negative.

After excluding infection, we focused on non-infectious causes. When re-examining our patient's data, we found eosinophil infiltrates on the replaced porcine bioprosthetic valves (figure). We suspected allergy to pork as the cause of his endocarditis. The numbers of eosinophils in his blood and increased after each valve replacement (web-appendix). We used the FEIA ImmunoCAP kit (Phadia, Sweden) to measure the serum concentrations of total IgE and specific IgE to pork and beef on four samples preserved at -20°C. Serum samples from ten patients with

porcine Hancock II valves were used as negative controls. No specific IgE to beef was found in any tested sample. Our patient had low concentrations of total IgE and specific IgE to pork before the first valve replacement (figure), but concentrations of both increased and persisted after the first valve replacement. Total IgE and specific IgE to pork were negative for all control patients.

Our patient had a rare case of relapsing and afebrile BCNE on porcine bioprostheses. In our series of 1107 patients with BCNE from 1983 to 2009,¹ five patients, including our patient, had relapsing BCNE that required more than one valve replacement. Our patient had an allergic reaction to porcine valves that presented as eosinophilic inflammatory infiltrates and aseptic vegetation, which led to the diagnosis of endocarditis.¹ We conclude that he presented a clinical picture of afebrile BCNE with eosinophilia. Few cases of endocarditis with eosinophilia have been described. One was due to allergy to teicoplanin,² and one fatal case was due to Loeffler endomyocarditis.³ Our patient received four porcine bioprostheses and various antibiotic regimens, which were prescribed after the diagnoses of BCNE and were unlikely to be the cause of the disease. Moreover, there was a temporal link between valvular replacements, eosinophilia, and increases in specific IgE concentrations. Porcine graft allergic inflammation has been reported in a patient with lymphocytic meningitis after a porcine dermis dural graft, which then had to be removed surgically.⁴ To prevent allergic reactions or graft rejection, valvular bioprostheses are treated with glutaraldehyde. However, this approach may not totally eliminate the antigenicity of the graft,⁵ and an immune reaction can ensue. Allergy to pork should be considered as a rare cause of BCNE in patients with porcine bioprostheses.

Contributors:

GH, J-PC, FT, DG, and P-JW looked after the patient. P-EF and DR wrote the report. DR, J-PC, JV, and HL did the diagnostic tests and analysis. All authors approved the final version of the report.

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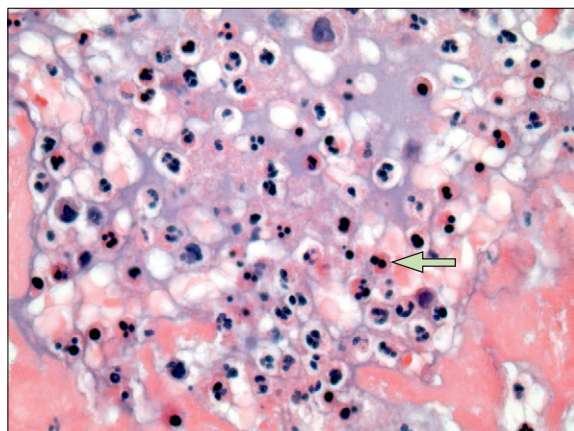


Figure: Infective endocarditis and allergy to pork
Haematoxylin-eosin-saffron staining of the mitral bioprosthesis removed on August 8, 2006, showing an extensive destruction of the valvular tissue with a large vegetation, and a dense polymorphic inflammatory infiltration in the vegetation, with numerous eosinophils (arrow).