

Case Report

Correspondence

Fabien Picard

fabien.picard@live.fr

Received 24 February 2014

Accepted 5 June 2014

From kreatophagia to infectious aortitis

Fabien A. Picard, Philippe Garçon, Philippe Abassade and Romain Cador

¹Paris Saint-Joseph Hospital, Cardiology Department, 185 rue Raymond Losserand, 75014 Paris, France

Introduction *Campylobacter fetus* subsp. *fetus* has been reported to have vascular tropism.

Case presentation: *C. fetus* subsp. *fetus* aortitis was found in an 82-year-old woman who had already undergone aortic valve replacement. The diagnosis was confirmed by positive blood cultures, transoesophageal echocardiography and a positron emission tomography scan.

Conclusion: We report the first case, to the best of our knowledge, of aortitis on a native ascending aorta caused by *C. fetus* subsp. *fetus* and confirm the vascular tropism of these bacteria. The origin of the infection was supposedly raw meat ingestion (kreatophagia).

Keywords: aortitis; *Campylobacter fetus*; mycotic aneurysm.

Introduction

Campylobacter are helical, microaerophilic, Gram-negative bacteria. Within this family, *Campylobacter fetus* is distinguished from other more common species (*Campylobacter jejuni* and *Campylobacter coli*) because it rarely induces digestive symptoms but causes bloodstream infections. These infections are associated with meningitis and cardiovascular damage due to the particular tropism of this organism for the vascular endothelium. We report the first case, to the best of our knowledge, of aortitis on a native ascending aorta caused by *C. fetus* subsp. *fetus*.

Case report

In December 2013, an 82-year-old woman was admitted to the cardiology service with a 4-week history of unexplained fever up to 38.5 °C, cough and asthenia. Eleven months before this admission, she had undergone aortic valve replacement with a supra-annular stentless aortic bioprosthesis without post-operative complication. She had no history of overseas travel or animal contact. She received 1 week of treatment with amoxicillin-clavulanate for this fever 3 weeks before admission.

On physical examination, she was afebrile; her heart rate and blood pressure were normal. A chest radiogram, electrocardiogram, blood tests and urinalysis showed no abnormalities except C-reactive protein at 12.8 mg l⁻¹ and anaemia (haemoglobin 10.9 g dl⁻¹). Her white blood cell count was 5.06 × 10³ µl⁻¹ and serum procalcitonin was 0.07 µg l⁻¹. Initial blood cultures were negative, and a transthoracic echocardiogram showed no vegetation.

Abbreviations: CT, computed tomography; PET, positron emission tomography.

Investigations, diagnosis and treatment

A computed tomography (CT) scan (Fig. 1a) and a transoesophageal echocardiogram showed no sign of active endocarditis on the bioprosthesis but revealed aortitis of the ascending aorta starting distal to the bioprosthesis. Initial blood cultures remained negative. A positron emission tomography (PET) scan showed increased periaortic activity (Fig. 1b). Blood cultures were performed in the cardiology department. Approximately 10 ml³ blood was inoculated in each Standard Aerobic and Standard Anaerobic BacT/ALERT (bioMérieux) blood culture bottle. Bottles were loaded on to a BacT/ALERT instrument (bioMérieux) and incubated. Several days later, the BacT/ALERT detected two positive aerobic blood culture bottles and informed the microbiology staff. An initial Gram stain was performed and demonstrated a small Gram-negative rod. The organisms were grown on Columbia blood agar and incubated under microaerobic conditions, necessary for the growth of *Campylobacter*. All positive bottles were subjected to subculture and routine identification, as well as direct identification with an Andromas matrix-assisted laser desorption/ionization time-of-flight mass spectrometry system. Susceptibility to antibiotics was tested using a disk-diffusion method on Mueller–Hinton blood agar. *C. fetus* subsp. *fetus* was identified (Fig. 2) and the patient was treated with imipenem and gentamycin. The origin of the infection was not found (colonoscopy and dental examination were normal), but the patient often consumed raw meat (beef and horse), which has been associated with *C. fetus* infections (Francioli *et al.*, 1985). The antibiotic regimen was switched to intravenous amoxicillin-clavulanate and ciprofloxacin on the basis of drug-sensitivity tests.

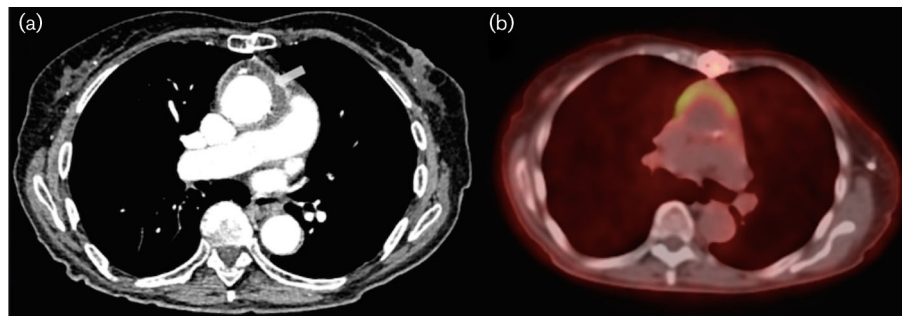


Fig. 1. (a) CT scan of the aorta showing aortitis of the ascending aorta starting distal to the bioprosthesis. (b) PET scan showing increased periaortic activity.

