

BRUCELLA ENDOCARDITIS OF PSEUDOANEURYSM OF AN AORTIC COMPOSITE GRAFT

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The occurrence of *Brucella* endocarditis following Bentall operation is a rare and life threatening condition, particularly when it is complicated by development of a pseudoaneurysm. Here we present a 40-year-old veterinarian with bicuspid aortic valve, who developed type A aortic root dissection and required Bentall operation. His past medical history was positive for an episode of treated brucellosis. Four months after the operation, he developed signs, symptoms and serological findings of brucellosis for the second time and was treated with antibiotics. Then after he was well until about 14 days prior to his recent admission, when he again developed hip pain, fever, shortness of breath, profound fatigue and weakness. His transthoracic echocardiography was suggestive of endocarditis. A transesophageal echocardiogram revealed detachment of valve-conduit from the annulus and the mitral-aortic intervalvular fibrosa and the presence of a large aortic pseudoaneurysm with multiple vegetations attached to its Dacron walls. A huge pseudoaneurysm was detected at surgery and the whole valve-conduit was replaced with a 25 mm homograft. Blood and vegetation cultures turned to be positive for *Brucella melitensis*. Early echocardiographic diagnosis and prompt surgical intervention were helpful for survival of our patient who had aortic pseudoaneurysm complicated by *Brucella* endocarditis.

KEY WORDS: Aortic valve conduit · Pseudoaneurysm · *Brucella* endocarditis · Bentall operation.

INTRODUCTION

Brucellosis is a multi-systemic zoonotic infection which is common in the Middle East, Central Asia, the Mediterranean basin and Central America.

Although *brucella* endocarditis is an uncommon complication, it remains the main cause of brucellosis-related mortality.

Here we report the clinical and transesophageal echocardiographic findings of an interesting case with *brucella* endocarditis of an aortic root pseudoaneurysm following Bentall operation.

CASE

A 40-year-old veterinarian with bicuspid aortic valve developed type A aortic root dissection following hypertensive crisis and underwent Bentall operation a year ago. His past medical history was positive for an episode of treated brucellosis.

Four months after the operation, he complained of fever, malaise, arthralgia of the left hip joint, anorexia and weight

loss. The erythrocyte sedimentation rate was 103, Wright = 1/1280 and 2-mercaptoethanol (2ME) = 1/320. Combination antibiotic therapy with rifampin 900 mg/day per os (PO), doxycycline 200 mg/day PO and ciprofloxacin was started and continued for 6 months resulted in disappearance of his symptoms. Then after he was well until about 14 days prior to his recent admission, when he again developed hip pain, fever, shortness of breath, profound fatigue and weakness. The erythrocyte sedimentation rate was elevated, his 2ME increased from 1/320 to 1/640. Because of recurrence of *brucella* symptoms, a transthoracic echocardiogram was done which showed a competent non-stenotic prosthetic aortic valve with no vegetation. The mitral and tricuspid valves were normal; however, there was question of vegetations attached to the inner surface of the Dacron wall. BACTEC blood cultures × 5 were obtained and he was empirically started on multiple antibiotics including doxycycline.

At this time the patient was transferred to our university

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hospital. His chest X-ray showed mild cardiomegaly and blunting of right costophrenic angle. Sinus tachycardia, left anterior hemiblock and non-specific ST-T wave changes in lateral leads were found in his initial electrocardiogram. An emergency transesophageal echocardiogram and color Doppler

mapping revealed the detachment of valve-conduit from the annulus and the mitral-aortic intervalvular fibrosa and a large aortic pseudoaneurysm with multiple sessile and mobile vegetations attached to its Dacron walls (Fig. 1 and 2, Supplementary movie 1).

