

e0693 COMPARISON OF MYOCARDIAL BRIDGES IMAGING WITH MULTI-SLICE SPIRAL CT AND CORONARY ANGIOGRAPHY

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Objective To assess the diagnostic and clinical value of 64-slice CT coronary angiography (64SCTCA) for evaluation of myocardial bridge (MB) and mural coronary artery (MCA).

Methods A total of 527 patients underwent 64SCTCA. The CT data was reconstructed and post-processed in the work-station. All the cases with MB were submitted to coronary angiography (CAG) studies observing the existence, length and thickness of MB as well as the stenosis of MCA. The results of CT and CAG were compared and analysed in the end.

Results The 118 of 527 cases with MB segments were found through 64SCTCA. The detection rate is 22.4%. The 45 of 118 cases which were detected by 64SCTCA were found MB positive by CAG. The detection rate is 9.1%. The dates represent significant difference from 64SCTCA and CAG. Statistical significance was established at the $p < 0.05$ level. The MB cases were found by 64SCTCA with the mean length of (6.1 ± 2.5) mm, the mean thickness of (2.5 ± 1.6) mm and the mean stenosis rate of MC of $(47.3 \pm 11.3)\%$. The length and the stenosis rate of MB measured by CAG represent significant differences from those dates by 64SCTCA ($p < 0.05$).

Conclusion The 64SCTCA can clearly characterise MB and MC, and has important clinical values.

e0694 EVALUATION OF LEFT HEART FUNCTION IN PATIENTS WITH TYPE 2 DIABETES MELLITUS BY DOPPLER ECHOCARDIOGRAPHY

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Objective To assess left ventricular (LV) structure, LV function, left atrial (LA) structure and LA systolic function by using all the currently available echocardiographic methods in patients with type 2 diabetes mellitus (DM) or impaired glucose tolerance (IGT), with or without coronary artery disease (CAD).

Methods Four groups of patients were evaluated including 35 patients with type 2 DM complicated with chronic CAD, 26 patients with type 2 DM without CAD, 12 patients with IGT without CAD and 26 healthy controls. All the patients were underwent coronary angiography to diagnose or exclude significant CAD. Echocardiography was performed and a lot of M-mode, 2-DE, pulse wave Doppler and tissue Doppler imaging parameters were measured.

Results All the patients with diabetes or IGT had a normal LV systolic function. However, compared to the control subjects, Am, Aa and Em/Ea were significantly higher ($p < 0.05$) while Em/Am, Ea and Ea/Aa were significantly lower ($p < 0.01$) in diabetic patients without CAD. Am and Aa were significantly higher ($p < 0.01$ and $p < 0.05$, respectively) while Em/Am was significantly lower in patients with IGT. Moreover, in patients with type 2 DM or IGT and without CAD, LAVmaxI, LAVminI, LAFF and LAEF were significantly higher. The diabetic patients with CAD had significant higher LVMI, LAVmaxI and LAEF ($92.25 \text{ g/m}^2 \pm 26.96 \text{ g/m}^2$ vs $82.85 \text{ g/m}^2 \pm 13.97 \text{ g/m}^2$, $31.66 \text{ ml/m}^2 \pm 7.05 \text{ ml/m}^2$ vs $27.45 \text{ ml/m}^2 \pm 7.19 \text{ ml/m}^2$, $42.38\% \pm 9.91\%$ vs $36.46\% \pm 5.49\%$, all $p < 0.05$) compare to those without CAD.

Conclusions LV diastolic dysfunction, LA dilatation and enhanced LAEF existed already before the occurrence of significant LV systolic

dysfunction in patients with type 2 DM or IGT. Patients with diabetes and CAD had more severe LA structural and functional abnormalities. These findings suggests that LA structural and functional abnormalities might be the earliest signs of further cardiac damage in type 2 diabetic patients when significant CAD is developed.

e0695 THE COMBINED USE OF UROKINASE AND GLYCOPROTEIN IIB/IIIA-TARGETED MICROBUBBLES RECANALIZE RABBIT FEMORAL ARTERY WITH THROMBOTIC OCCLUSIONS

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Objective To determine the effect of the combined use of urokinase and glycoprotein IIB/IIIA-targeted microbubbles prepared by direct conjugation method to dissolve the thromb.