Outcome and follow-up

The patient was discharged, and the control CT scan, carried out 3 months later, showed a stability of the aortitis. The patient was symptom free at the 3-month follow-up. Although a second aortic replacement was offered, the patient refused the surgery and a life-long antibiotic treatment was decided on.

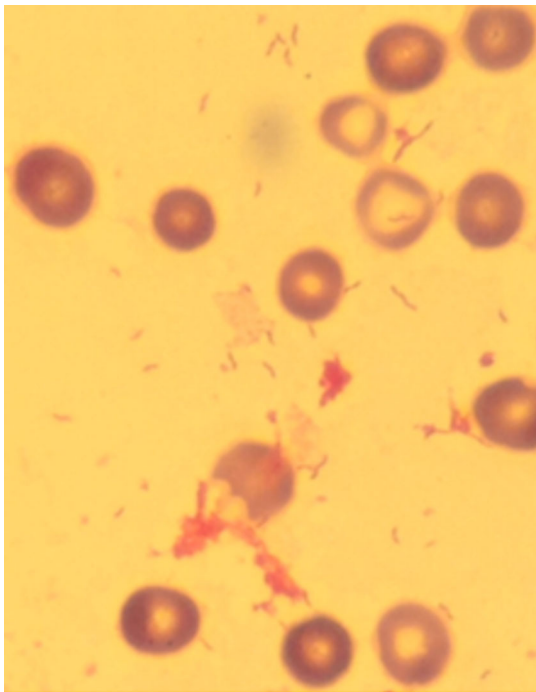


Fig. 2. *C. fetus* subspecies *fetus* grown as an aerobic blood culture.

Discussion

Infection of the ascending aorta is not common. We report the first case, to the best of our knowledge, of aortitis of the ascending aorta due to *C. fetus* subsp. *fetus* on a native aorta, after a bioprosthetic aortic valve replacement. Although *C. fetus* was isolated from only two of the four sets of blood cultures – possibly as a consequence of the administration of an oral antimicrobial medication before admission – we speculate that it was the causative agent. *C. fetus* is a helical, microaerophilic, Gram-negative rod, and is reported to cause miscarriage in livestock, especially in cattle and sheep (Hsu *et al.*, 2004; Macedo *et al.*, 2004). Its biotope is the digestive tract, and the mode of infection is not well established: direct contamination by a sick animal, or ingestion of meat (especially raw meat) or contaminated water (Francioli *et al.*, 1985).

In humans, *C. fetus* is characterized by its affinity for vascular endothelium and is associated with bacteraemia, septic thrombophlebitis, aneurysmal infections (abdominal aorta, popliteal artery), endocarditis and meningitis (Herve *et al.*, 2004; Gazonne *et al.*, 2008). Gastrointestinal symptoms are rare.

In *C. fetus* bacteraemia, it is necessary to identify the source of infection, although it is rarely found. In our case, the cause might have been the consumption of raw meat. This mode of transmission is rare but has already been described (Francioli *et al.*, 1985). We must emphasize the role of the PET scan, which helped us prove the infectious nature of the aortitis. At first glance, the periaortic density seen on the CT scan might have been taken for a post-operative reaction, but the increased metabolic and positive blood cultures helped confirm the proper diagnosis.

C. fetus infections are uncommon, but their number is increasing. Delayed diagnosis, related to difficulty in identifying the organism, and the immunocompromised state of many patients in whom these infections occur (Gazonne *et al.*, 2008) exacerbate the seriousness of the disease. The vascular tropism of *C. fetus* underscores the need to investigate possible endocardiac or vascular sites

when bacteraemia is found, especially when foreign endovascular material is in place.

Acknowledgements

Signed patient consent was collected. The authors report no conflict of interests.

References

- Francioli, P., Herzstein, J., Grob, J. P., Vallotton, J. J., Mombelli, G. & Glauser, M. P. (1985). *Campylobacter fetus* subspecies *fetus* bacteraemia. *Arch Intern Med* **145**, 289–292.
- Gazaigne, L., Legrand, P., Renaud, B., Bourra, B., Taillandier, E., Brun-Buisson, C. & Lesprit, B. (2008). *Campylobacter fetus* bloodstream infection: risk factors and clinical features. *Eur J Clin Microbiol Infect Dis* **27**, 185–189.
- Herve, J., Aissa, N., Legrand, P., Sorkine, M., Calmette, M. J., Santin, A., Roupie, E. & Renaud, B. (2004). *Campylobacter fetus* meningitis in a diabetic adult cured by imipenem. *Eur J Clin Microbiol Infect Dis* **23**, 722–724.
- Hsu, R. B., Chen, R. J., Wang, S. S. & Chu, S. H. (2004). Infected aortic aneurysms: clinical outcome and risk factor analysis. *J Vasc Surg* **40**, 30–35.
- Macedo, T. A., Stanson, A. W., Oderich, G. S., Johnson, C. M., Panneton, J. M. & Tie, M. L. (2004). Infected aortic aneurysms: imaging findings. *Radiology* **231**, 250–257.