Myokardial tissue typing: honestly, why do we need it. MRI and CT and outcome data

Kurzfassung: Cardiac MRI is a well-established imaging method with ability to provide tissue characterization. With the development of the late gadolinium enhancement (LGE) technique, the identification of the enhancement patterns and distribution of fibrosis became possible. The elaboration of T2-weighted techniques enabled the detection of myocardial edema and inflammation. Recently, T1 mapping and T2 mapping techniques opened up new horizons to explore tissue characters in more quantitative ways. Like LGE imaging of cardiac MRI, late post-contrast CT can be used to image myocardial infarction. Introduction of dual-energy CT has demonstrated the ability to evaluate extracellular volume (ECV) fraction as well as myocardial ischemia and infarction.

CT coronaries combined with Perfusion: Does it add value to patients care and outcome

Kurzfassung: Cardiac computed tomography angiography (CCTA) provides morphological information concerning coronary artery stenosis with high sensitivity and negative predictive value. However, the degree of coronary stenosis assessed by CCTA remains a modest predictor of functional myocardial ischemia. Measurements of myocardial blood flow (MBF) and coronary flow reserve (CFR) have been reported to be superior for evaluating the physiological significance of coronary regions. 15O–H2O PET is the gold standard for quantitative MBF and CFR assessment, since it employs a freely diffusible tracer with 100% extraction fraction even at high blood flow. However, its clinical use is limited since morphological coronary artery imaging is not provided. CTP combined with CCTA shows a promise for the accurate detection of obstructive CAD. CTP/CCTA provides self-registered datasets permitting direct correlation of stenosis with downstream perfusion defects. We established a method for the relatively low-dose dynamic 320-row MDCT (Aquilion ONE ViSION, TOSHIBA)-derived quantitative MBF and CFR and validated their diagnostic values for detecting significant CAD in comparison with 15O–H2O PET.

Per-patient and per-vessel CFR, and hyperemic MBFCT had moderate diagnostic values in detecting or excluding patients with significant CAD in the clinical setting. This presentation will cover especially stress/rest dynamic CTP/CCTA protocol and its clinical usefulness for quantification of MBF and CFR and detection of ischemia.
2. Patient preparation and settings
3. How to do stress/rest dynamic CT. Stress first or Rest first?
4. How to quantify myocardial blood flow with single tissue compartment model
5. What is the clinical impact of MBF and CFR?

RöKo INT 301.3

Myokarditis and MRI: The Chinese perspective

8:40 Uhr
Referent(en): Li D

Kurzfassung: Myocarditis is defined as inflammation of the myocardium and can result from a wide range of causes. Viral etiologies are the most common infectious cause, such as Coxsackie B, ECHO, and Cytomegalovirus. The clinical symptoms include fever, myalgia, chest pain, and so on. Electrocardiography may change similar to acute coronary syndrome or heart failure. The clinical presentations are nonspecific. The gold standard for diagnosing myocarditis remains endomyocardial biopsy, which is highly invasive. Cardiovascular magnetic resonance imaging (CMR) has become the leading modality in noninvasive imaging of myocarditis. It can provide the changes of myocardial morphology, function and viability, and become a “one-stop-shop” imaging method. CMR findings are consistent with myocardial inflammation, if at least two of the following criteria are present (the Lake Louise criteria): ? Edema, signal intensity increase in T2-weighted images. ? Early enhancement in Gd-enhanced T1-weighted images. ? Late enhancement in inversion recovery-prepared Gd-enhanced T1-weighted images. The new techniques of native T1 mapping and extracellular volume fraction (ECV) can evaluate tissue characterization noninvasively, so that myocardial edema and fibrosis can be detected and measured quantitatively without administration of contrast medium. Both native T1 mapping and ECV are superior to the Lake Louise criteria for the diagnosis of myocarditis, and that native T1 mapping might be influenced by the time be- tween the onset of symptoms and CMR. Therefore, native T1 mapping might be preferentially used in patients with acute myocarditis, whereas the combination of native T1 mapping and LGE might be preferentially used in convalescent disease stages to achieve a high level of diagnostic accuracy. Although definite diagnosis of myocarditis with CMR remains challenging, CMR is a promising technique in evaluation of myocarditis.

Lernziele: 1. Lake Louise criteria
2. Appearance of myocarditis on native T1 mapping and ECV

RöKo INT 301.4

Evidence and Guidelines vs. individual patient care in Cardiovascular imaging: Two calls from either side of the cake

9:00 Uhr
Referent(en): Lotz J, Jacobshagen C

RöKo INT 301.5

Diskussion

9:20 Uhr