Methods Urokinase and RGDS were in conjunction with microbubbles by the direct conjugation method. A total of 42 rabbits with platelet-rich thrombi in the femoral artery were randomised into seven treatment groups ($n=6$): 1) ultrasound alone (US); 2) ultrasound plus non-targeted microbubbles (US+M); 3) urokinase alone (UK); 4) ultrasound, non-targeted microbubble and urokinase (US+M+UK); 5) ultrasound plus RGDS microbubble (US+R); 6) RGDS microbubble plus urokinase (R+UK); and 7) ultrasound, RGDS microbubble and urokinase (US+R+UK). US in diagnostic ultrasound were simultaneously applied over the thrombus up to 30 min. The thrombolytic effect was evaluated at 120 min post treatment.

Results SonoVue, Urokinase and RGDS were combined successfully. In vitro thrombolysis experiment indicated that the urokinase in the prepared contrast agent had activity ($p < 0.01$).

Conclusion The combined use of urokinase and glycoprotein IIB/IIIA-targeted microbubbles is effective in targeting thromb and recanalizing thrombolytic occlusion.

e0696 INVESTIGATION ON DIFFERENCE OF MECHANICAL PARAMETERS ON CAROTID PLAQUES BETWEEN PATIENTS WITH AND WITHOUT CEREBRALVASCULAR DISEASE USING VELOCITY VECTOR IMAGING

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Objective Our aim was to investigate the difference of mechanical properties of carotid plaques in subjects with and without ischaemic cerebralvascular disease using velocity vector imaging technique.

Methods 162 carotid plaques were detected in 121 subjects. All patients were divided into three groups: patient with acute ischaemic infarction (ACI, $n=48$), patients with transient ischaemic attack (TIA, $n=22$) and patients without cerebrovascular history (NCD, $n=51$). With velocity vector imaging technique and syngo US Workplace (Siemens), mechanic parameters such as radial velocity (RV), longitudinal strain (LS) and longitudinal strain rate (LSR) were measured on carotid plaques at proximal base (P1), proximal shoulder (P2), top (P3), distal shoulder (P4) and distal base (P5). Morphological parameters including Intima-median thickness, plaque length and lumen diameter was also measured. Receiver operating characteristic curves were constructed from model that associate mechanical and morphological parameters.

Results Higher RV was found in TIA and ACI than that in NCD. In ACI patients, P2-LS was higher than P1-LS, P4-LS and P5-LS

($p < 0.05$), P5-LSR was higher than P1-LSR ($p < 0.05$). The area under the ROC curve was 0.812 in model that associate mechanical and morphological parameters. Sensitivity and specificity was 78% and 84% separately at the cut-off point.

Conclusion Measurement of mechanical parameters provides a noninvasive approach to the evaluation of plaque mechanical conditions, which is associated with ischaemic cerebralvascular disease. A characteristic of asymmetry was detected among different locations on carotid plaques especially in symptomatic subjects.

e0697 THE ECHOCARDIOGRAM NEW TECHNOLOGY IN THE HEART FADING PATIENT SYNCHRONISES IN THE TREATMENT APPLICATION

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The heart failure patient has the varying degree generally between the ventricle or the ventricle does not synchronise the movement, the heart synchronises the treatment (CRT) to be valued people's more and more again. Echocardiogram each kind of new technology in the heart synchronises in the treatment to have the important function again particularly. This article introduced in detail organises Doppler, the two-dimensional strain, the three dimensional entire volume and the velocity vector image formation and so on supersonic new technology after the appraisal heart synchronism, the CRT patient screens, the instruction actuator place, optimises wrestles the procedure, the appraisal curative effect as well as the technique makes a follow-up visit aspect and so on observation progress and the application.

e0698 VALUE OF SEGMENTAL MYOCARDIAL STRAIN BY 2-DIMENSIONAL STRAIN ECHOCARDIOGRAPHY FOR ASSESSMENT OF SCAR AREA INDUCED IN A RAT MODEL OF MYOCARDIAL INFARCTION

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Backgrounds and Objectives Two-dimensional strain echocardiography (2DSE) technique has enabled accurate quantification of regional myocardial function. This experimental study was aimed to investigate the value of 2DSE in detection of segmental regional myocardial dysfunction induced by fibrosis following myocardial infarction in a small animal (rat) model.

