BEST POSTERS IN NOVEL IMAGING TECHNIQUES IN HEART FAILURE

P6212
What is the best imaging technique to explore right ventricular function at the time of multimodality cardiovascular imaging?
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Background: Right ventricular (RV) function is a powerful independent predictor of adverse heart failure outcomes. Several RV imaging parameters have been proposed to detect patients at risk new-onset acute heart failure. The objective of our study was to compare the predictive value of main RV systolic parameters for outcome.

Methods: One hundred patients underwent comprehensive cardiovascular imaging modalities including two-dimensional (2D) transthoracic echocardiography (TTE), cardiac magnetic resonance imaging (CMR) and tomographic equilibrium radionuclide ventriculography (ERV) for the assessment of RV function. The composite primary endpoint was explored in the retrospective cohort of 79 patients and defined by the occurrence of a major adverse cardiac event (MACE), i.e., death, heart transplantation, or new-onset acute heart failure. Intra- and inter-rater reliabilities for each RV systolic function parameter were explored in a prospective cohort of 21 patients.

Results: Mean NYHA class and left ventricular ejection fraction were 1.7±0.9 and 56±17%, respectively. During a mean follow-up of 13±9 months, 13 (20%) patients reached the composite primary endpoint. The areas under the receiver operator characteristic curves for the prediction of MACE were 0.922 (P<0.0001), 0.913 (P<0.0001), 0.906 (P<0.0001), 0.849 (P=0.002), 0.837 (P=0.003), 0.799 (P<0.0001), 0.792 (P<0.01), 0.753 (P<0.02), 0.720 (P=0.053) and 0.608 (P=0.346) for integral systolic S’ wave tricuspid annular velocity, RV free wall longitudinal strain, RV fractional area change, tricuspid annular plane systolic excursion, RV ejection fraction (RVEF) by CMR using the 4-chamber slices, peak systolic S’ wave tricuspid annular velocity, RV free wall longitudinal strain, RV fractional area change, tricuspid annular plane systolic excursion, RVEF by CMR using short-axis slices, RVEF by ERV, RVEF by CMR (short-axis), RVEF by CMR (short-axis), RVEF by CMR (short-axis), RVEF by CMR (short-axis). After adjusting for the transfusional requirement, the homozygous β+ group versus the homozygous β° group showed a lower number of patients with a pathological left ventricular ejection fraction (LVEF) than the homozygous and homozygous β° groups (27.2% vs 24.2% vs 14.3% P<0.05) (see Figure).

Conclusions: The homozygous β+ TM patients showed less myocardial iron overload and a concordant lower frequency of systolic heart dysfunction and cardiac remodelling. These data support the knowledge of the different phenotypic groups in the clinical and instrumental management of β-TM patients.

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P6213
Role of different phenotypic groups of thalassemia major patients studied by CMR
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Introduction: Beta thalassemia major (β-TM) displays a great deal of phenotypic heterogeneity, not fully investigated in terms of cause-effect.

Aim: We aimed to detect if different phenotypic groups could be related to different levels of cardiac impairments, evaluated by cardiovascular magnetic resonance (CMR).

Methods: We studied retrospectively 671 β-TM patients (age 30.1 years, 52.9% females) enrolled in the Myocardial Iron Overload in Thalassemia (MIOT) network. Myocardial iron overload was assessed by using a multislice multiecho T2* approach. One sequences were obtained to quantify biventricular functional parameters.

Results: Three groups of patients were identified: heterozygotes (N=279), homozygotes β+ (N=154), homozygotes β° (N=238). No significant differences for age, sex, and haematological parameters were found among the groups. Transfusional needs resulted significantly lower in the homozygous β+ patients than the heterozygous (34.7 U vs 38.0, P<0.05) and the homozygous β° patients (34.7 U vs 41.6, P<0.0001). After adjusting for the transfusional requirements, the homozygous β° group versus the homozygous β+ group showed higher global heart T2* values (32.4 ms vs 26.2 ms, P<0.01); the number of segments with T2*>20ms and the number of patients with a global heart T2* value>20ms were significantly lower in the homozygous β° group when compared to the other groups (see Figure). Moreover, after adjusting for cardiac iron, the homozygous β+ group showed a lower number of patients with a pathological left ventricular ejection fraction (LVEF) than the homozygous and homozygous β° groups (27.2% vs 24.2% vs 14.3% P<0.05) (see Figure).

