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Case Report

Iatrogenic Rupture of The Descending Aorta After Coronary Angiography : A Case Report

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Abstract:

Rupture of descending aorta is a rare fatal complication after coronary angiography, we report a case of 65 years-old man who presented acute coronary syndrome without ST segment elevation and underwent coronary angiography in a private hospital, he was admitted in cardiology departement twelve days after coronary angiography for strong suspision of aortic dissection, Computed Tomography angiography of the chest performed immediately revealed descending aorta dissection and its rupture in the left lung; surgically recused, the patient died few days later.

Key words: Descending aorta rupture, Desending aorta dissection, Coronary angiography risks.

Introduction

Iatrogenic rupture of descending aorta is very rare fatal complication, due to angiography catheter manipulation, this risk is most likely in patient with descending aorta aneurysm and/ or dissection, the clinical manifestations were atypical but the diagnosis is suspected after coronary angiography and confirmed by Computed Tomography (CT) angiography, this complication carries inevitable death in absence of surgical intervention.

Case report

A 65 years-old man, with a past history of high blood pressure, admitted in cardiology department in the February 3rd 2022, for management of acute coronary syndrome without ST segment elevation, the surface ECG showed sinus rhythm, left atrial enlargement and left ventricular hypertrophy with strain pattern (Figure 1), high-sensitive troponinI level (hs-troponin I) about 524 ng/l; his blood pressure was high and symmetrical in both arms, the systolic blood pressure was about180 and the diastolic about 80 mmHg, the echocardiography doppler showed normal left venticular ejection fraction (63 %), hypertrophic interventricular septum (18 mm), and with normal diameter of ascending aorta the patient had received conventional treatment such as anticoagulant, dual antiplatelet therapy and beta blockers, with good evolution (resolution of chest pain and decrease in troponin level).

During hospitalization, the chest X ray showed mediastinal widening (Figure2), the CT angiography was recommended immediately but unfortunately not performed, because of technical problems.

Before he was discharged from hospital in the February 11th 2022, CT angiography of chest and coronary angiography were recommended by his attending physician.

