Asymptomatic Aortic Dissection: The Importance of Evaluating all Diastolic Murmurs

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Abstract

All diastolic heart murmurs merit echocardiographic evaluation. Dissection of the ascending aorta may result in aortic regurgitation. Aortic dissection, while usually painful, may present without pain in the minority of patients. While Type B aortic dissections may be managed medically, Type A aortic dissections should be managed surgically. Rapid diagnosis of Type A aortic dissection is of utmost importance since emergent surgical intervention improves outcomes.

Keywords: Aortic dissection; Aortic regurgitation; Aortic valve; Diastolic murmur; Aorta

Case Report

An asymptomatic 57 year old male presented to the clinic for a routine checkup. Past history was significant for 25 years of hypertension on diltiazem, hydrochlorothiazide, and lisinopril. Physical examination detected a 2/6 diastolic murmur at the left lower sternal border. Chest x-ray showed a widened mediastinum compared to six years prior (Figure 1). Transthoracic echocardiogram demonstrated left ventricular end diastolic volume of 60 mm with a preserved ejection fraction of 62%. The tricuspid aortic valve had an eccentric aortic regurgitant jet (aortic valve pressure halftime 305 ms, effective regurgitant orifice 0.21 cm$^2$, regurgitant fraction 50%) (Figure 2A & 2B) and a small pericardial effusion and a focal linear echo-bright separation of the posterior aortic wall suggestive of a Type A ascending aorta dissection (Figure 2C & 2D). Chest computed tomography angiogram (CTA) confirmed an aneurysmal aortic root measuring 5.3 × 4.5 cm a Type A aortic dissection (Figure 3) and aneurysm of the non-coronary cusp. Transesophageal echocardiogram (TEE) confirmed localization of the dissection from the aortic root to mid-ascending aorta without arch involvement.

He was admitted to the hospital and started on esmolol and nitroprusside infusions for blood pressure control. He underwent urgent aortic root replacement using a 25 mm Carbomedics Valsalva composite graft with reimplantation of the coronary arteries without complication. On pathology review, the aortic specimen had an acute intra-medial dissection, prominent medial degeneration with focal laminar medial necrosis. A beta blocker and warfarin were initiated. The patient had an uneventful postoperative course and began outpatient cardiac rehab two weeks after hospital dismissal.

All diastolic murmurs deserve echocardiographic evaluation. However, the sensitivity and specificity of transthoracic echocardiogram is inferior to TEE, CT, and MRI. Painless dissection is uncommon (6.4%) and associated with Type A dissection, diabetes, and prior cardiac surgery. Estimated incidence is 2.6-3.5 per 100,000 person-years. Common risk factors include hypertension, preexisting aortic aneurysm, inflammatory vasculitides that affect the aorta, collagen disorders, bicuspid aortic valve, and aortic coarctation. In Type A dissections, 70% of cases do not involve the arch. Ascending aortic dissection has a high early mortality; approximately 1% to 2% per hour upon presentation with in-hospital mortality of 27% in patients who undergo surgical repair (versus 56% who are medically managed). In conclusion, patients with diastolic murmurs require further evaluation, Type A dissections are surgical emergencies, and patients fare better with surgery.

Figure 1: A) Baseline chest X-ray from six years prior to admission B) Chest X-ray at time of admission demonstrating widening of the mediastinum.
Figure 2: A) Transthoracic echocardiogram with color-flow Doppler (Apical 4-chamber view) demonstrating an eccentric aortic regurgitant jet B) Transthoracic echocardiogram pulse-wave Doppler assessment consistent with moderate aortic regurgitation C) Parasternal long-axis view revealing a dissection flap in the ascending aorta D) Parasternal short-axis view of the aortic valve showing the dissection flap.

Figure 3: Computed tomography angiogram of the chest showing a dissection flap in the ascending aorta.