Conclusions: The heterozygous β+ TM patients showed less myocardial iron overload and a concordant lower frequency of systolic heart dysfunction and cardiac remodelling. These data support the knowledge of the different phenotypic groups in the clinical and instrumental management of β-TM patients.

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P6214
The value of cardiac magnetic resonance imaging in the diagnosis of Chagas heart disease in a non-endemic zone

Chagas disease (CD) is one of the most prevalent of all tropical infectious diseases imported in Spain, with undiagnosed cases.

Main objectives: 1) To estimate the prevalence of anatomical and functional cardiac abnormalities of Chagas’ disease of recent serological diagnosis, in a non-endemic zone before starting treatment. 2) To assess the usefulness of cardiac magnetic resonance imaging to detect cardiac involvement in patients with Chagas disease compared to electrocardiogram and transthoracic echocardiography, either conventional or advanced.

Material and methods: An observational, prospective cohort study; carried out from 2015 to 2017.
Results: We included 100 consecutive patients: 66 women and 34 men, with a mean age of 43.8±5.88 years. Most of the patients were from Bolivia; with an average time of residence in Spain of 9.73±10.47 years.42% of the patients were asymptomatic and in symptomatic patients the most frequent symptoms were chest pain and palpitations. In the analysis of ECG 37% of patients had normal parameters and 42% had two or more ECG abnormalities; 22% of the patients had alterations echocardiography (6% DTVI greater 55.5%, 5% LVEF <50% and 17% alterations of segmental contractility in the inferior face and apex). Other abnormalities detected included: E' lateral <10 (35.4%) and increased VTDVI (31.8%) and increased AI volume (23%). In the analysis of myocardial deformatry an overall longitudinal strain <20% was detected in 16% of the patients. In the study using CMR, the most common anomaly was an increase in VTSVI which was higher in men, and alterations of the segmental contractility in the middle and lower apical segments. Significant concordance for LV mass was detected by ECO and RMC. STIR detected edema in 16% and fibrosis in 18% of patients, more frequent intramyocardial and with apical and inferior predominance. The presence of delayed enhancement was significantly associated with lower LVEF and higher indexed LV end-diastolic volume and worse functional class. Using several complementary exploration methods, up to 92% of the patients presented any abnormality. The combination that most dramatically increased the ability to detect a cardiac abnormality was the ECG with a complete ECO. Adding advanced echocardiographic parameters such as strain or CMR did not clinically increase the rate of patients who presented cardiac abnormalities.

Conclusions: The prevalence of cardiac involvement in Chagas disease may range from 61% with conventional criteria to 92% when new imaging parameters and used for assessing anatomy and cardiac function. Cardiac magnetic resF
nance allows to identify subtle alterations such as myocardial edema or small zones of fibrosis, not identifiable by echocardiography, which could help to identify those patients in whom a closer clinical follow-up should be considered in order to reduce cardiac morbidity and mortality.

P6215 Prognostic value of advanced lung cancer inflammation index in patients with chronic heart failure: a prospective comparative study with cardiac I-123 metaiodobenzylguanidine imaging


Background: Recently, nutritional status and systemic inflammation are reported as robust prognostic factor in chronic heart failure (CHF) patients. Advanced lung cancer inflammation index (ALI), which is calculated as body mass index × serum albumin / neutrophil to lymphocyte ratio (NLR), is an independent prognostic marker in several types of cancer. On the other hand, cardiac I-123 metaiodobenzylguanidine (MIBG) imaging, which is useful for the estimation of cardiac adren- ergic nerve activity, provides prognostic information in CHF patients. However, there is no information available on the comparison of prognostic value of cardiac MIBG imaging and ALI in CHF patients.

