



Calcific aorta and coronary artery: two cases of calcific ascending aorta and descending aorta

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Abstract

Calcific aorta is a disease of old age and is an independent risk factor for morbidity and mortality. Here, we present two patients with calcific aorta at different levels. One with a descending porcelain aorta, and modified Bentall's procedure was done. Second is a patient who is having a calcific ascending aorta and coronary artery. Coronary artery bypass grafting from left internal mammary artery to left anterior descending was done for the patient. The calcification and its morbidity had been discussed briefly.

J Geriatr Cardiol 2015; 12: 88–90. doi:10.11909/j.issn.1671-5411.2015.01.011

Keywords: Calcific aorta; Calcific coronary; Great artery

1 Introduction

Calcification aorta and coronary artery are independent risk factor for morbidity and mortality. They are also marker of the atherosclerotic burden of the individual especially the descending aorta. The calcific great vessels, on losing the elastic property place a high afterload on the heart accentuating heart failure. There are several scoring systems which help in quantification of the calcification. Management of these calcific aortas is a controversy and revascularisation of the calcific coronary carry high morbidity and mortality. Here, we present two cases where there was presence of extensive calcification of descending aorta in first case and another had calcification of ascending aorta and coronary arteries.

2 Case report

2.1 Case 1

A 49-year-old male presented in severe congestive heart failure with history of orthopnoea for last two months. Chest

X-ray showed cardiomegaly with porcelain aorta (Figure 1). Echocardiogram showed a dilated left ventricle (78 mm) with severe aortic and mitral regurgitation. There was also moderate tricuspid regurgitation and moderated pulmonary artery hypertension. CT angiogram showed extensive calcification of the descending aorta from proximal to bifurcation and also aneurysm of the ascending aorta (sinus of valsalva 58 mm, sinotubular junction 66 mm). There was no calcification of the coronary artery. Patient underwent Modified Bentall's procedure under moderate hypothermic cardiac arrest using composite graft (29[#] titling disc valve and 30 mm Dacron graft). Mitral valve was addressed with a 30[#] rigid ring and tricuspid annuloplasty done with 29[#] MC3 ring. He was elective ventilated for three days with high inotropic support and was discharged at 15th postoperative day with stable hemodynamics.

2.2 Case 2

A 62-year-old male with known diabetic and hypertensive presented with angina on exertion for the last five months. Electrocardiogram showed T inversion in I, aVL, V5 and V6. Chest X-ray showed calcification of the ascending aorta (Figure 2). Coronary angiogram showed a proximal left anterior descending (LAD) lesion of 80%, proximal circumflex lesion of 40%, and osteo-proximal 80% lesion of the right coronary. He underwent percutaneous transluminal coronary angioplasty to the right coronary and a coronary artery bypass to LAD using left internal mammary artery. He

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Received: October 2, 2014 **Revised:** November 21, 2014

Accepted: November 28, 2014 **Published online:** December 28, 2014

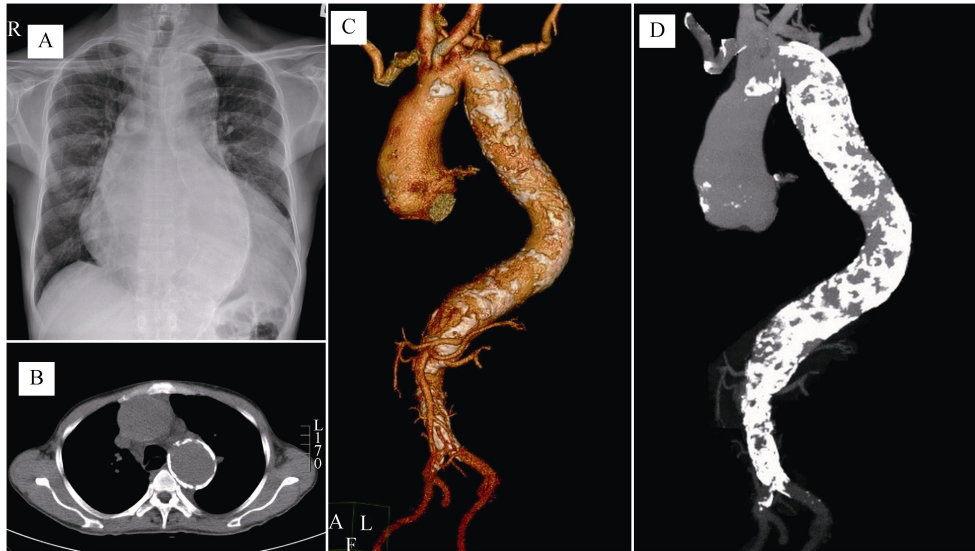


Figure 1. Image examination of case 1. (A): Chest X-ray showing cardiomegaly and calcification of the descending thoracic and abdominal aorta; (B): CT abdomen demonstrating the solar eclipse sign; (C & D): 3D CT reconstruction of the descending aorta showing extensive calcification extending from the proximal to the bifurcation. Ascending aortic aneurysm can also be noted.

