Pitfalls in CT diagnosis of thoracic aortic dissection


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Introduction

Aortic dissection is a condition in which there is a tear of the intima and separation of the media layer of the sick aortic wall due to the degeneration of the latter. Etiology factors include: high blood pressure, atherosclerosis, relatives with a history of aortic dissection, Marfan syndrome, among others. Its clinical manifestation may include: thoracic pain, syncope, stroke, etc. It is suspected in chest X-ray and confirmed by CT scan, chest MRI and echocardiogram\(^1, 3, 8, 12\). The most frequent finding in aortic dissections is an aortic wall intima flap separating the true lumen from the false lumen\(^10\).

Case Report

54-year-old male patient is admitted through ER to the General Surgery Department with a diagnosis of choledochal lithiasis syndrome associated to acute pancreatitis. Chest X-ray was performed on which mediastinal widening is observed (Photograph 1). Abdomen and thorax CT scan is performed, and an image is observed compatible with ascending aorta flap (Photographs 2, 3, 4), with a probable diagnosis of Stanford Type A dissection (Photograph 5, Diagram 1). The patient did not make reference to thoracic pain or other concomitant symptoms. Personal background: high blood pressure, seminoma with retroperitoneal metastasis (he had received surgical treatment 10 years before, associated to radiation therapy), and morbid obesity. The Cardiovascular Surgery Department assessment was required and they asked for a transesophageal echocardiography, which showed no evidence of pathologic changes, and thus aortic dissection was dismissed.
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In order to avoid this confusion with the brachiocephalic trunk, the suggestion is to inject endovenous contrast into the right arm. Familiarity with these common pitfalls, coupled with a knowledge of normal thoracic anatomy (Photographs 6, 7, 8, 9), can help to avoid interpretive errors in the diagnosis of aortic dissection in almost all cases.

References

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Photographs 2, 3 and 4: Patient’s thorax with endovenous contrast. An image is observed compatible with ascending aorta flap. Photograph 5: CT showing the brachiocephalic trunk and the superior vena cava, projecting over the ascending thoracic aorta and simulating Stanford type A dissection (10).

Photograph 6: Horizontal anatomical cross-section of the chest (6). Photograph 7: CT cross-section of normal thorax (6). 1. Right auricle 2. pulmonary artery trunk; 3. aorta; 4. superior vena cava; 5. pericardial space; 6. left coronary artery; 7. left auricle; 8. right superior pulmonary vein; 9. left atrium; 10. pleuropericardial space; 11. right descending pulmonary artery; 13. right ventricle; 14. left ventricle.

Photograph 8: Horizontal anatomical cross-section of the chest (6). Photograph 9: CT cross-section of normal thorax (6). 1. Right auricle 2. pulmonary artery trunk; 3. aorta; 4. superior vena cava; 5. pericardial space; 6. left coronary artery; 7. left auricle; 8. right superior pulmonary vein; 9. left atrium; 10. pleuropericardial space; 11. right descending pulmonary artery; 13. right ventricle; 14. left ventricle.