Methods An rat model of myocardial infarction was established by ligation of the proximal left anterior descending coronary artery in 17 SD rats. Regional myocardial function was detected by 2DSE at baseline and 4-weeks post-infarction, including end-systolic radial strain and strain rate (SR and SrR) and end-systolic circumferential strain and strain rate (SC and SrC) of each of six segments. According to the size of scar found by histologic Masson staining, the optimal cutoff points of parameters for detecting scar area were analysed and the sensitivity and specificity of every parameter to detect myocardial scar were obtained using ROC.

Results (1) Comparing with parameters measured at baseline, there were significant decreases in SR, SrR, SC and SrC as well as WTF of each segment at papillary level at 4-weeks post-infarction, with the worst in the infarct area (anterior septal, anterior and lateral wall) and the mildest in distal area (mid-inferior wall), ($p < 0.05$ for each); (2) Significant negative correlations were found between the size of segmental scar and 2DSE parameters (r -value 0.63–0.80, all $p < 0.05$) with the strongest correlation in SR. SR less than 10% has 84%

sensitivity and 98% specificity for detecting segments of scar area greater than 30% with AUC=0.97.

Conclusions 2DSE is able to assess regional myocardial dysfunction in a rat model of myocardial infarction and has high accuracy in detecting infarct segments with scar area greater than 30%.

e0699 LATE GADOLINIUM-ENHANCED CARDIAC MRI IN RESTRICTIVE CARDIOMYOPATHY

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Objective To evaluate the diagnostic value of MRI in combination of late gadolinium-enhanced imaging in the identification of restrictive cardiomyopathy (RCM).

Methods 116 patients with RCM underwent ECG, X-ray, Echocardiography and MRI. The final diagnosis was made on comprehensive evaluation in consideration of patients' history, clinical symptom and sign, imaging modalities. All patients had objective evidence of impaired cardiac filling and were referred to rule out pericardial thickening. Five histologically proven cases with RCM included heart transplantation in four patients with RCM, endomyocardial biopsy in one patient with RCM. 55 normal subjects were used for reference. All patients were divided into two groups according to contrast-enhanced MRI: RCM with delayed enhancement (RCM with DE, $n=35$) and RCM without delayed enhancement (RCM without DE, $n=81$). Quantitative measurement of bi-atrial and bi-ventricular size, ventricular septal and left free wall thickness were done. A paired t-test was used for statistic analysis and a p value of less than 0.05 was considered significant. Qualitative assessment of segmental wall motion, in this present study.

Results The parameters, such as bi-atrial size, right ventricular diastolic diameter, ventricular septal and left free wall thickness were significantly larger in 116 patients with RCM than in normal subjects ($p < 0.05$). However, there were no statistical differences between the two groups in left ventricular diastolic diameter. Visual observation showed that mild mitral regurgitation (43%), moderate mitral regurgitation (21%), mild tricuspid regurgitation (28%) and severe tricuspid regurgitation (40%) were noted, respectively. 35 RCM with DE was further divided into diffuse and segmental enhancement. RCM with diffuse delayed enhancement was 15 cases, of which 12 cases showed powdery enhancement, and three showed petaline enhancement. three cases with powdery enhancement were histologically proven as myocardial amyloidosis. RCM with segmental enhancement was 20 cases. Ventricular septum was the most vulnerable segment. 6 cases presented subendocardial enhancement that corresponded to apical obliteration, of which one case was confirmed as hypereosinophilia with use of marrow examination. The other 14 cases didn't present any regular enhancement. 81 RCM without DE, of which histologically proven non-specific findings were in two cases, had marked bi-atrial dilation, near-normal ventricular chambers and near-normal ventricular thickness.

Conclusions MRI is an excellent imaging modality to identify restrictive cardiomyopathy. Primary RCM presents marked bi-atrial dilation with nonhypertrophied and nondilated ventricles. Diffuse left ventricular thickening associated with powdery enhancement indicates myocardial amyloidosis. Apical obliteration associated with subendocardial enhancement corresponds to endomyocardial fibrosis.