eComment: Multidetector computed tomography scanning is still the gold standard for diagnosis of acute aortic syndromes

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We read with great interest the case reported by Lebreton et al. [1] who described a false-positive result of a computed tomography suggesting an intramural aortic hematoma which led to unnecessary surgery. Computed tomography scanning has been used for more than two decades to identify acute aortic diseases. Electrocardiogram (EKG)–gated techniques have made it possible to generate motion-free images of the aortic root and coronary arteries, similar to coronary computed tomography angiography imaging.

Reports of newer-generation multidetector helical computed tomography scanners show sensitivities of up to 100% and specificities of 98–99% [2]. Data from the International Registry of Acute Aortic Dissection (IRAD) show that for patients with acute aortic syndromes, computed tomography is the most used diagnostic modality (61% of patients) and transthoracic echocardiography and/or transesophageal echocardiography is used first in 33% of patients [3]. Increased risk for complications or mortality in patients with intramural hematoma involving the ascending aorta when the ascending aortic diameter is >4.8 cm or intramural aortic hematoma thickness is >11 mm has been described [4]. The guidelines of the Brazilian Society of Cardiovascular Surgery for treatment of aortic diseases recommend computed tomography as the first diagnostic method in acute aortic syndromes or, if not available immediately, transesophageal echocardiography as a second option [5].

Although, the impact of one false-positive result could be important in a specific patient, we can rely on computed tomography for the diagnosis of acute aortic syndromes and the treatment should not be postponed once the diagnosis is confirmed.

References


eComment: Acute aortic syndrome: have we always got a precise diagnosis?

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It was with great interest that we read your case report [1], which reminds us that the specificity of many of the usual imaging diagnostic tools used in case of acute aortic syndrome is so far not 100% accurate. In reality, the usual computed tomographic angiography (CTA) or transesophageal echocardiography (TEE) in some ‘falsely-positive’ findings could and have lead both, patients of yours and cases of ours to the operating room for a median sternotomy [1], or a thoracoabdominal aorta.

A series of benign conditions like aortitis, endoluminal thrombus, soft (without calcification) atheromatous plaque [3], pericardial recess [1], remnant of a non-patent ductus arteriosus [2] and previous surgery of the aorta, could misleadingly be diagnosed as acute aortic syndrome.

The diagnostic tool with the specificity closest to 100% seems to be the multi-detector computed tomography (MDCT), particularly the 16-, 32- and 64-section MDCT [3, 4]. Its presence in tertiary hospitals with its excellent resolution offers a precise diagnosis in minimum time [4]. MDCT also provides information about the coronary arteries of the patient who might be subjected to surgery to deal with the acute aortic syndrome. If you do not have a MDCT (as in our case) you should repeat the TEE in the intensive care unit before transferring the patient to the operating room. If the TEE gives you false-positive results, as we experienced [2], (considering that TEE is operator-dependent), after the sternotomy one has to exclude totally the presence of intramural hematoma (IMH). IMH may be located in the posterior wall of the aorta, in an area which is difficult to see after the pericardial opening. For this reason, we have to perform an aortotomy and inspect the aorta and the suspicious area from its internal surface.

After sternotomy and the opening of the pericardium a very useful diagnostic tool may be the epiaortic ultrasound of the thoracic aorta that may resolve some of our doubts in cases of rare conditions. According to the international bibliography, such an examination can influence the decision-making and the type of the intervention in 41% of the cases [5]. It can provide excellent information about the aortic diameter, the presence of atherosclerotic lesions of the anterior and posterior aortic wall. It can also provide information about the quality of the aortic wall. It does not require a specific probe. The same probe of the TEE before its entrance into the esophagus for the intraoperative examination can be used. The cardiac surgeon with the probe of the TEE coated by a sterile drape should perform the epiaortic ultrasound of the ascending aorta and aortic arch. Then the anesthetist can proceed with the routine TEE.

References