

Clinical emergency of acute aortic dissection

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Abstract

In this work, the Authors report a particular case of extensive Type A thoraco-abdominal aortic dissection. This pathology, even in the presence of a completely silent cardiological history, can occur suddenly and dramatically, affecting high mortality. Aortic dissection usually has an acute onset that clinically can range from chest pain to cardiac shock. Type A dissection can involve the ascending thoracic aorta and the aortic arch or can extend to the entire aorta and, due to the high risk of rupture, this pathology is an indication for life-saving cardiac surgery in emergency. Therefore, timely diagnosis and the subsequent dedicated therapeutic process of life-saving cardiac surgery allow to improve the prognosis of these patients by reducing their morbidity and mortality.

Keywords

aortic dissection Type A.

Background

Acute aortic dissection is the most frequent pathology of all aortic pathologies and is burdened by high perioperative mortality. Type A dissection involves the ascending thoracic aorta and the aortic arch and can be limited to them, but more often it can extend to the entire aorta. This pathology often occurs suddenly and dramatically, in fact affecting the high mortality.

As in our case reported, during the care of a patient with acute onset of chest pain and signs of cardiocirculatory shock, the initial clinical evaluation and the echocardiogram performed in the emergency room allows you to quickly orient the diagnosis towards this type of pathology so that, with intensive care for hemodynamic compensation, by activating of the thoraco-abdominal staging AngioCT, the subsequent phases of treatment of the critically ill can be planned in the shortest possible time.

Due to the high risk of rupture, and the consequent very high mortality, this pathology is an indication for life-saving cardiac surgery in emergency [1].

Clinical Case

Patient D.U., a 53-year-old man, with a positive history of arterial hypertension on drug therapy and, 10 years earlier, a previous cerebral aneurysmectomy due an aneurysm of the right sylvian artery. The patient comes to our emergency unit for sudden and short-lasting chest pain followed by presyncope with marked bradycardia and hypotension. Cardiac ultrasound performed in the emergency room showed dilation of the aortic bulb and ascending aorta, with a double track visible up to the aortic arch, together with severe aortic valve insufficiency (Figure 1,2). The subsequent thoraco-abdominal AngioTac showed the presence of Type A aortic dissection extended from the aortic root up to the left common iliac artery (Figures 3,4,5), the dissection extends cranially along the epiaortic vessels dissecting the trunk right brachycephalic. Complete blood tests were normal except for the D-dimer value above 20 mcg/ml. The ECG demonstrated sinus bradycardia with ventricular repolarization within the limits. Rapid antigenic Ag-RDTs and molecular SARS CoV - 2 tests were negative. On the basis of the tomographic data, the patient was subsequently transferred by competence to the specialist cardiac surgery unit.

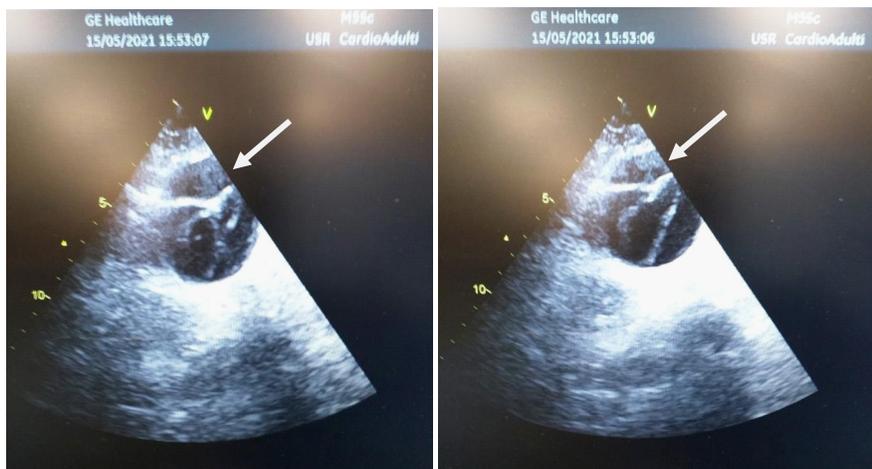


Figure 1&2: Echocardiography: aortic bulb dilation - Ascending aorta with double track appearance.



Figure 3: Thoraco-abdominal AngioTac: dissection from the aortic root to the left common iliac artery.

