

Case reports

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Abdominal Aortic Aneurysm Due to *Brucella Melitensis*

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Case report

A 72 year-old man of Italian origin was admitted in September 2001 for diffuse abdominal pain of four weeks duration, bilateral lumbar pain, nausea, vomiting, and weight loss. The patient described a history of fever and sweating three months ago. At the time of admission, the patient had been afebrile for two weeks. Laboratory data showed a WBC count of 9280/mm³, a CRP of 66 mg/l and a fibrinogen of 5.69 g/l. Abdominal ultrasonography showed an ectasy of the abdominal infrarenal aorta. Abdominal CT-scan and nuclear magnetic resonance (NMR) demonstrated an aneurysm of the infrarenal abdominal aorta with a widest diameter measured at 45 mm (Fig. 1). There were multiple saccular protrusions originating from the lateral, anterior and posterior aspects of the aorta. Arterial thromboembolic potential was feared. Complete resection was performed through a midline laparotomy. Multiple saccular ectasies were found on the abdominal aorta. There were signs of aortic wall leak into the retroperitoneum just above the aortic bifurcation. A bifurcated Dacron prosthetic graft was interposed between the aorta and the common iliac arteries. Histologic examination was required (Fig. 2). Destructive inflammation and hemorrhage of the aortic wall and the periaortic fat was observed. There was complete disruption of the medial elastic layer and irregular fibrosis of the vascular wall. The inflammatory infiltrate consisted of collections of histiocytes admixed with lymphoid cells and abundant polymorphonuclears, with abscess formation. On the outer aspect of the aorta, the vasa vasorum were involved by vasculitis and frequently exhibited luminal occlusion by inflammatory recent or organized thrombi. Tissue cultures from the aneurysm revealed *Brucella melitensis*. *Brucella melitensis biovar 3* was identified on blood cultures. Wright's serodiagnosis was positive. *Brucella* infection was linked to the fact

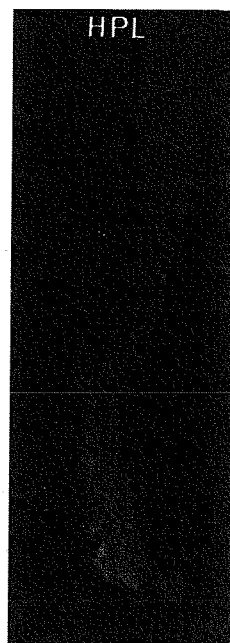


Fig. 1

Angio-MRI of the infrarenal aorta (A. frontal view, B. transverse section). Presence of outpouching lesions. 15 mm in depth in the anterolateral left and right sides, second similar lesion below the neck on the right anterolateral side of the infrarenal aorta. A third lesion is located at the origin of right common iliac artery.

that the patient had visited Italy four months ago and had eaten unpasteurised goat's milk cheese. A 14 days intravenous antibiotherapy with gentamicin and doxycycline was given. The patient was discharged 14 days after surgery. An oral antibiotherapy with rifampicin and doxycycline was administered during six months. Two and a half years after surgery, the patient is well and asymptomatic ; the abdominal CT scan shows no evidence of mycotic transformation.

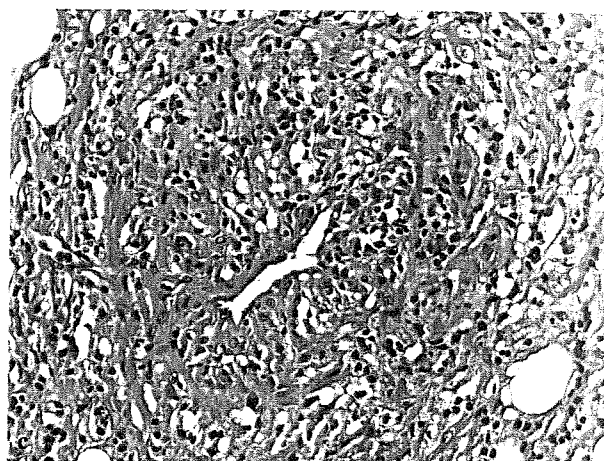
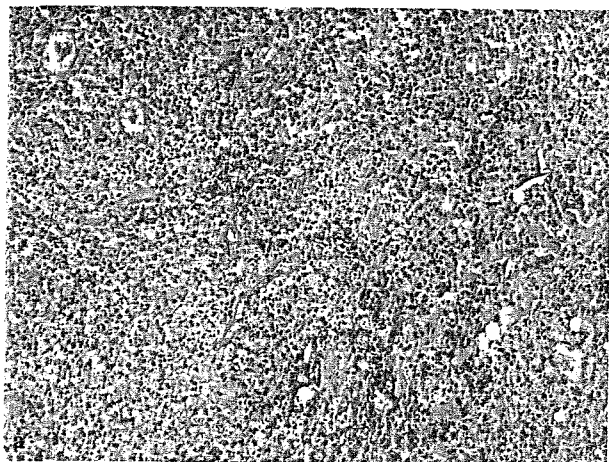


Fig. 2a, b, c

Microscopic appearance of the aortic wall

a : Low-power view (luminal aspect on top) showing extensive inflammation and hemorrhage within the aortic wall and surrounding fat ; note (arrow) an inflammatory thrombus within a periaortic vessel (hematoxylin and eosin, original magnification $\times 25$) ; b : Inflammatory infiltrate with necrosis and microabscess formation (hematoxylin and eosin, original magnification $\times 100$) ; c : Vasculitis involving a vasa vasorum (hematoxylin and eosin, original magnification $\times 200$).