Methods and results: We studied 104 CHF outpatients with LVEF <40% in our prospective cohort study. The cardiac MIBG heart-to mediastinum ratio (HM) washout rate (WR) were calculated from the chest anterior view images obtained at 20 and 200 min after isotope injection. Abnormal WR was defined as WR≥27%. We also measured laboratory data and echocardiography at entry. During a follow up period of 6.3±4.5 years, 51 patients had cardiac events, de-
tained at 20 and 200 min after isotope injection. Abnormal WR was defined as

Conclusions: To identify those patients in whom a closer clinical follow-up should be considered in order to reduce cardiac morbidity and mortality.

P6217 Global expression profiling identifies a novel hyaluronan synthases 2 gene in the pathogenesis of lower extremity varicose vein

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Introduction: Lower extremities varicose veins (VV) are among the most easily recognized vascular abnormalities with superficial venous tortuosity and enlarge-
mement. The molecular mechanism and genetics of VV are largely unknown.

Purpose: In the present study, we sought to explore the global expression change of VV and identify novel genes that might play a role in the mechanism of VV.

Methods: We used next-generation ribonucleic acid (RNA) sequence technology to study the global messenger RNA expression change in the ve-
nous samples of diseased and control patients.

Results: We identified several differentially expressed genes, which were further confirmed by conventional reverse transcription polymerase chain reaction (RT-PCR). Using these significant genes we performed in silico pathway analyses and found distinct transcriptional networks, such as angiogenesis, cell adhesion, vascular injury and carbohydrate metabolisms that might be involved in the mech-
anism of VV. Among these significant genes, we also found hyaluronan synthases 2 gene (HAS2) played a pivotal role and governed all these pathways. We further confirmed that HAS2 expression was down-regulated in the venous samples of patients with VV. Finally, we used a zebrafish model with fluorescent emitting vasculature and red blood cells to see the morphological changes of the venous system and blood flow. We found that HAS2 knockdown in zebrafish resulted in dilated venous structural with static venous flow.

Conclusions: HAS2 regulates the transcriptional networks of angiogenesis, cell adhesion, vascular injury and carbohydrate metabolisms and down-regulation of HAS2 may underlie the mechanism of VV. Therapeutic strategies targeting HAS2 may be warranted to identify novel non-surgical treatment for VV.

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P6218 Identification of Latrophilin-2, a novel receptor that specifies cardiac progenitor cells from pluripotent stem cells and is essential for heart development

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The identification of a lineage-specific marker plays a pivotal role in understanding developmental process and is utilized to isolate a certain cell type with high purity for therapeutic purpose. When mouse pluripotent stem cells were stimulated with BMP4, Activin A, BFGF and VEGF, they differentiated into cardiac cells. To screen cell-surface expressing molecules on cardiac progenitor cells compared to undifferentiated mouse iPS and ES cells, we isolated Flk1+PDGFRα+ cells at different days of culture and performed microarray analysis.

Conclusions: We identified a new G protein–coupled receptor, latrophilin-2 (LPHN2). Here, we re-
port a novel cardiac-specific cell surface marker, latrophilin 2 (LPHN2), expressed specifically by cardiac progenitor cells (CPCs) and cardiomyocytes (CMs) dur-
ing mouse and human pluripotent stem cells (PSCs) differentiation in vivo and exclusively in the heart during mouse embryonic development. In sorting experi-
ments under cardiac differentiation condition, LPHN2+ cells derived from pluripo-
tent stem cells strongly expressed cardiac-related genes (Mspe1, Nkx2.5, AMHC and cTNT) and exclusively gave rise to beating cardiomyocytes. As compared with LPHN2− cells, Lphn2 knockout in mice is embryonically lethal owing to severe heart, but not vascular, defects. Interestingly, LPHN2+/− heterozygotes were alive and fertile. We also examined the importance of LPHN2 during heart devel-

Figure 1