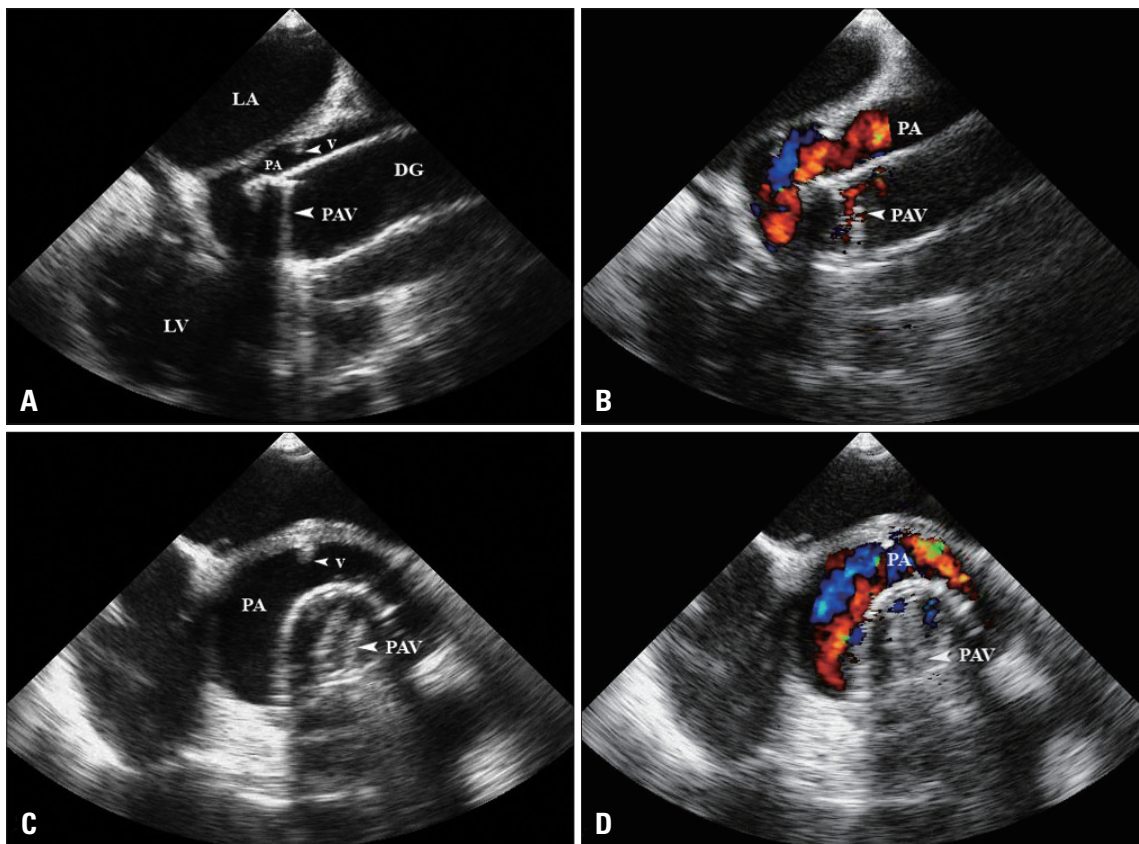


Fig. 1. Transesophageal echocardiographic findings of the left ventricular outflow tract and the ascending aorta. A: Mid-esophageal long axis view revealing the detachment of the aortic valve-conduit from the annulus and the mitral-aortic intervalvular fibrosa and the formation of a large pseudoaneurysm with multiple vegetations attached to its walls. B: Color flow mapping showing the simultaneous entrance of blood into the pseudoaneurysm around the Dacron graft and into the aorta. C: Mid-esophageal short axis revealing the pseudoaneurysm surrounding the aortic Dacron graft. The bi-leaflet prosthetic aortic valve is seen as well. D: Color-flow mapping indicating that most of the ejected blood volume enters the pseudoaneurysm rather than the aorta. DG: Dacron graft, LA: left atrium, LV: left ventricle, PA: pseudoaneurysm, PAV: prosthetic aortic valve, V: vegetations.