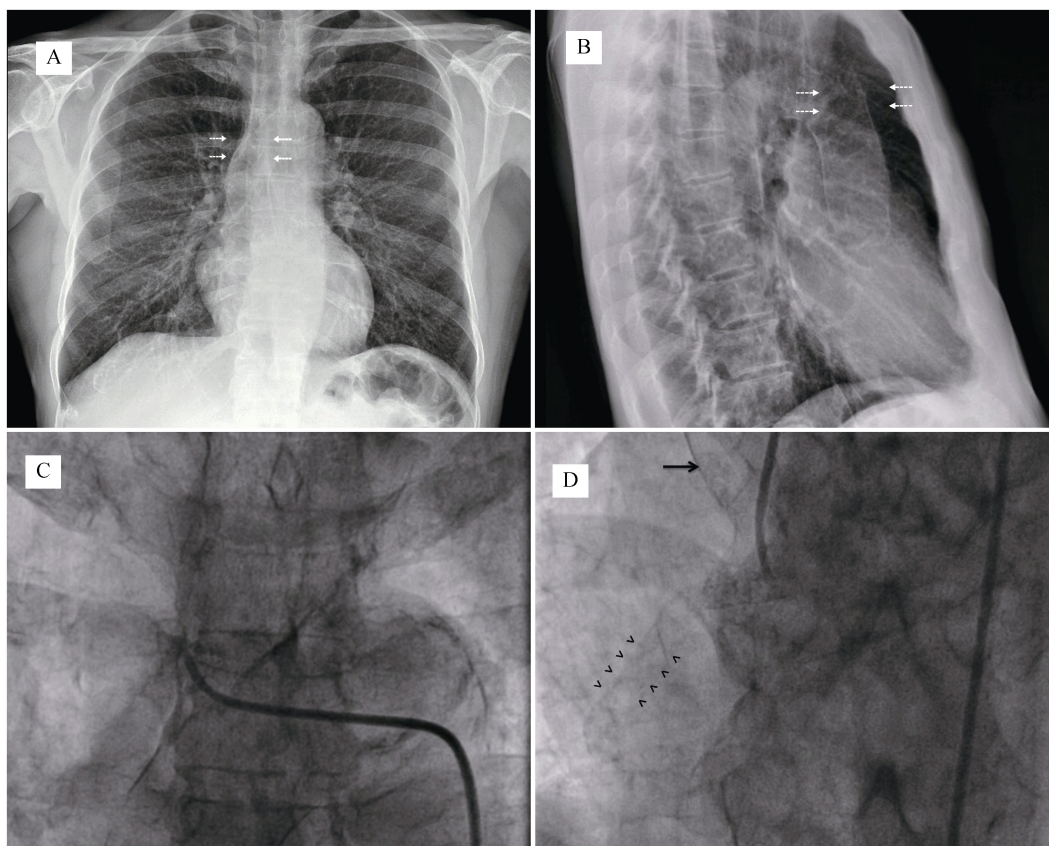


Figure 2. Image examination of case 2. (A): Chest X-ray demonstrating calcific ascending aorta and arch of aorta (white arrow); (B): lateral chest X-ray demonstrating the calcific ascending aorta (white arrow); (C & D): Angiogram with catheter in the arch of aorta demonstrating the calcific innominate artery (black arrow) and calcific coronary artery (black arrow heads).

had an uneventful postoperative recovery and was discharged on the 5th postoperative day.

3 Discussion

Calcification of the aorta is a disease process of the old age. There are numerous causes which include infection, inflammation, atherosclerosis, hypertension, hyperuricemia, etc. This calcification reduces the aortic elastance and causes severe morbidity and mortality. The severity and the extend of calcification indicate the atherosclerotic burden and is an independent predictor of cardiovascular morbidity and mortality.^[1] The Windkessel effect is lost in case of inelastic artery placing the heart at a higher work load and promoting heart failure independent of the other factor. Aortic calcification can extend from the ascending aorta to the bifurcation. Eisen, *et al.*^[2] has shown in his paper that descending aortic calcification is more dominant in all events and hence it is a better marker of burden of vascular disease.

A simple method developed by Schousboe, *et al.*^[3] helps in quantification of the abdominal aortic calcification (ACC). The AAC-8 scale assesses the total length of calcification on the anterior and posterior aorta extending from L1 to L4. To help us understand the relative risk associated with severe ACC is 2.4, which is equivalent to the relative risk of a lady with total cholesterol of 400 mg/dL. The presence of aortic calcification by plain radiograph predicts

the risk of a coronary event in future especially more in diabetic population. Calcification can be at the intimal and medial layer. It is important to identify the exact layer which makes the correlation much better. Coronary artery calcification (CAC) by itself is an independent predictor of cardiovascular events. Aortic calcification has a strong association with age as compared to the CAC. The relationship of CAC and plaque rupture is unknown. But the amount of calcification correlates with the atherosclerosis. The presence of severe CAC is a independent predictor of major adverse cardiac event at the end of one year after coronary artery bypass grafting.^[4]

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