Sutureless valves offer improved hemodynamics and low gradients [6]. Our early experience at 2 different institutions in Europe suggests extremely secure valve positioning with the Perceval S, with a very low gradient, including a small annulus, and with excellent hemodynamics [7, 8]. Compared with stented bioprostheses, this sutureless valve can be implanted with reduced cross-clamp time and extracorporeal time. In this case, the advantage of inserting a sutureless valve is the ease of insertion despite massive aortic and annulus calcification. Once the adequate sizer is fitted, the valve can be optimally deployed in an intrannular position. The aorta can be opened well above the homograft, which avoids clamping and suturing of the calcified homograft.

A percutaneous stented aortic valve was discussed before the operation. It was decided not to attempt such a procedure because the leaflets themselves were not calcified and therefore we could not be sure that the valve would be anchored sufficiently in the annulus. Certainly, in the case of a heavily calcified annulus, a percutaneous approach could be attempted.

In conclusion, reoperation for homograft degeneration can be very challenging because of massive calcification. Reoperation for a failed homograft valve can be made simpler by using a sutureless aortic stentless valve. Correct sizing of the valve is critical to minimize paravalvular leakage, and this should be performed with transesophageal echocardiography and intraoperative sizing.

References


Type A Intramural Hematoma in the Setting of Acute Type B Aortic Dissection

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Type A intramural hematoma (IMH) is an uncommon entity, the pathophysiology of which is thought to be related to a contained hemorrhage within the medial layer of the aorta as a result of either rupture of the vasa vasorum or an atherosclerotic plaque. We present a case of type A IMH in the setting of acute type B aortic dissection with suspicion for malperfusion syndrome and discuss the treatment algorithm of this uncommon entity.


Type A intramural hematoma (IMH) is a contained hemorrhage within the medial layer of the aorta that results from either rupture of the vasa vasorum or an atherosclerotic plaque [1]. Acute type A IMH is now recognized as a distinct clinical entity in the spectrum of acute aortic syndromes, which also includes acute...
aortic dissection and penetrating aortic ulcers. Early recommendations emphasized an approach similar to that for classic type A aortic dissection [2]. Recent reports, mostly from the Asian literature, have challenged this notion by outlining an algorithm of initial medical management for stable patients [3, 4]. Moizumi and colleagues [3] described their experience with 33 patients over 9 years who were treated surgically only in the setting of cardiac tamponade, impending rupture, or rupture. Mortality at 1 and 2 years was similar for those initially treated surgically, and operative procedures were avoided in two thirds of the medically treated patients without adverse clinical consequences. In a report by Song and colleagues [4], patients with type A IMH were initially treated medically unless they were hemodynamically unstable. In the medically managed group of 85 patients, 36.5% experienced adverse clinical events within the first 6 months of follow-up, including delayed surgical procedures, progression to aortic dissection, or death. The controversy regarding the initial management of this uncommon entity has been fueled by subsequent reports of international differences in presentation and outcomes [5] and editorials in the western literature unwilling to endorse the initial medical management approach [6].

A 43-year-old man with a history of poorly controlled hypertension, medication noncompliance, and cocaine abuse presented to the emergency room with persistent abdominal pain for the preceding 10 hours. Abnormalities of vital signs and laboratory workup included blood pressure of 220/110 and serum creatinine levels of 1.6 mg/dL. On physical examination, auscultatory findings were unremarkable, and the patient had only mild tenderness in the epigastrium without guarding or rebound tenderness. An abdominal computed tomographic scan was obtained showing aortic dissection. Additional chest computed tomographic images were obtained, revealing type A IMH associated with type B aortic dissection (Fig 1). Aggressive blood pressure control was initiated, and the patient was taken to the operating room for transesophageal echocardiography (TEE) and possible operative intervention under anesthesia.