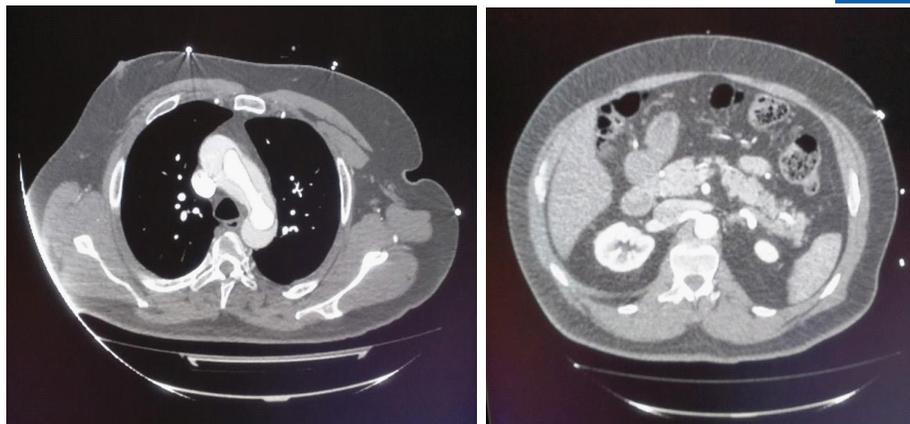


Figure 3&4: Thoraco-abdominal AngioCT scan: 2 significant images of thoracic and abdominal dissection

Discussion

As can be seen from the international literature, acute aortic dissection is the most frequent pathology among aortic pathologies and is burdened by a high perioperative mortality, with mortality rates of 1-2% per hour after the onset of symptoms in untreated patients. The risk of death depends on the extent of the dissection and is highest in dissections of the ascending aorta [1].

In general, dissection may involve the ascending aorta, the aortic arch, the descending and abdominal aorta, or the entire aorta, and usually occurs at a 'breach' or tear in the intimal artery wall through which the column of high pressure blood makes its way, causing the detachment of the layers of the aortic vessel wall, with the formation of two lumens, true and false, communicating through an entrance hole and separated by an intimal flap [2].

Causes of acute aortic dissection include arteriosclerosis, arterial hypertension, aneurysms and inflammation of the aorta, acquired valvulopathies, congenital/hereditary anomalies such as collagenopathies (Marfan, Ehler-Danlos or Loeys-Dietz syndromes), inflammatory forms (Takayasu arteritis or Erythematosus Systemic Lupus), trauma (direct, penetrating wounds or severe decelerations), infectious causes (from bacterial and fungal infections), as well as pregnancy and pleasure habits (smoking or cocaine abuse) [3].

Clinically, acute aortic dissection begin with acute chest pain, such as a stab, which may be anterior or infrascapular; the pain can also be migratory and associated with very serious clinical signs such as loss of consciousness and cardiocirculatory shock [4]. In emergency, the key exams for these patients are the transthoracic echocardiogram, which allows us to evaluate above all the state of the aortic valve and the aortic root, and the thoraco-abdominal AngioCT for the purpose of adequate staging [5].

Regarding the surgical and anatomical subdivision, aortic dissection is most commonly classified according to Stanford by Type A proximal and Type B distal. Type A proximal dissection involves the ascending thoracic aorta and the aortic arch and can be limited to them, but more often it can extend to the entire aorta; due to the high risk of rupture, and the consequent very high mortality, this pathology is an indication for life-saving cardiac open surgery in emergency. Type B distal dissection, on the other hand, originates from the descending thoracic aorta and, in this case, if there is no risk of organ malperfusion, suffering of the abdominal viscera or spinal cord, or imminent risk of rupture, it is treated with medical

therapy, where pain and systemic pressure can be controlled with drugs; if endovascular treatment is indicated, this is made possible thanks to the important cooperation with the interventional radiologists in the structured operating room, including angiography [6]. Finally, surgical and perioperative procedures will vary depending on the presentation and aortic pathology [7].

Conclusion

Our case illustrates a case of Type A acute aortic dissection involving the entire length of the aorta. No other pathology such as acute aorta dissection, even in the presence of a completely silent cardiological history, can occur suddenly and dramatically with a wide spectrum of vascular lesions.

During the care of a patient with acute onset of chest pain and signs of cardiocirculatory shock, the initial clinical evaluation and the echocardiogram performed in the emergency room allow to orient towards a diagnosis of aortic dissection, in order to activate in the shortest possible time the subsequent execution of thoraco-abdominal AngioCT. In fact, timely diagnosis with next dedicated therapeutic process for a life-saving intent, allow to improve the prognosis of these patients and reduce morbidity and mortality.

Declarations

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