Case Report

Post-traumatic descending aorta intramural haematoma fortuitously witnessed during a magnetic resonance examination of the spine

Filippo Cademartiri[1], Bianca Valentina Salamousas[2], Giacomo Luccichenti[3], Massimo Pedrazzini[4]

[1]Department of Radiology, Erasmus Medical Center, Rotterdam, The Netherlands; [2]Department of Anaesthesiology; San Raffaele Hospital, Milan, Italy; [3]Fondazione Biomedica Europea, ONLUS, Roma, Italy; [4]Servizio di Radiologia, Ospedale di Vaio, Fidenza (Parma), Italy

Abstract. Most patients with traumatic aortic lesions of the thoracic aorta die at the accident site but 15% arrive at the hospital with vital signs. Digital subtraction angiography is considered the gold standard for the diagnosis of traumatic lesions of the thoracic aorta. Other non-invasive diagnostic techniques, such magnetic resonance and spiral computed tomography, proved to be reliable alternatives. Sometimes the diagnosis can be delayed by the relative lack of significant symptoms as well as the presence of unusual clinical findings. A case of post-traumatic intramural haematoma of the descending aorta revealed during a magnetic resonance of the spine is described. The final diagnosis was obtained with spiral computed tomography.

Key words: Spiral computed tomography; magnetic resonance; intramural aortic haematoma; incidental finding

Introduction

Although most patients with traumatic aortic lesions of the thoracic aorta (TAL) die at the accident site (1], 13-15% arrive at the hospital with vital signs (2). Deaths at a later stage are usually due to associated damage or multiple organ failure (3).

The TALs are one of the most dreaded complications of blunt chest trauma; therefore, in patients with high-risk deceleration injuries, radiographic assessment is crucial.

Imaging methods should detect even subtle aortic wall disruption and should provide a mechanism for communicating the findings to the surgical team.

Non-invasive, cross-sectional imaging have proven efficacy in the diagnosis of aortic diseases and have largely replaced aortography (4).

Both spiral computed tomography (SCT) and magnetic resonance imaging (MRI) provide aortogram-like reconstruction of the original datasets, and in addition to assessing the aortic lumen, permit detailed evaluation of the aortic wall (5).

In the case presented an MRI of the spine revealed an intramural haematoma. The final diagnosis was obtained with SCT.

Case report

The patient C.G., a 66-year-old male, had a vehicle accident with deceleration dynamic and a mild blunt trauma of the thorax. Clinical inspection, chest X-ray and hemodynamic status were negative. The patient developed in the following hours neurological

and motor deficits in the lower extremities, median lumbar pain, no modifications in blood pressure. An MRI of the spine was performed. The MRI scan was negative, but an intramural haematoma of the descending aorta was suspected (Fig. 1).

The patient underwent a SCT scan with contrast media which confirmed a posterior and left lateral asymmetric thickening of the aortic wall (Fig. 2). No intimal flaps were visualized.

The patient was treated with medical therapy. The clinical conditions worsened and a further SCT scan was performed five hours later prior to admission to the operating room.

This scan revealed a marked progression of the intramural haematoma but still no intimal flap was detected.

The patient was immediately transferred to the operating room and died during surgery.

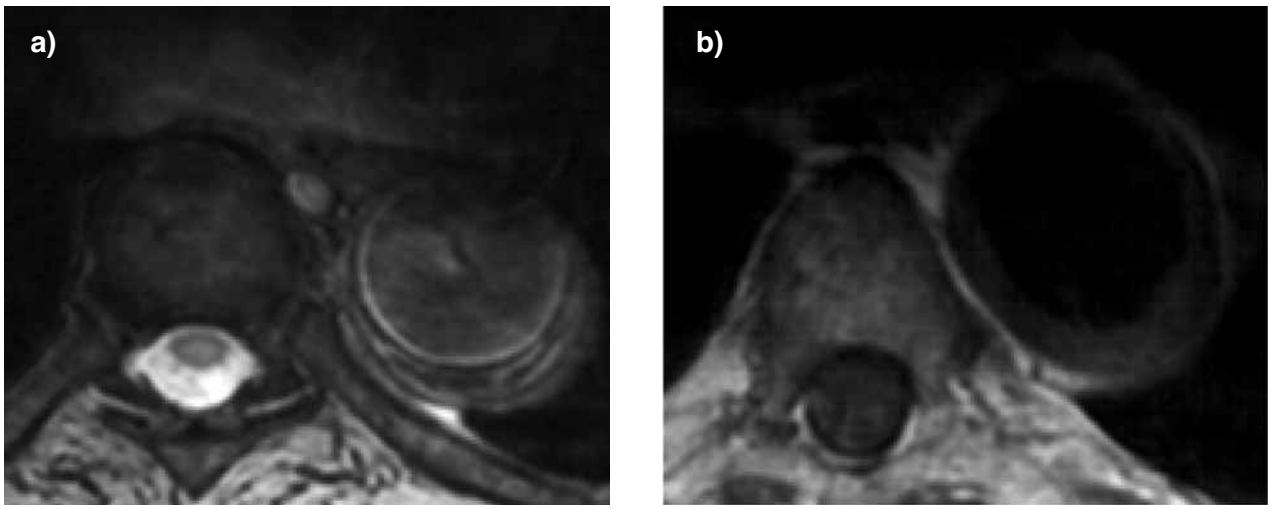

Figure 1. MRI of the thoracic spine: transverse T2-weighted (a) and T1-weighted (b) images. The wall of the aorta is thickened, particularly in its posterior contour, with an inhomogeneous signal intensity in the T2w image and increased signal intensity in the T1w image