Discussion

Brucellosis has been an emerging disease since the discovery of *Brucella melitensis* by Bruce in 1887. This disease is a zoonotic infection existing worldwide, but especially in Mediterranean countries.

The cardiovascular complications include essentially endocarditis that occurs in less than 2% of cases but accounts for the majority of *Brucella*-related deaths (4). The majority of reported cases are due to a direct invasion of the aortic wall from an infective focus adjacent to the aorta, like a spondylodiscitis. In this case, no contiguous source of infection has been found and the mechanism of aortic involvement seems to be a consequence of direct bacterial seeding on an atheromatous arterial wall.

The treatment of *Brucella* aortitis has not been well established because of the low number of reported cases (9). If mycotic character of the aneurysm had been suspected, we should have selected to resect the infected aortic tissue and reestablish the continuity by in situ grafting with cryopreserved allograft (5). Once the diagnosis of *Brucella* aortitis was evident, a specific antibiotic treatment was instituted. The benefits of triple or double therapy over single therapy are well admitted (3, 4, 6, 8). Different combinations of doxycycline, rifampicin, gentamicin, streptomycin and co-trimoxazole can be used. Only the aminoglycosides are bactericidal

on *Brucella* species in experimental conditions and thus, they should be administered in the early postoperative period (6). Doxycycline and rifampicin have a good intracellular activity (3). The recommended duration of treatment ranges from six weeks to more than one year (4, 6, 7, 8). Based on our limited experience, we gave a two weeks intravenous antibiotherapy with a combination of gentamicin and rifampicin, followed by a six months oral antibiotherapy with rifampicin and doxycycline. More than two years after a graft replacement, there is no biological or CT scan evidence of recurrent infection. This apparent success of textile grafting in an infected area can be attributed to the completeness of aortic tissue resection and long-term antibiotherapy, but careful surveillance is continued.

References

1. YEE N., ROACH D. J. Infected abdominal aortic aneurysm caused by spinal brucellar infection. *Am J Roentgenol*, 1996, 167 : 1068-1069.
2. AGUADO J. M., BARROS C., GOMEZ GARCES J. L., FERNANDEZ-GUERRERO M. L. Infective aortitis due to *Brucella melitensis*. *Scand J Infect Dis*, 1987, 19 : 483-484.

3. YOUNG E. J. An overview of human brucellosis. *Clin Infect Dis*, 1995, **21** : 283-289.
4. AL-HARTHI S. S. The morbidity and mortality pattern of *Brucella* endocarditis. *Int J Cardiol*, 1989, **25** : 321-324.
5. LAVIGNE J. P., POSTAL A., KOLH P., LIMET R. Prosthetic vascular infection complicated or not by aortoenteric fistula : Comparison of treatment with and without cryopreserved allograft (homograft). *Eur J Vasc Endovasc Surg*, 2003, **25** : 416-423.
6. ROLAIN J. M., MAURIN M., RAOULT D. Bactericidal effect of antibiotics on *Bartonella* and *Brucella* spp : clinical implications. *J Antimicrob Chemother*, 2000, **46** : 811-814.
7. HADJINIKOLAOU L., TRIPOSKIADIS F., ZAIRIS M., CHLAPOUTAKIS E., SPYROU P. Successful management of *Brucella melitensis* endocarditis with combined medical and surgical approach. *Eur J Cardiothorac Surg*, 2001, **19** : 806-810.
8. LEANDRO J., ROBERTO H., ANTUNES M. *Brucella* endocarditis on the aortic valve. *Eur J Cardiothorac Surg*, 1998, **13** : 95-97.
9. BERGERON *et al.* False aneurysm of the abdominal aorta due to *Brucella suis*. *Ann Vasc Surg*, 1992, **6** : 460-463.
10. YEE N., ROACH D. J. Infected abdominal aortic aneurysm caused by spinal brucellar infection. *Am J Roentgenol*, 1996, **167** : 1068-1069.
11. AGUADO *et al.* Infective aortitis due to *Brucella melitensis*. *Scand J Infect Dis*, 1987, **19** : 483-484.
12. KUMAR *et al.* *Brucella* mycotic aneurysm of descending aorta complicating discrete subaortic stenosis. *Am Heart J*, 1993, **125** : 1780-1782.

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