Case report

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Abstract

Penetrating ulcer of the ascending aorta is a very rare pathological entity with known potential for progression towards intramural hematoma or dissection. Intraoperative diagnosis of an asymptomatic ulcer of the ascending aorta was carried in a 60-year-old male with rheumatic valve disease. The tubular portion of the aorta was slightly dilated (45 mm) and the aortic valve was tricuspid. A supracoronary replacement of the ascending aorta was performed with a Dacron tube. Pathological analysis of the operative sample showed a considerable thinning of the aortic wall with a complete lack of elastic fibers at the level of the penetrating ulcer surrounded by a slightly dystrophic ascending aorta free from calcification and atheroma.

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1. Introduction

Penetrating ulcer of the aorta is an uncommon pathological entity with known potential for progression towards intramural hematoma or dissection [1,2]. It is most frequently located in the descending thoracic aorta where multiple localizations are not unusual and the underlying aorta is oftentimes aneurismal [3,4]. It remains clinically silent until rupture occurs at which time the diagnosis is ordinarily made [5]. This report describes the surgical management of an asymptomatic penetrating ulcer localized to the ascending aorta fortuitously discovered before the onset of rupture.

2. Case report

A 60-year-old male with no past history of trauma was referred to surgery for rheumatic aortic and mitral valve disease. Echocardiography showed slight dilatation (45 mm) confined to the tubular portion of the ascending aorta. Preoperative aortic angiogram failed to demonstrate any aneurysmal formation. Intraoperative inspection revealed a localized bulging at the anterior aspect of the ascending aorta close to the usual cannulation site underneath the pericardial reflexion line. It was free from pericardial adhesion (Fig. 1). The diagnosis of aortic ulcer was suspected and cardiopulmonary bypass was instituted between the vena cava and the aortic arch. The whole ascending aorta was excised and supracoronary replacement was achieved using a 30 mm Dacron tube. The aortic valve, which comprised three retracted cusps with commissural fusion, was replaced using a bioprosthesis. In addition, mitral commissurotomy together with pulmonary vein exclusion was carried out. Postoperative outcome was uneventful. Pathological examination of the operative sample confirmed the presence of a penetrating ulcer located at the distal part of the ascending aorta near its concavity (Fig. 1). The ulcer was 8 mm wide with a circular shape and smooth edges. Its wall was considerably thinner than that of the surrounding ascending aorta (Fig. 2), the latter being completely free from calcification. Histological analysis (hematoxylin–eosin–safran) showed complete lack of elastin fibers at the level of the ulcer, the aortic wall being limited to a thin collagen network covered by the adventitia (Fig. 2). Besides, the ascending aortic wall had near normal microscopic structure with slightly increased incidence of elastin fragmentation areas. There was neither calcification nor any sign of atheroma.

3. Discussion

All authors acknowledged the difficulty in recognizing penetrating an aortic ulcer before the onset of rupture. As in the present case, the lesion can be overlooked on angiography due to the limited number of incidences, as well as by transesophageal echography the access to the arch being limited [6]. Multisliced CT scan and nuclear magnetic resonance imaging are the best diagnostic methods [1,4].
In the present case the aortic ulcer was fortuitously discovered at the time of surgery by intraoperative inspection. Indications for surgery are not completely standardized either and several authors have claimed that conservative management might offer a safer alternative in uncomplicated cases [7,8]. On the other hand it has been clearly established that penetrating ulcers can promote major aortic complications such as intramural hematoma and acute aortic dissection whose risk of rupture is much higher when the ascending aorta is involved. Hence although rare, it can be postulated that perforating ulcers of the ascending aorta carry worse prognosis than their counterparts located to the descending aorta and should probably be treated more aggressively. Open repair can be performed either by resection and patch reconstruction or by segmental replacement of the aorta with a Dacron tube. The latter technique was preferred in this patient whose ascending aorta was slightly increased in diameter. Recently endovascular approaches have been successfully applied to descending aortic ulcers [9] and might as well be used for ascending aortic lesions in selected cases.

Although its vascular wall comprised three layers, the aortic lesion was labelled as a penetrating ulcer due to its similarities with previously published observations [1,5]. Concerning the pathophysiology, as opposed to most reports [1,4,5] this case demonstrates that penetrating ulcer can occur without any calcification plaque or sign of atheroma. The lesion was part of a dystrophic process involving the ascending aorta, which was the site of slight ectasia whose vascular wall presented some elastin fiber disorders.

**References**