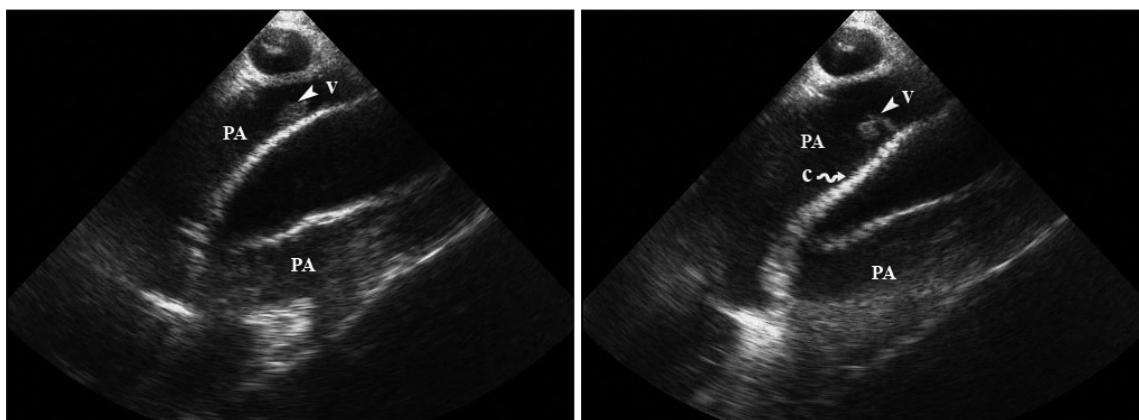


Fig. 2. Long axis views of the ascending aorta showing the compression of the aortic Dacron graft as the blood enters the pseudoaneurysm. Multiple vegetations are visible too. C: compression, PA: pseudoaneurysm, V: vegetations.

The prosthetic aortic valve appeared to have normal motion and to be free of any vegetation. No aortic regurgitation was noted either (Fig. 2). Color-flow imaging showed the entrance of most of the cardiac stroke volume into a large pseudoaneurysm covering almost the entire circumference and length of the Dacron graft as far as it could be seen (Fig. 1 and 2, Supplementary movie 1). The next day, he underwent an uneventful redo operation. A huge pseudoaneurysm was detected at surgery and the whole valve-conduit was replaced with a 25 mm homograft. His condition improved and he was discharged on day 7, in a stable condition. Before discharge, the initial blood and vegetation cultures were reported to be positive for rifampin-resistant *Brucella melitensis*. He was treated with doxycycline 200 mg/day PO, plus ciprofloxacin and gentamicin 5 mg/kg/day intramuscularly for 14 days. Subsequently he received the same dose of doxycycline for several additional months.

DISCUSSION

Our patient had a unique presentation namely *Brucella* endocarditis of a pseudoaneurysm of an aortic composite graft. Endocarditis following Bentall operation is quite rare and life threatening if untreated.¹⁾

Brucellosis is a systemic disease mainly affecting the musculoskeletal system. Cardiovascular complications, including endocarditis, are rare but usually fatal. The aortic valve is most often involved. This includes both the native and prosthetic valves.

Brucella infection was considered as the possible underlying cause for the dehiscence of the conduit from the aortic annulus and formation of pseudoaneurysm in our patient.²⁾

Infection of a prosthetic cardiac device is a rare complication of brucellosis; however, it should be highly considered in any case with recurrent symptoms such as our patient.

Overall, early diagnosis and prompt medical and surgical interventions are essential for patients' survival³⁾ since endocar-

ditis continues to be the principal cause of mortality in the course of the disease.

Transesophageal echocardiography and color Doppler mapping have become the most popular non-invasive, cost effective and easy-to-do procedure of choice for detection of the complications associated with Bentall procedure and composite grafts. These include pseudoaneurysms, which may occur in 7% to 25% of cases, supra-avalvular aortic stenosis, which occurs less often^{4,5)} and endocarditis, which is the least frequent complication and was observed in our patient.

In conclusion, this rare case report is additive to the previously reported albeit, infrequent complications of *Brucella*-induced cardiac prosthetic endocarditis.⁶⁾

It emphasizes the need for a high clinical suspicion in susceptible cases, particularly those with recurrent brucellosis and shows the utmost importance of transesophageal echocardiography for the diagnosis and guiding of therapy in such patients.

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