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Percutaneous Management of an Extensive Iatrogenic Aortocoronary Dissection Complicating Percutaneous Coronary Intervention

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Abstract

Iatrogenic aorto-coronary dissections following Percutaneous Coronary Interventions (PCI) represent rare but potentially life threatening complications. If procedural complication is clinically, suspected Computed Tomographic (CT) angiography is a very helpful diagnostic and follow-up tool. We present a case of iatrogenic type a dissection successfully diagnosed and treated intraprocedure with his CT angiography correlation and follow-up.

Case report description

A 63-year-old man with a remote history of chronic coronary artery disease, angioplasty of the distal anterior descending, circumflex coronary artery, and stent placement who presented in January 2020 with acute-onset dyspnea. Cardiac perfusion study demonstrated inferolateral and anteroapical necrosis with approximate ischemic amount of 18% of total left ventricular mass. The patient subsequently underwent percutaneous coronary angiography using a right femoral approach, which demonstrated right dominant coronary anatomy, with chronic occlusion of right and circumflex coronary arteries, severe stenosis of the first diagonal branch and stents in the anterior descending arteries and intermediate branch without particularities.

The patient underwent elective recanalization of the chronically occluded RCA in March 2020. A dissection of the aorta was diagnosed intraprocedure after recanalization of the RCA, due to accumulation of contrast material at the aortic wall after contrast injection. The interventional cardiologist placed a drug eluting stent at the ostium of the RCA. Contrast-enhanced CT of the chest was requested immediately after the percutaneous coronary intervention (PCI) for further assessment.

The dissection was confirmed on CT angiography. The patient was medically managed and closely observed in hospital, he remained asymptomatic. A follow-up CT angiography was performed 2 days after the PCI, which showed no ongoing dis-

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section and the presence of an intramural hematoma. A third CT scan was performed 8 days after the PCI, which showed no changes. The patient was discharged on the same day. At a 2 months CT control after the discharge a complete resolution of the intramural hematoma was observed.

Imaging technique

The patient underwent nongated unenhanced CT chest and subsequently ECG-gated CT angiography of the thoracic aorta. The same protocol was used for the index study and the follow-up studies.

Findings

During the PCI, with the catheter located in the ostium of the RCA, an accumulation of contrast material at the ascending aortic wall, extending to the aortic root and ascending aorta, was observed (Figure 1).

On the post procedure control CT angiography there was a pooled extra luminal contrast in the aortic root and ascending aorta (Figure 2A) which was not seen in the unenhanced phase, confirming the diagnosis of aortic dissection type A with a permeable false light that was not completely filled in the acquired phases. The extent of the dissection was best demonstrated on the oblique view (Figure 2B)

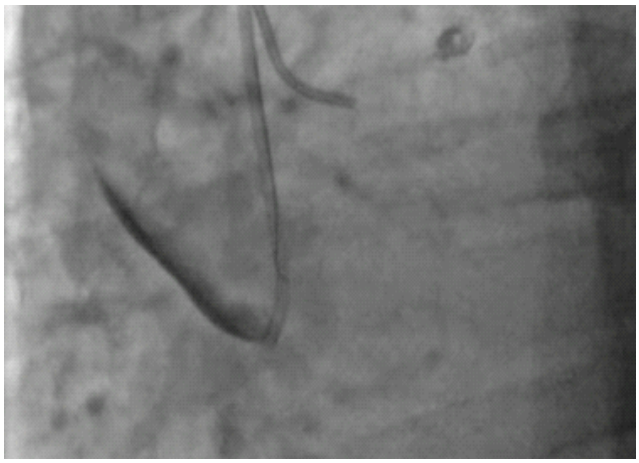
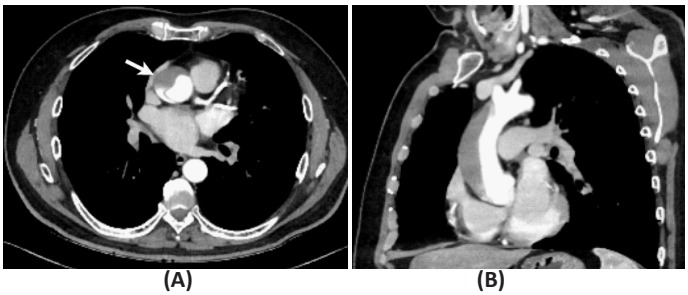


Figure 1: Coronary angiogram. RCA iatrogenic dissection with contrast pooled into the false lumen in the aortic root and ascending aorta.



(A) (B)

Figure 2: Post procedure CT angiography. **(A)** Axial enhanced view evidence a pooled extra luminal contrast in the aortic root with a false lumen 24mm thick. **(B)** Oblique enhanced view helps determine the extent of the dissection to the beginning of the aortic arch.

