Case Report

Giant Coronary Artery Aneurysm Mimicking a Mediastinal Mass: A Case Report and Review

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Giant coronary artery aneurysm is a rare disorder which remains asymptomatic in most patients. However, it appears that serious complications may develop at some point of time and will likely require surgical intervention. A patient with a huge coronary aneurysm ten centimeters in diameter successfully treated with surgical intervention was presented.

Keywords: *Coronary artery aneurysm, Giant coronary artery aneurysm*

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Aneurysm of the coronary artery is an uncommon pathology. In particular, giant aneurysms are rare. Because this abnormality is so rare, prognosis and management are not well defined[1]. Most of the patients with coronary artery aneurysm are asymptomatic[2], but some may present with symptoms of acute coronary syndrome involving angina and myocardial infarction. Acute rupture into the pericardium or a heart chamber forming a fistula can occur and the huge size may also compress the adjacent organs[3].

Case Report

A 41-year-old woman presented with chest discomfort and shortness of breath. She had no risk factors for coronary artery disease including diabetes, hypertension, dyslipidemia or smoking. There was no history or clinical features suggestive of acute inflammatory or connective tissue disorders. Physical examination was unremarkable and the initial electrocardiograms were normal. Her chest roentgenography revealed a protrusion of the right heart border (Fig. 1). Recognizing this as a mediastinal mass, computer tomography was performed. This suggested an aneurysm approximately ten centimeters in diameter with compression affecting the distal superior vena cava (SVC) and right atrium which was also demonstrated by transthoracic echocardiography (Fig. 2). Nevertheless, both investigations could not

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Fig. 1 CXR revealed a protrusion of right heart border

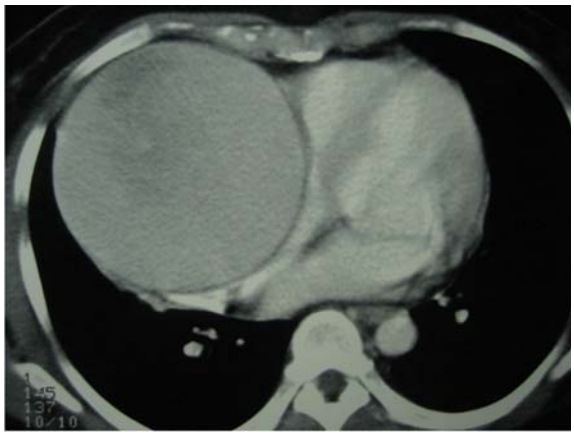

Fig. 2 CT scan and TTE revealed a vascular mass with compression affecting distal SVC and RA

demonstrate the origin of the aneurysm. Finally, cardiac catheterization revealed a huge aneurysm connecting to the right coronary orifice, but distal run off of the right coronary system could not be demonstrated due to dye dilution in the huge aneurysm (Fig. 3). However, the cardiac catheterization revealed a normal left coronary artery system.

The patient underwent successful resection of her giant right coronary artery aneurysm with a reverse saphenous vein graft interposition. This was performed under cardiopulmonary bypass, which was established via an ascending aortic cannulation and two venous cannulations at the SVC and the femoral vein. A right atrial cannulation was not performed due to the inferior displacement of the right atrium from the presence of the right coronary aneurysm ten centimeters in diameter. Obtaining cardiac arrest was performed with antegrade cold blood cardioplegia at moderate hypothermia.

The calcified wall of the aneurysm connecting to the right coronary ostium was opened longitudinally. There was no thrombus in the aneurysmal part. Healthy wall without calcification of proximal and distal right coronary artery was interposed with a reverse saphenous vein graft. Her postoperative course was uneventful and the patient was discharged from the hospital on postoperative day 7. Histological report of the resected aneurysmal wall revealed atherosclerotic changes. The patient is still doing well seven years postoperatively.

