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Poster session, Thursday morning, 13 June

Session nº 1 — New cardiovascular techniques

01

Diagnostic value of cardiac magnetic resonance in patients presenting with chest pain, troponin elevation and unobstructed coronary arteries

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Objectives.— Among patients presenting with chest pain, troponin elevation and non obstructed coronary arteries, diagnosis is important for prognostic stratification and treatment. However, many conditions can lead to this presentation. We sought to assess the diagnostic value of cardiac magnetic resonance (CMR) in this setting.

Patients and methods.— From January 2009 to December 2012, 108 consecutive patients with chest pain, troponin elevation and unobstructed coronary arteries on coronary angiography underwent a CMR study with cine imaging, T2 weighted imaging for detection of inflammation and late gadolinium enhancement imaging for detection of infarction/fibrosis.

Results.— Mean age was 54 ± 17 years and 54 (50%) were men. Mean peak troponin I level was 5.49 ± 7.3 ng/mL (range: 0.1—40). The median interval from presentation of chest pain to CMR was 5 days. CMR lead to a formal diagnosis in 76 (70.3%) patients. The final diagnosis was acute myocarditis in 32 (29.6%) patients, acute myocardial infarction in 24 (22.2%) patients, stress cardiomyopathy in 16 (14.8%) patients, hypertrophic cardiomyopathy in two cases (1.8%) and cardiac amyloidosis in two cases (1.8%). In 25 (23.1%) patients, the CMR was normal. Patients with normal CMR had a lower mean peak level of troponin (1.75 ng/mL) than patients who have abnormal examination (6.69 ng/mL) ($P = 0.001$).

Conclusion.— Among patients admitted with chest pain, troponin elevation and non obstructed coronary arteries, CMR establishes a definite diagnosis in more than 2/3 of patients and is useful to discriminate patients who need secondary prevention treatment. Normal CMR seems to be correlated with a smaller myocardial injury.

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02

Interest of 3D TEE for the percutaneous closure of paraprosthetic mitral valves leaks

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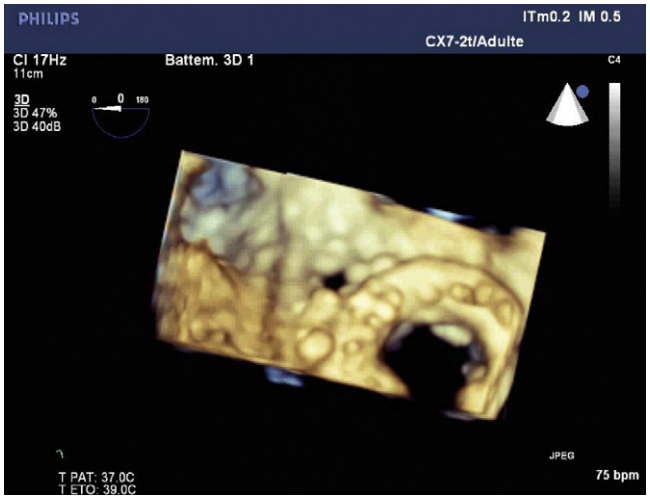
Prosthetic valve leaks are rare, mainly mitral, and difficult to treat due to possible refractory heart failure and anemia. In case a new surgical operation is too risky, percutaneaous closure has been proposed.

The main difficulty of this procedure is the passage of the guide wire through the regurgitant orifice. 2D angiography alone cannot locate and guide the procedure with enough precision. A 3D anatomical imaging obtained real time using 3D TEE minimizes this difficulty. We have also observed that the anatomy of the regurgitation zone, as well as its location, can be very different from one patient to another.

We report 11 consecutive closures of mitral paravalvular leaks between 2009 and 2012, in seven patients (four men, range 1 to 4 procedures per patient). Mean age was 71 y. and 5/7 patients (71%) had mechanical prosthesis.

The procedural closure success rate was 64% (7/11) with a mitral regurgitation regression of at least one grade. The clinical impact was rapidly evident with a reduction of the NHYA grade (from 1 to 2) and reduction in the need of transfusion. There was no per procedure mortality.

Our experience highlights the role of 3D TEE for the location of the leak, its shape length and width in pre procedure. During the procedure it is more helpful than fluoroscopy for positioning the device. According to this experience, percutaneous closure guided by 3D TEE can be a real alternative to surgery in symptomatic patients with high surgical risk.



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03

Assessment of initial left ventricular systolic dysfunction in Tako-Tsubo cardiomyopathy by multimodality imaging

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Background.— Tako-Tsubo cardiomyopathy is a stress-induced cardiomyopathy and is characterized by transient left ventricular (LV) systolic dysfunction. During the hospitalization, recovery may rapidly occur with a partial increased of LV ejection fraction. The aim of this prospective study was to assess LV systolic dysfunction by echocardiography in a large population of Tako-Tsubo cardiomyopathy.
Methods.— The study population included 90 patients presenting with Tako-Tsubo cardiomyopathy (85 women, 71 ± 12 y.o.). This is a substudy of the multicentric prospective TAKO-GENE study (ClinicalTrials.gov Identifier: NCT01520610). TTC was defined according to the Mayo-Clinic criteria.
Results.— Among Tako-Tsubo cardiomyopathy, a typical pattern was observed in 73 pts, an apical-sparing variant in 16 pts and an inverted Tako-Tsubo cardiomyopathy in one patient. Mean LV ejection fraction assessed by echocardiography was $39.3 \pm 11.4\%$ and was significantly lower that LV ejection fraction calculated by LV angiography ($43.1 \pm 12.7\%$, $P < 0.05$) and by cardiac magnetic resonance ($49.6 \pm 11.8\%$, $P < 0.0001$). Assessment of LV ejection fraction was performed by echocardiography at admission, by LV angiography between day 0 and day 3 and by cardiac magnetic resonance between day 2 and day 7.
Conclusion.— Echocardiography allows a fast and immediate assessment of LV ejection fraction whereas assessment of LV systolic dysfunction may be delayed by LV angiography and cardiac magnetic resonance.

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04

Subclinical cardiac injury in systemic sclerosis assessed by speckle tracking strain analysis

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Systemic sclerosis (SSc) is a rare connective tissue disease that can lead to severe heart complications, i.e. congestive heart failure, arrhythmia and sudden cardiac death. SSc can be also associated with pulmonary arterial hypertension. The latter are associated with poor prognosis in SSc, may be related to a specific myocardial right ventricular disease. The aim of this study was to test whether infra-clinical myocardial dysfunction can be detected in patients with SSc free from cardiovascular symptoms.
Patients and methods.— Segmental right ventricular (RV) strain and left ventricular (LV) strain by the global longitudinal strain (GLS) were quantified by 2 Dimensional speckle-tracking with transthoracic echocardiography to assess ventricular deformations in 48 patients suffering from SSc and 40 matched control subjects.
Results.— Despite normal LVEF, patients presenting SSc had significantly impaired LV GLS compared to controls. There was only a trend for an impaired lateral and inferior RV strain between patients and controls ($P = 0.08$ and 0.07 respectively). Patients with diffuse cutaneous SSc (DcSSc) had impaired LV strain in 4 and 2 chamber views and lateral RV strain compared to those presenting a limited form of cutaneous SSc (LcSSc). These differences were irrespective of the pulmonary function and the presence or not of a pulmonary hypertension (data not shown).
Subclinical cardiac injury in systemic sclerosis assessed by speckle tracking strain analysis.
Conclusion.— Speckle-tracking strain analysis can detect infra-clinical impairment of LV myocardial function in patients with SSc who are free from any cardiovascular symptoms regardless of SSc impact on pulmonary function.