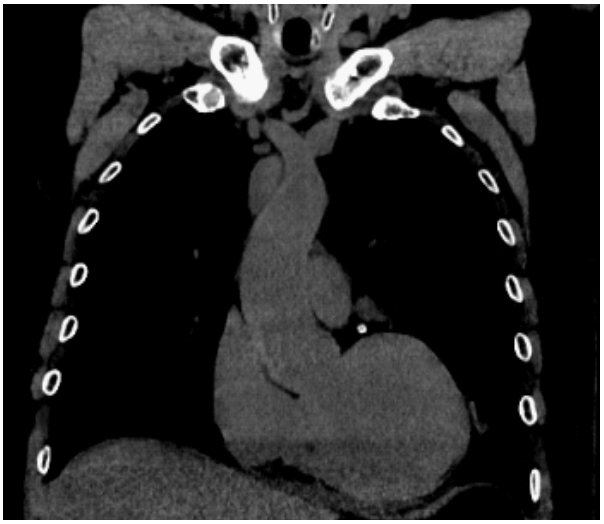


Figure 3: Coronal view Follow up CT. 2 days after PCI. Unenhanced coronal view demonstrates the presence of a lunate image, spontaneously hyper dense in the unenhanced phase compatible with intramural hematoma of 7mm thick with resolution of the extra luminal-pooled contrast. The study did not demonstrate any ongoing dissection.

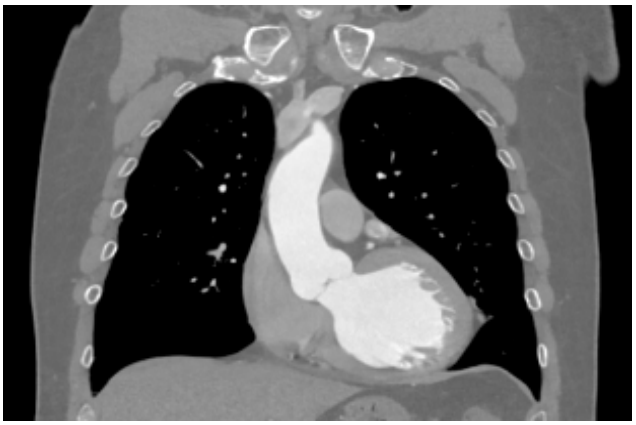


Figure 4: Coronal view CT angiography, 2 months after PCI. Evidence complete resolution of the intramural hematoma.

Discussion

Iatrogenic coronary artery and aortic root dissection is a rare but serious complication of coronary angiography with an overall incidence of 0.02% in elective procedure [1]. Mostly occurs in complex therapeutic procedures and predominantly involves the ostium of the RCA and aortic root extending variably in an anterograde and retrograde fashion [2].

Dunning et al. classified these dissections into three groups, where the local involvement of the ipsilateral cusp was defined as class I, the extension along the ascending aorta of less than 40 mm as class II and more than 40 mm as class III. [3]. Class 1 and Class 2 dissections are best treated by sealing the entry point in the coronary artery by means of stenting and surgical intervention is usually warranted for Class 3 dissections.[4]. However, there are no clear guidelines for IAD management, and limited data are available [5]. Some reports state that when a coronary artery is involved as an entry point, it usually can be safely sealed with a stent with good long-term outcomes [3].

Based on the criteria proposed by Dunning et al. [1] our patient was classified as type 3 dissection with a 10cm of cefalocaudal extension and a 24mm thickness, with a RCA dissection

tear that was covered with a drug eluting stent. Conservative management was elected due to the absence of symptoms. Considerable dissection into the aortic root, aortic insufficiency, and hem pericardium are general indications for urgent surgical intervention; however, none of these conditions was observed in our patient. Additionally persistent active extravasation of blood into the false lumen on serial imaging would also prompt urgent surgery; however the follow-up CT Angiography 2 days after PCI showed no extra luminal pooled contrast and the presence of a 7mm thick intramural hematoma. Another control CT Angiography was done before discharge, which showed no significant changes. The patient remained asymptomatic and a 2 months CT control showed complete resolution of the hematoma.

This case suggests that if there are no important symptoms, the dissection is small and the imaging studies show no progression, it seems reasonable to follow a conservative strategy.

References

1. Dunning DW, Kahn JK, Hawkins ET, and O'Neill WW. Iatrogenic coronary artery dissections extending into and involving the aortic root. Catheter Cardiovasc Interv. 2000; 51: 387e93.
2. Núñez-Gil IJ, Bautista D, Cerrato E, et al. Incidence, management, immediate and long-term outcomes following iatrogenic aortic dissection during diagnostic or interventional coronary procedures. Circulation. 2015; 131: 2114–2119.
3. Baumann S, Behnes M, Sartorius B, et al. Follow-up of iatrogenic aorto-coronary "Dunning" dissections by cardiac computed tomography imaging. BMC Med Imaging. 2017; 17: 64.
4. Yip H-K, Wu CJ, Yeh KH, Hang CL, Fang CY, et al. Unusual Complication of Retrograde Dissection to the Coronary Sinus of Valsalva during Percutaneous Revascularization: A Single-Center Experience and Literature Review. Chest. 2001; 119: 493-501.
5. Tam DY, Mazine A, Cheema AN, Yanagawa B. Conservative Management of Extensive Iatrogenic Aortic Dissection. Aorta (Stamford). 2016; 4: 229-231.