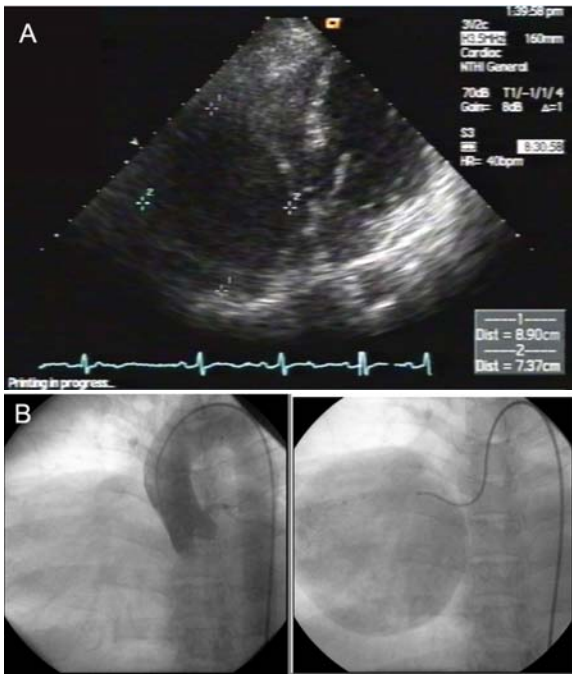

Fig. 3 A) Aortogram revealed left coronary artery and faint dye color filled in an aneurysmal sac. B) Catheter passed through right coronary ostium into the aneurysm

Discussion

Coronary artery aneurysm defined as a coronary artery dilatation exceeding the diameter of the adjacent normal segment by 1.5 times or more is rare. The incidence was 0.3-4.9% of patients undergoing coronary angiogram[4]. The term "giant coronary aneurysm" refers to an aneurysm with a diameter greater than 20 millimeters which is even less common with an incidence of 0.02 %[5].

The proximal and middle parts of the right coronary artery are the most common sites of coronary aneurysm, followed by the circumflex artery and the left anterior descending artery. However, aneurysmal change of the left main coronary artery is markedly rare[6].

The most common cause is atherosclerosis, causing approximately 50-90% of cases. However, inflammatory processes and connective tissue disorders such as Marfan syndrome and Ehlers Danlos syndrome can also induce this pathology. Kawasaki disease or syndrome is the most common cause of inflammatory origin, particularly during infancy and childhood and mostly occurs in multiple sites[3]. There are increasing recent reports of coronary artery aneurysm after drug eluting stent implantation and angioplasty, but the mechanisms which might relate to chemotherapy and immunosuppressive eluting in stents are still inconclusive[7].

Coronary angiography is the gold standard diagnostic procedure to visualize the origin, size and drainage, or fistula connection to adjacent structures. However, the majority of cases are already suspected after CT or MRI scanning to evaluate a mass lesion. Multidetector Computed Tomography (MDCT) is another excellent diagnostic tool to identify the detail of the pathology, which sometimes may not be clearly visualized from coronary angiogram[8].

Due to scarcity of resources, the natural progression and history of this disease is unknown, so general agreement on treatment has not yet been established. Treatment options vary from conservative medical treatment with antiplatelet and anticoagulant therapy to surgical treatment involving coronary artery grafting with or without ligation of the aneurysm[9].

Recently, another alternative treatment with a PTFE covered stent to cover the aneurysmal part has been reported. Nevertheless, data is still limited[10]. Owing to a high risk of rupture with a size of ten centimeters and the pressure effect of this aneurysm, the authors considered surgical resection and interposition vein graft. This technique can preserve a normal coronary flow pattern and blood supply to some small right ventricular branches close to the ligation site, which may be compromised with the ligation technique.

Conclusion

Giant coronary aneurysm is an uncommon disease with varying clinical presentations. Imaging procedures including coronary angiogram, echocardiogram and advancing technologies with multidetector CT and MRI scanning can demonstrate a correct diagnosis. This will assist with an appropriate management plan. Surgical treatment should be considered to prevent catastrophic complications.

Potential conflicts of interest

None.

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เส้นเลือดแดงโคโรนารีโป่งพองขนาดใหญ่ที่มาด้วยก้อนในช่องอก: รายงานผู้ป่วยและทบทวนความ

ปราโมทย์ ปรปักษ์ขาม, ทวีศักดิ์ โชติวัฒนพงษ์

เส้นเลือดแดงโคโรนารีโป่งพองเป็นความผิดปกติที่พบได้น้อยซึ่งส่วนใหญ่ผู้ป่วยมักจะไม่มีอาการ แต่อย่างไรก็ตามภาวะแทรกซ้อนที่รุนแรงอาจเกิดตามมาได้ทุกขณะ และการรักษาภาวะแทรกซ้อนเหล่านี้มักต้องใช้การผ่าตัดรักษาในบทความนี้จะรายงานผู้ป่วยที่มีเส้นเลือดแดงโคโรนารีโป่งพองขนาดใหญ่ประมาณ 10 เซนติเมตรที่ได้รับการผ่าตัดรักษาอย่างปลอดภัย