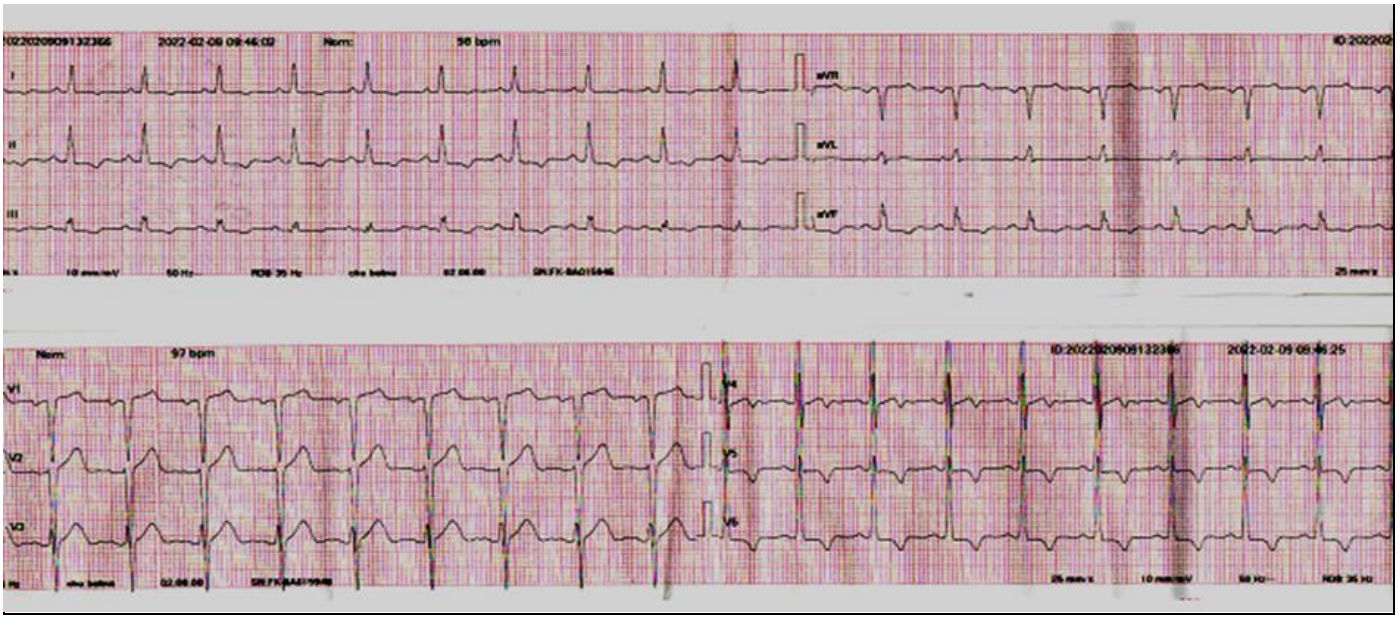

Figure 1: Surface ECG showed sinus rhythm with left atrial enlargement and systolic left ventricular hypertrophy with strain pattern

Figure 2 : Chest X-ray showed mediastinal widening

The CT angiography was not performed, but the coronary angiography was performed in private hospital on February 16th 2022, this exam revealed severe stenosis of Left anterior descending artery; the patient had reported severe chest pain with syncope, during the procedure, but despite this incident the patient was discharged.

At home the patient had experienced fever and dyspnea which considered as COVID infection by a general practitioner, but given the deteriration of his general condition, the patient presented to public hospital in the February 28th 2022 (twelve days after procédure), and was admitted immediately because of strong suspcion of aortic dissection.

The patient was pale and asthenic, with fever and dyspnea; physical examination showed low blood pressure 100 /60 mmHg, and obvious dullness to percussion of the left lung, the chest X-ray showed a massive left pleural effusion (Figure 3).

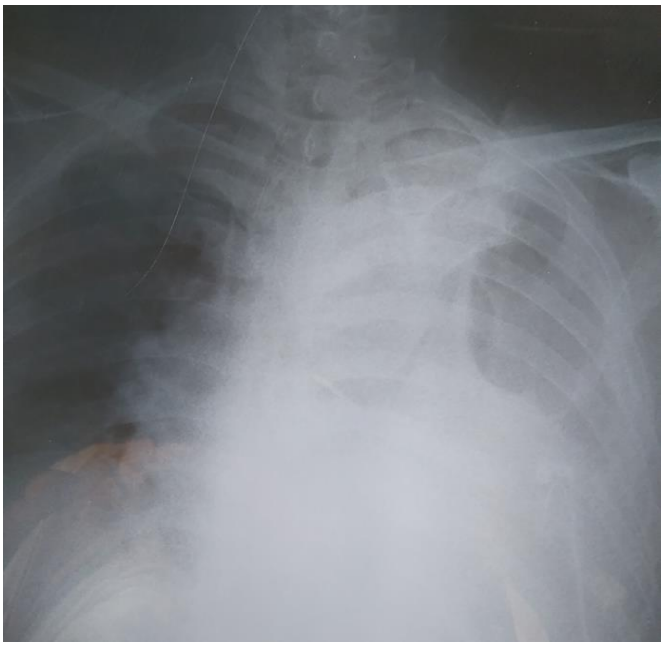

Figure 3 : the chest X-ray showed a massive left pleural effusion

He had inflammatory test abnormalities (elevated erythrocytes sedimentation rate: 81, C reactive protein: 173 mg/l), high level of blood urea : 1.15 g/l, high serum Potassium: 5.7 mmol/l, Hyperleukocytosis : 36.3 10^3 /mm^3, low Hemoglobin level : 8.4 g/dl, low Hematocrit : 23.6 %.

CT angiography performed in private medical imaging center, confirmed the diagnosis and showed descending aorta dissection extending from the aortic arch to the right external iliac artery with rupture in the left lung (Figure 4) and (Figure 5).

Anticoagulants and dual antiplatelet therapy have been withdrawn, and sympathomemetic drugs were instaured, with repeated blood transfusions, but the patient was surgically recused, and died five days later.

