Cardiovascular imaging: Increasingly efficient

Jean-Paul Beregi

Hôpital Caremeau, radiologie et imagerie médicale, CHU de Nîmes, 30029 Nîmes cedex 9, France

Available online: 24 June 2011

Imaging of the heart and the great vessels changed rapidly these last 20 years. Arteriogram which was the technique of reference is now with no interest in our current practice whereas CT angiogram (CTA) and MR angiogram (MRA) appear to play a key role with echocardiography. Because of the rapid technical evolution of both technologies (CT and MR), some indications were debated in terms of detection, diagnosis, planning before intervention, follow-up. Sometimes they can be competitive but most of the time they are complementary. In this journal, you will find the expertise of the best team in their field who describe the place of the imaging and their role for the management of the different pathologies.

The first paper is dedicated to CoroCT scan and the indication in your practice [1]. CoroCT scan does not replace coronaryography today, if we analysed the recent literature. Because of the lack of spatial resolution, the presence of false positive or false negative results and the technical compromise with temporal resolution, this exam should be integrated in a multidisciplinary approach. This could be seen as a failure for some physicians. However, coroCT scan is a very specific exam to screen patients for possible coronary disease. This exam should be used in your current practice to detect patients with intermediate cardiovascular risk factors, because of the excellent negative predictive value. Of course, there are a lot of other indications that you will discover in the excellent chapter of Salah D. Qanadli.

With cardiac MR and ischemic cardiopathies chapter, J. Wright and J. Bogaert cover the indications of this technique [2]. You will be surprised about the high number of indication where cardiac MR can be with interest. Cardiac MR is the only exam that shows clearly the myocardium infarct with late enhancement sequences. Linear high intensity of the signal is very sensitive and specific of the infarct. Technique of perfusion at rest or under stress is very sensitive in the detection of severe coronary stenosis. Compared to scintigraphy, spatial resolution of cardiac MR is much better with higher sensitivity and no irradiation. With the advantages to evaluate the morphology of the heart and the infarct, the global and regional function, perfusion and viability, cardiac MR in ischemic cardiopathies should be considered as a challenger of nuclear medicine, if available for the everyday practice.

Cardiac failure will be the most popular cardiopathy due elderly population (with coronary disease or not). Hypertrophy of the left ventricle is also relatively frequent and is due to several pathologies (genetic, sport, amylosis, tumor...). These diseases are well studied by cardiac MR and Silveira et al. clearly shows multiple examples [3]. Indications of cardiac MR in order to evaluate the origin of the hypertrophy or the cause of the cardiac dilatation with low ejection fraction are now well assessed. Cardiac MR should be performed relatively systematically in...
these indications. Cardiac MR is the gold standard exam to evaluate the myocardium (mass, morphology, function, perfusion, viability) and their pathologies. Aneurysm, aortic dissection, intramural hematoma, penetrating ulcer are well studied by MRA and CTA. Arteriogram is almost never performed, only before endovascular treatment (before and after thoracic stentgraft implantation for example). With the improvement of the spatial and temporal resolution, 3D-analysis of the whole aorta is now feasible. This global approach was helpful in better understanding aortic dissection, for example, in order to detect the malperfusion syndrome. New algorithms of treatment are now proposed in the management of the patients. Jos Van den Berg illustrated these changes with his knowledge in endovascular treatment and the impact of CTA and MRA in the decision of treatment and in the follow-up [4].

In the last chapter, Gilles Soulez et al. report the benefit of MRA and CTA in the management of peripheral disease [5]. Arteriogram is now reserved for endovascular intervention, before the angioplasty and after to control the results. CTA and MRA are really indicated to assess the morphological anatomy of the lesions. They do not replace duplex ultrasound which gives with clinical evaluation the severity of the lesion. They are indicated before an intervention or to follow patients. The choice between the two techniques is challenging. However, often availability of the machine and preference of the team are relevant for the management of the patient. We should never forget the advantages of the CT scan which are spatial resolution and calcification visualisation which is not feasible in MR. In contrario, no irradiation and no iodine contrast media are needed for MRA.

Disclosure of interest: the author declare that he has no conflicts of interest concerning this article.

References


