Localized Aortic Root Dissection Secondary to Contrast Agent Injection: Feasibility of Conservative Follow-up With Echocardiography

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1. Introduction

Iatrogenic aortocoronary dissections (ACDs) are uncommon clinical entities. The majority of cases are catheter-induced. Spontaneous ACD secondary to contrast agent injection is rarely reported; however, the real-world prevalence is expected to be higher because of unreported cases. Parallel to increments in complex percutaneous coronary interventions, especially retrograde chronic total occlusion procedures, the incidence of ACD is expected to become more common. Catheter trauma and subintimal progression of guidewires are major causes of ACD occurrence.

2. Case Presentation

Herein presented is a case report of spontaneous ACD observed after contrast injection to the RCA ostium. Approximately 8 cc of radiocontrast agent was injected into the right coronary ostium. Antegrade and retrograde dissections which extended to the distal RCA and aortic root were observed. The right sinus of Valsalva was stained with contrast agent, and the border of the stained area was extended to the sinotubular junction. Medical follow-up was proposed by the heart team. Close follow-up with echocardiographic examination indicated the complete regression of the dissection.

Conclusion: The authors consider conservative follow-up with echocardiography rather than computed tomography and/or magnetic resonance to be the most appropriate imaging technique for use with stable patients.

Keywords: Aortic dissection, Radiocontrast agent, Echocardiography, Iatrogenic disease, Diagnosis
Valsalva was stained with contrast agent, and the border of the stained area was extended to the sinotubular junction. A sapheneous graft anastomosed to the distal RCA was also patent. Medical follow-up was proposed by the heart team. The patient was transferred to the intensive care unit for medical follow-up. Computed tomography (CT) showed a localized 1.5 cm aortic root dissection originating from the RCA ostium and extending towards the sinotubular junction (Figure 2). After that, daily echocardiographic imaging was performed (Figure 3). The dissection did not enlarge, nor did it progress. The patient was discharged five days later. Weekly echocardiographic follow-up continued for the first month, and a three-month control follow-up was also uneventful.

3. Discussion
Acute ACD is a rare clinical entity which occurs in 0.02% of diagnostic catheterizations and 0.07% of percutaneous coronary interventions. In the majority of cases, there is an intimal tear in the ostial segment of the coronary artery which subsequently leads to bidirectional dissection. An antegrade dissection of the coronary artery may extend to even the distal segment of the RCA, whereas, a retrograde dissection of the ascending aorta may lead to urgent clinical picture including cardiovascular collapse. Risk factors for catheter-induced aortic dissection were defined as follow: left main coronary artery intubation, use of special catheters, aggressive handling of rigid guide wires, catheterization during acute myocardial infarction and profound cannulation of the catheter into the coronary ostia. Risk factors for contrast-induced ACD, however, are not well defined because of its extremely rare incidence. Diffuse atherosclerotic disease, a rigorous injection rate, and adherence of the catheter’s tip to the intimal layer seem to be major predictors of ACD. The treatment strategy depends mainly on the symptomatology of the patients. Stenting of the coronary ostium to seal the primary entry tear, thereby allowing the aortic dissection to heal spontaneously, has been reported as the best treatment option. However, surgical repair may be indicated in the propagation of dissection and hemodynamic instability. Conservative treatment of uncomplicated retrograde dissection with blood pressure control, analgesics, and close observation has been recommended, especially in high-risk patients or those with previous cardiac surgery. Although a CT scan is the best modality for conservative follow-up, it brings additional contrast load and radiation exposure as well as an increase in costs. Conservative follow-up with echocardiography as an appropriate imaging technique is suggested in such cases. It has the advantage of being a safer profile which does not necessitate additional radiocounter agent and x-rays. It is also cost affordable compared with CT scan and/or magnetic resonance imaging (MRI). However, echocardiographic examintion is self-dependent and requires experienced operators to avoid underdiagnosis. CT scan may give more accurate results in critical patients prior to deciding on surgical treatment.

4. Conclusion
Iatrogenic ACD is a catastrophe in interventional cardiology. Conservative follow-up with imaging technique is proposed for small uncomplicated dissections. Computed tomography has been proposed as the gold standard for conservative follow-up; however, echocardiographic observation may show more satisfactory evidence than a CT scan in selected cases. Echocardiography also has the advantages of being of average cost, accessible, and safe. The authors consider conservative follow-up with echocardiography to be the most appropriate imaging technique for use in small ACDs.

Conflicts of Interest Disclosures
The author reports no conflicts of interest regarding this work.

Ethical Approval
The work was approved by the Ethics Committee of the local hospital.
References