TEE demonstrated an eccentric aortic lumen associated with a crescent-shaped area of echolucency within the aortic wall (Fig 2). No intimal flap was noted and no communication of blood flow was observed at the area of aortic wall thickening. The aortic valve was unremarkable. Ventricular function was normal. There was, however, severe left ventricular (LV) hypertrophy with a LV wall thickness of 3 cm in this 43-year-old patient (Fig 3). A decision was made to proceed with ascending aortic and hemiarch replacement. Right axillary cannulation was performed followed by median sternotomy. Inspection of the aorta revealed an IMH involving the undersurface of the aortic arch and the ascending aorta down to the aortic root. After induction of cardiopulmonary bypass, the patient was cooled to 18°C in preparation for open distal anastomosis under circulatory arrest. The ascending aorta and hemiarch were resected and replaced with a Hemashield (Atrium Medical Corp, Hudson, NH) tube graft. The patient had an unremarkable postoperative convalescence and was discharged on the 12th postoperative day.

**Comment**

We describe a case of an asymptomatic type A IMH in the setting of acute type B aortic dissection in a hypertensive patient taking cocaine. The initial workup in the emergency room included an abdominal computed tomographic scan that detected the descending aortic dissection. Because the timing of contrast administration was optimized for evaluation of the abdominal aorta, the subsequently obtained images of the ascending aorta were suboptimal to clearly distinguish between aortic dissection and IMH. Expectant management of the type A IMH was briefly entertained, mainly secondary to the concern for malperfusion syndrome from the descending aortic dissection in the setting of ongoing abdominal pain and a slightly elevated creatinine level in an
otherwise healthy (with the exception of poorly controlled hypertension) patient. However, the diagnosis of type A IMH versus type A classic aortic dissection could not be unequivocally established. Additional contrast administration was deemed ill advised, as was a magnetic resonance imaging examination in the setting of suspicion for acute aortic dissection. The patient was therefore taken to the operating room for a TEE examination under general anesthesia. The type A IMH was confirmed and massive LV hypertrophy was noted, and it was thought that the creatinine elevation was likely secondary to hypertensive nephropathy.

Although concerns for abdominal malperfusion in our patient were sorted out quickly, the presence of bowel ischemia would have considerably complicated the clinical scenario, as well as increased morbidity and mortality. Therefore, in that setting addressing the gut malperfusion first may be warranted. Percutaneous fenestration procedures have become well established and, depending on the resources of the institution, may be a valuable option. The presence of a hybrid operating room would offer a particular advantage in this case because it would minimize patient transport and unnecessary delay in addressing the ascending aortic component. In the spectrum of a pathologic process of the ascending aorta, type A IMH is relatively straightforward, which may translate into shorter bypass and circulatory arrest times. Several reports of using less than deep hypothermia have been reported, and perhaps consideration of modifying the temperature threshold for circulatory arrest may be entertained, depending on the speed and experience of the surgeon, in an attempt to minimize bypass time for rewarming [7]. If the cardiac problem is addressed first, immediate fenestration after the open heart operation to reperfuse the bowel may be of benefit. The availability of a hybrid operating room would allow the second procedure to be done safely without transporting a potentially hemodynamically unstable patient to another part of the hospital. If percutaneous fenestration procedures are not available, careful abdominal examinations and the need for open fenestration or visceral bypass are necessary. Finally, bowel resection should be used as a last resort for the primary treatment of the gut ischemia. Careful serial abdominal examinations are warranted regardless, because the need for bowel resection may become evident even if the bowel was reperfused up front.

Our case report exemplifies some of the questions that may arise during the evaluation of patients with type A IMH in the setting of acute type B aortic dissection. Although the management of type B dissection is medical, the presence or absence of malperfusion may affect the treatment algorithm of the associated type A IMH. Conversely, depending on the characteristics of the descending dissection, surgical intervention on the ascending component may increase the risk of paraplegia. This case report emphasizes that the management of multilevel aortic disease is complex and needs to be carefully individualized.

References

Intercostal Artery Aneurysmosis
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True intercostal artery aneurysms have been reported to occur in conjunction with neurofibromatosis, coarctation of the aorta, and Kawasaki disease. However, there has not been a previous report of a patient with intercostal artery aneurysmosis and no known or diagnosed

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