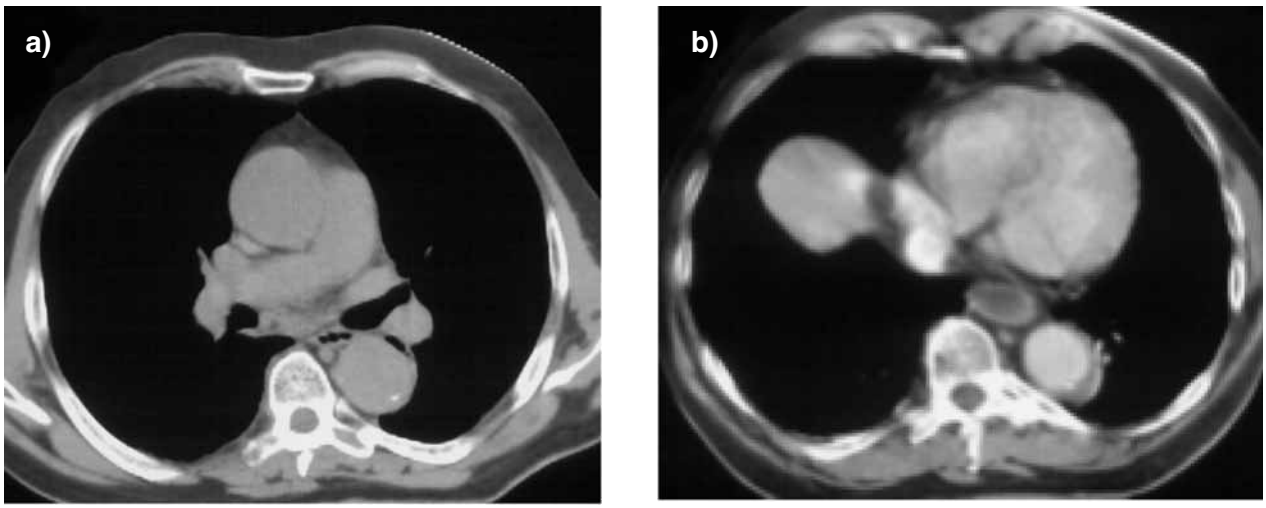

Figure 1. Spiral CT of the thoracic aorta: unenhanced (a) and enhanced (b) scan. An axial CT scan performed at the level of descending aorta within one hour after MRI scan (see Figure 1), confirms the thickening of the aortic wall pre (a) and post (b) intravenous contrast media administration

Discussion

The incidence of patients with blunt thoracic trauma who reach the operating room in time for surgical repair of the aortic damage is 4.8%. Approximately 85-90% of patients with TAL die of blood loss at the site of the accident or during their transfer to hospital. The remaining 10-15% survive long enough to reach the hospital because the aortic lesion is small or because the damage is contained within an intact adventitia.

The diagnostic procedure requires thorough knowledge of trauma dynamics. The causes of TAL are, in decreasing order: vehicle collisions (with frontal or lateral impact), motorcycle collisions, pedestrians hit by motor vehicles or fallen from great height. Being projected from a vehicle on impact is the most frequent cited cause of TAL. The risk of TAL increases considerably when restraining devices such as seat belts or air bags are not used.

From the physio-pathological standpoint, the mechanisms more frequently proposed as determining TAL are:

1. Sudden decelerations that "tear" the vessel as it passes between the aortic arch, where it is relatively mobile, and the descending aorta which, on the contrary, is fixed to the posterior structures (6).
2. The hypothesis of the "aortic pinch", in which the aortic isthmus is pinched between the spine and the bones of the anterior thoracic wall (the sternum) during the thoracic compression determined by the sudden deceleration (7).

In the present case the diagnosis was delayed by the patient's deceptively good clinical conditions. The parameter that might have suggested the possibility of an aortic lesion was trauma dynamic.

The literature describes a case in which the diagnosis was suspected during an MR scan performed for other reasons (8). The difference is that the aetiology was atherosclerotic (and therefore spontaneous) and not traumatic, and that it developed into a classic communicant dissection whereas in our case it remained an intramural haematoma (8).

Another difference between our case and the others cited in the literature is that the intramural haematoma is generally located in the ascending aorta while in our case an intramural haematoma developed in the ascending aorta only in a later phase.

In conclusion, intramural haematoma can be considered a life-threatening lesion that requires immediate treatment. Timing is often a life-saving factor in this clinical context and SCT can play a major in the diagnostic algorithm.

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Received: 3 October 2003
Accepted in modified version: 27 October 2004
Correspondence: Filippo Cademartiri, MD
Viale Rustici, 2
43100 - Parma
Tel +39 0521 961833
E-mail: filippocademartiri@hotmail.com