Vegetation attached to the elephant trunk

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Abstract

The elephant trunk technique is used as a standard method in the approach to staged repair of extensive thoracic aneurysms. Here, we present a rare case of a graft infection, in which vegetation was attached to the distal end of the elephant trunk. A 36-year old male who had undergone total arch replacement with elephant trunk installation for type A aortic dissection was readmitted for high-grade fever. At the time of admission, Osler’s nodules were present and brain magnetic resonance imaging showed multiple small emboli and haemorrhages. Transoesophageal echocardiography could not locate any sign of infection within the cardiac chambers, but disclosed vegetation attached to the elephant trunk. He underwent successful emergent graft replacement of the lesion, and no recurrence of the infection has been observed.

Keywords: Elephant trunk technique • Vegetation • Transoesophageal echocardiography • Aortic dissection

INTRODUCTION

Since its introduction by Borst et al. [1], the elephant trunk procedure has become a standard method in the approach to staged repair of extensive thoracic aneurysms. Here, we present a rare case of a graft infection after total arch replacement with elephant trunk installation for acute type A dissection, in which vegetation was attached to the distal end of the elephant trunk.

CASE

A 36-year old male with pain in his left leg and loss of consciousness was transferred to our institute. He had untreated hypertension and poorly controlled allergic dermatitis. Enhanced computed tomography (CT) revealed Stanford type A aortic dissection, in which the aorta was dissected from the aortic root to bilateral femoral arteries, and all the three branches of the aortic arch were involved. Narrowing of the true lumen had been causing both brain and leg ischaemia. He underwent emergent total arch replacement using a 26 mm 4-branch woven Dacron graft. An elephant trunk, a straight 18 mm woven Dacron graft with 10 cm in length, was inserted into the true lumen of the descending aorta. Leg and brain ischaemia disappeared immediately after the surgery, and he was uneventfully discharged. Eight months after the operation, he had a high-grade fever, and brain magnetic resonance imaging showed multiple small infarctions with minor haemorrhages. Infective endocarditis was suspected, but no evidence of vegetation or thrombus in the cardiac chamber was confirmed with transthoracic echocardiography and the transoesophageal echocardiography (TEE). However, multiple blood cultures grew Staphylococcus aureus, therefore intravenous administration of cefotaxime sodium was continued for two months. After an 8-month afebrile period, he began to have a high fever again. At the time of third admission, disseminated intravascular coagulopathy and Osler’s nodes were present. Chest and abdominal CT could not identify the infection focus, but this time the TEE was able to disclose a mobile vegetation attached to the distal end of the elephant trunk (Fig. 1). Also, a mosaic flow pattern was observed within the elephant trunk by colour Doppler. Both cultures of blood and skin lesions of allergic dermatitis had grown methicillin-resistant Staphylococcus aureus. Emergent operation was performed through left thoracotomy. Under partial cardiopulmonary bypass, the whole elephant trunk was excised and replaced with a rifampicin-impregnated 24 mm woven Dacron graft. The distal end of the new graft was anastomosed to the descending aorta in a double-barrel fashion. The vegetation found at the distal end of the graft was 20 mm in length and 10 mm in width (Fig. 2). Intraoperative microscopic study showed the proximal end of the graft was free of infection, and no further procedure was performed. Intravenous administration of vancomycin was continued for 2 months and oral rifampicin was used simultaneously for 1 month for the synergy effect. After the intravenous administration of vancomycin, oral sulfamethoxazole trimethoprim was administered for 3 months. He was discharged after full recovery, and no recurrence of the graft infection has been observed for the past 5 years.

DISCUSSION

The potential benefit and efficacy of elephant trunk techniques have been well described [2], but a few complications of the elephant trunk procedure have been reported, such as kinking or flattening [3], particularly when placed into a compressed distal
true lumen in aortic dissection. However, there has never been a report of elephant trunk infection. The mechanism of this rare infection can be explained by the theory proposed by Rodbard [4]. When the vena contracta is formed immediately beyond a narrow orifice, the amount of streamborn nutritive and defensive materials becomes small because of the reduced stream contact, leading to increased susceptibility to infection. In the present case, the diameter of the arch graft was 26 mm, but that of the elephant trunk was only 18 mm because of the compressed true lumen at the first operation. This size discrepancy caused rising of vena contracta at the distal end and resulted in the formation of the infection focus.

TEE has been reported to be an excellent diagnostic imaging tool for the elephant trunk [5] since the oesophagus is adjacent to the descending aorta. In the current case, TEE was the only module that could locate the infection focus and reveal the flow acceleration at the elephant trunk.

We believe this is the first case in the English literature reporting vegetation found at the elephant trunk, which was successfully treated with graft replacement. Careful investigation with TEE should be recommended in the case of fever in unknown patients who had undergone the elephant trunk procedure.

Conflict of interest: none declared.

REFERENCES