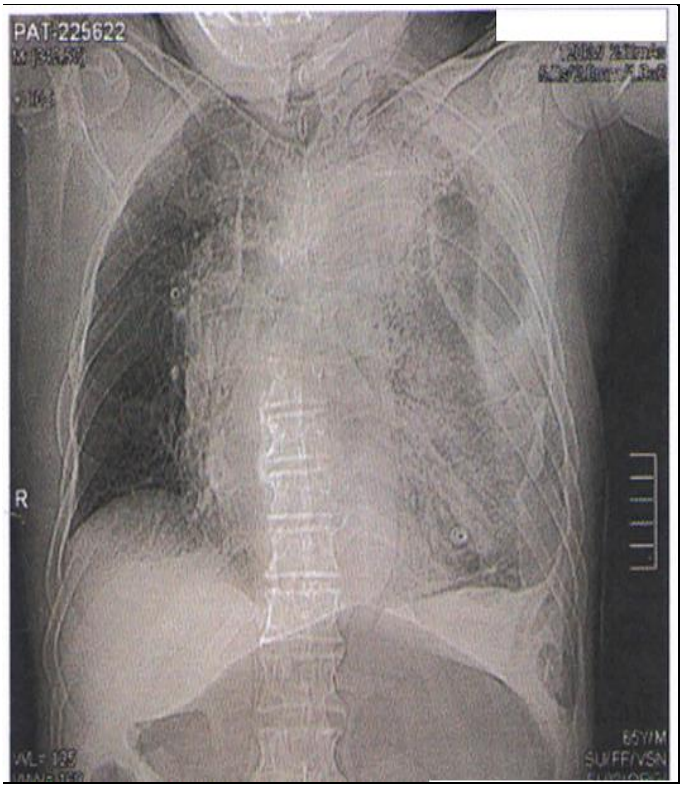

Figure 4: the CT angiography showed a massive left Hemopneumothorax

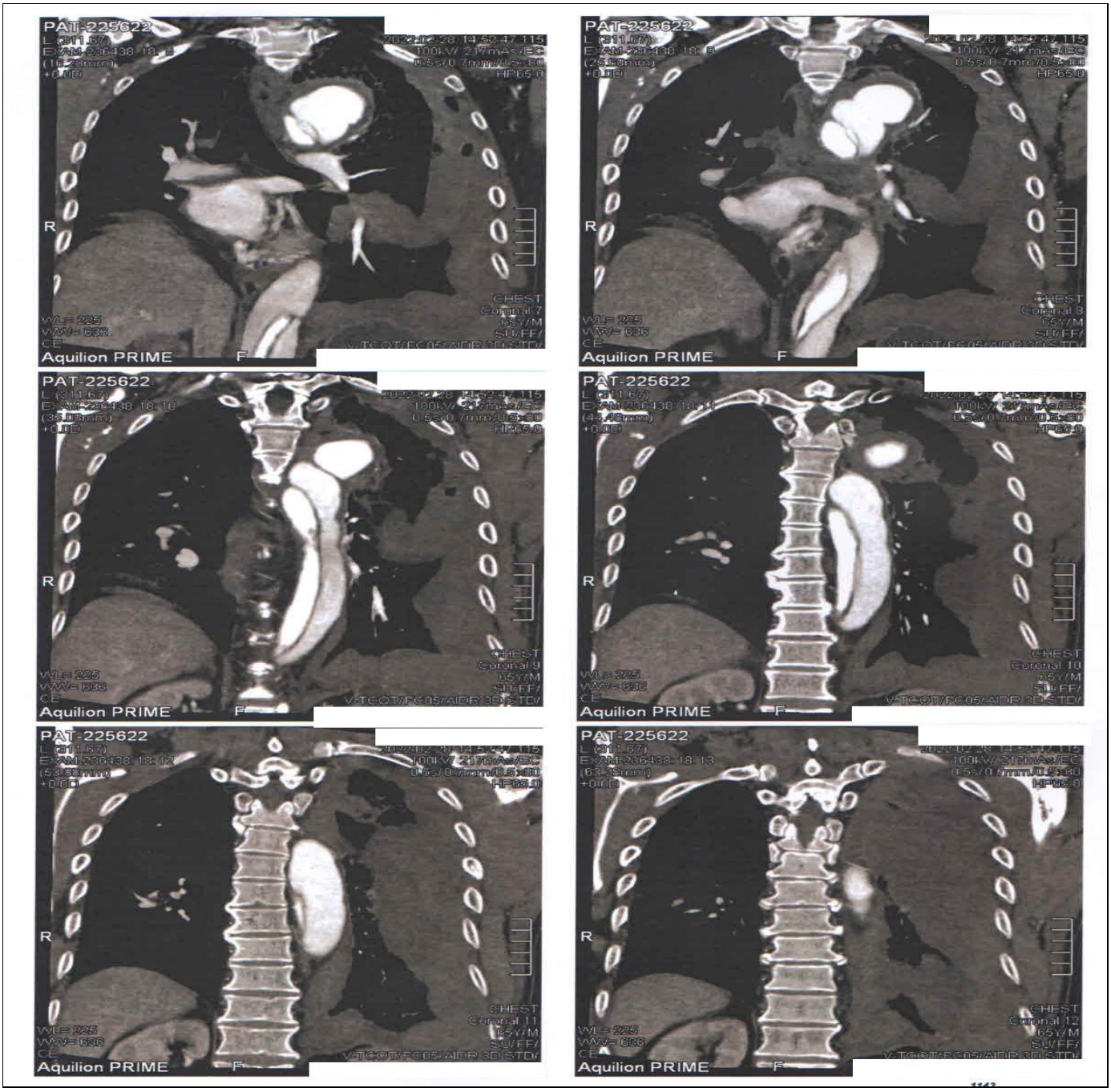

Figure 5: CT angiography showed descending aorta dissection extending from the aortic arch to the right external iliac artery

Discussion

Descending aorta rupture is an extremely rare but fatal complication after coronary angiography or angioplasty, several cases of dissection with or without rupture were reported in literature, its incidence varies between 0.02% to 0.07% [1], rupture of descending aorta was also reported during trans catheter aortic valve implantation. [2]

Wyss and al reported in 2008, one case of aortic dissection during percutaneous coronary intervention without involvement of the coronary arteries. [3]

Other cases of iatrogenic acute dissection of descending aorta were reported during Percutaneous Coronary Intervention [4][5]

One case of perforation was reported, in 2011 by Hui-Han Lin and al, it was about aortic perforation at the sinus of Valsava during coronary angiography being carried out in preparation for percutaneous coronary intervention. [6]

Dissection with rupture of descending aorta was also reported during coronary angiography in one patient with transthoracic aortic valve replacement. [7]

Iatrogenic aortic dissection is related to catheter manipulation and trauma of an already fragile aortic wall; rupture may be related to catheter penetration in the false lumen, and perforation of the aortic wall.

Some factors favor the occurrence of dissection or rupture of aorta during coronary angiography or angioplasty, such as older age, extensive atherosclerosis, high blood pressure, presence of aorta aneurysm, also patients undergoing transthoracic aortic valve replacement etc. [7]

Our patient had probably aneurysm or dissection of descending

aorta, but not investigated before coronary angiography, so it could be aneurysm complicated by dissection and rupture, or chronic limited aortic dissection which was aggravated by catheter manipulation, with extension of dissection and rupture. CT angiography showed extensive dissection of descending aorta with contained rupture in the left lung, which allowed a temporary hemodynamic stability of the patient and his survival for a few days.

During hospitalization, the patient had presented hemodynamic instability despite sympathomimetic drugs and blood transfusions, he also experienced acute kidney injury; unfortunately recused surgically, he died five days later.

Conclusion

Iatrogenic rupture of descending aorta is extremely rare; to our knowledge, contained rupture of descending aorta in the left lung with extensive aortic dissection was reported for the first time after coronary angiography, preexistence of aneurysm or chronic dissection may promote this fatal complication, mediastinal widening should be investigated before coronary angiography or angioplasty, and catheters should be manipulated carefully during procedure.

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