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Correlation between architectonic perturbations of left ventricular geometry, evaluated with 3D-echo, and perturbations of apical hemodynamics, leading to apical thrombosis in dilated cardiomyopathy. 

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In dilated cardiomyopathy (DCM), preferential localisation of intracavitary thrombosis in the Left Ventricular (LV) apex could be explained by architectonic and hemodynamic perturbation of the LV shape, which create an apical thrombogenic area. Decrease of flow velocities and persistence of flow are more pronounced in areas where architectonic modifications occur (LV apex), favoring thrombus development at these sites. 

Methods: Thirty-six patients with DCM - group A, and a control lot of 25 healthy subjects - group B. Ventricular shape and geometry were evaluated using B-mode echo. Doppler mapping of blood flow velocity in the LV was performed at different sites, along 3 longitudinal axes at 3 levels: basal, medioventricular and apical. Three-dimensional echocardiography (Sonos 5.500 - Agilent Technologies) was performed in 12 cases, transhrocathric and transesophageal, for analysis of LV architectonics. 

Results: LV thrombosis was present in 56.7% of DCM cases, all of them in the apex. Study of LV architectonics showed dilatation of LV in DCM group, 25% more pronounced in the apex than in the medioventricular area, (p<0.001). Doppler mapping of flow velocities showed a decrease of diastolic velocity from basis to apex with 0.48 m/sec (avg) in pts. with DCM and 0.25 m/sec (avg) in control group (p=0.001). In DCM group, this velocity decrease was 2.2 times more pronounced in the apical half of the LV (0.33 m/sec) than in the basal half (0.15 m/sec), while in control group this decrease was uniformly distributed (0.13 m/sec vs 0.12 m/sec). Time duration of flow (on Doppler wave) increased from basis to apex (with +0.25 msec avg) in group A (p=0.007) while in group B it decreased from basis to apex (with -0.25 msec avg) (p=0.007). 3D echocardiography showed in all the 12 cases modifications of LV architectonics, with a relative "narrowing" in the medioventricular area, 31% more pronounced than in the control lot. Contrast echo showed a longer persistence of flow and turbulent flow in the apex in all DCM cases. 

Conclusions: In DCM, LV's shape and architecture presents significant perturbations, demonstrated with 3D echo, which favor a turbulent flow in the dilated apex, leading to development of thrombi especially in this area. Doppler mapping of flow velocities shows a progressive decrease of flow velocity from basis to apex, more pronounced in the apical part of the LV, creating proper conditions for apical thrombosis in DCM. 

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Influence of aetiology on long-term survival in patients with chronic heart failure. 

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Aetiology of ischemic heart disease has been shown to be associated with worse prognosis than idiopathic aetiology in patients with chronic heart failure. Other reports showed that survival was worse for idiopathic dilated cardiomyopathy or was unrelated to aetiology. Due to these conflicting results, large therapeutic multicentre heart failure trials included patients regardless of aetiology. We hypothesized that patient group selection bias, for example the study of heart transplant candidates, may explain these conflicting results. To determine whether ischemic or idiopathic causes of cardiomyopathy were associated with prognosis, 287 patients with LV ejection fraction (EF)>40% and LV end diastolic diameter > 6.0cm were followed prospectively. VEF was assessed by visual estimation, M-mode echo (when there were no regional wall motion abnormalities or left bundle branch block), Simpson's method, and patients with heart diseases who had no CHF (III group). Aortic and mitral pressure gradients, with IAD and IAD<30mmHg, were identified as the variables most prognostically significant. Optimal management of CHF requires monitoring of the symptoms of congestion. Pulmonary congestion (PC) is a useful marker of CHF. The diagnosis of PC is confirmed by clinical and X-ray examination. The mean sign of PC – dyspnoea, is not specific and can be caused by pulmonary diseases. Thoracic US is very sensitive and specific in detection of fluid. However, US is not recommended as the leading method of examination of respiratory system. The fluid amount in lung is increased by PC and it changes the sonographic characteristics of lung. 

Objective: The aim of this study was to find the US signs of PC. 

Methods: We studied 169 patients with different grade CHF and X-ray signs of PC (I group), 30 patients with dyspnea caused by exacerbation of chronic obstructive bronchitis, bronchial asthma or emphysema (II group) and 80 normal persons and patients with heart diseases who had no CHF (III group). Left ventricular cavolity size and EF% was determined by 2D-EchoCG, pulmonary artery pressure – by Dopplerographic evaluation of tricuspid or pulmonary regurgitation flow. Sonographic evaluation of a lung was done in horizontal and vertical positions of patient, from 12 points on thoracic wall, which corresponded to the projection of lower, middle and upper lobes of a right lung and upper and lower lobes of left lung. 

Results: In patients with CHF significantly often was found the one of the sorts of re-verberation - "Comet Tail Phenomenon" (CTHP) (100% versus 46%, p<0.005). The count of positions on thoracic wall from where the CTPh was registered in I group was 9.2±3.14, in II group – 1.19±1.11 (p<0.001) and in III group – 1.36±1.30 (p<0.001). There was good correlation between the count of CTPh registration points from the thoracic wall and the heart failure NYHA class (r=0.56), left ventricular systolic (r=0.40) and diastolic (r=0.32) diameters and negative correlation with EF% (r=-0.42). If we take 5 positions as a reference value the sensitivity of sign in diagnosis of PC was 84.6% an specificy – 98.8%. In CHF group CTPh was prominent, protracted and multiple, while in the II and III group it was single and short lasting. 

Conclusion: Thoracic US is sensitive and accurate method for evaluation of PC in patients with CHF and in differentiating dyspnea induced by CHF from dyspnea induced by respiratory diseases. (2) The US sign of PC in HF is a "Comet tail Phenomenon", which is protracted, prominent, multiple and registered from larger area of thoracic wall (5 positions or more). 

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Assessment of mitral annulus dilatation in patients with primary dilated cardiomyopathy before and after posterior semicircular reductive annuloplasty. 

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Mitra regurgitation (MR) is one of the most common independent factors causing heart failure in patients with primary dilated cardiomyopathy (PDCM). The main cause of MR in PDCM is mitral annulus dilatation. 

Purpose: The aim of the study is to compare changes in mitral annular area (MAA), changes in index of annular dilatation (IAD), changes in degree of MR before and after posterior semicircular mitral annuloplasty. 

Material and Methods: Twenty patients (9 male and 11 female, mean age 31) with PDCM were included in the study. The following parameters were analyzed using TEE: mitral annulus diameter in systole (MADS), mitral annulus diameter in diastole (MAAdd), mitral annular area in diastole (MAA), lengths of anterior mitral leaflet in diastole (LAMLD). 

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