Echocardiographic assessment of cardiac remodeling in the high-level football players
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Introduction.— The aim of this study is to assess the morphological and hemodynamic cardiovascular changes of high-level football players, using Doppler-echocardiography, and compare them to a similar control group.

Methods and results.— Twenty-four elite football players were matched to 24 normal subjects according to age, sex, and body surface. All participants had a clinical examination, resting ECG, Doppler-echocardiography and a measurement of maximal oxygen uptake (VO₂ max). The echocardiographic variables were compared between the two groups by the Student's t test and other statistical tools with the software SPSS 17.0. In the group of veteran marathoners, the wall thickness was (9.9 ± 1.5 vs 8.4 ± 1.4 mm in the control group; P < 0.05), the left ventricular diastolic diameter was (56.3 ± 3.40 vs 40.2 ± 3.5 mm in the control group; P < 0.01), and the surface of left atrium was (18.5 ± 3.9 vs 14.0 ± 3.5 cm² in the control group; P < 0.01). The VO₂ max was (48.9 ± 7.9 vs 18.5 ± 6). The hemodynamic and morphological changes are the results of a cardiac adaptation required in veteran marathoners who are subjected to moderately important efforts. They have not only cardiac remodeling but also an optimal filter then using of oxygen inspired dependent on years of training and the number of training sessions per week.

Conclusion.— Cardiovascular and pulmonary exploration in veteran marathoners aged over forty allows a distinction between electrical changes and cardiac remodelling in physiological and pathological conditions. These changes vary depending on years of training and hours of training per week. A correlation between their size and physical ability of veteran marathoners is plausible.

doi:10.1016/j.acvd.2011.03.080

Comparison between non-invasive coronary flow reserve and fractional flow reserve to assess the functional significance of left anterior descending artery stenosis of intermediate severity
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Introduction.— To assess the functional significance of left anterior descending artery (LAD) stenosis of intermediate severity (50–70% diameter stenosis) is challenging.

Objective.— To compare the value of non-invasive coronary flow reserve (CFR) to the invasive fractional flow reserve (FFR) in the setting of LAD stenosis of angiographic IS.

Methods.— Fifty stable consecutive patients (pts) (mean age 63 ± 13 years, 11 females, mean left ventricular ejection fraction 61 ± 10%) with an angiographic proximal LAD stenosis of IS (55.5 ± 5% diameter stenosis, QCA), no previous anterior myocardial infarction, and with various vascular risk factors, were prospectively studied. They underwent FFR with intracoronary bolus adenosine (140 μg/kg per minute over 2 min), in the distal part of the LAD, in the same day in nearly all cases. CFR
was defined as hyperemic peak diastolic LAD flow velocity divided by baseline flow velocity (normal value > 2) and FFR was defined as distal pressure divided by mean aortic pressure during maximal hyperemia (normal value > 0.8).

**Results.**— The mean FFR and CFR were 0.84 ± 0.07 and 2.7 ± 0.75 respectively, in the whole population. Concordant results between FFR and CFR were seen in 44 cases (88%) and discordant results in six cases (12%). There was a significant correlation between CFR and FFR and CFR were seen in 44 cases (88%) and discordant results in 0.05). Concordant results between CFR and the same anatomic markers of stenosis severity (all, P = NS). The sensitivity, specificity, positive and negative predictive values of CFR more than 2 to detect a non significant lesion defined by a normal FFR were 95, 69, 90, and 82%, respectively.

**Conclusion.**— In pts with LAD stenosis of ≤5, discordant results between non-invasive CFR and FFR were not unusual, and the anatomic determinants of the stenosis are better correlated to FFR than to CFR. However, CFR which is a global evaluation of the coronary tree has a very high sensitivity to detect a non significant lesion, despite the high prevalence of vascular risk factors.

doi:10.1016/j.acvd.2011.03.083

**Prediction of exercise capacities and cardiac involvement in scleroderma patients using a novel Doppler echocardiographic parameter**

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**Background.**— The heart is one of the major organs involved in scleroderma, and the presence of cardiac injury usually portends poor prognosis. Ischaemia and fibrosis are the major mechanisms involved in scleroderma heart disease, and early detection is important. Echocardiography with modern ultrasound modalities such as tissue Doppler imaging (TDI) and 2D strain is considered as the best method for routine cardiac assessment, showing left and right ventricular systolic and diastolic function, pulmonary hypertension, and pericardial involvement. Besides, conduction defects are common in scleroderma, and among them, interatrial block (IAB) has been reported as a mark of atrial involvement.

**Aims of the study.**— To assess the prevalence of IAB by measuring the inter atrial electro-mechanical delay (IAMD) in scleroderma patients using TDI; to evaluate the correlation between IAMD and clinical, biological, and other echo-Doppler parameters.

**Methods.**— Patients with systemic sclerosis were selected if there were in sinus rhythm and were able to walk. The following data were collected: type and duration of the disease, NYHA functional class and distance walked in six minutes (6WD), P wave duration on ECG, serum creatinine and NT proBNP levels. Echo-Doppler study comprised: left ventricular (LV) mass, LV systolic function (LVEF: biplane Simpson’s method), LV diastolic function, pulmonary artery pressure, tricuspid regurgitation velocity (TRV), left atrial (LA) volumes and function (Simpson’s method). IAMD was assessed using colour TDI study, by measuring the delay between annular tricuspid and mitral a’ waves. A cut off value of 35 ms was chosen to define the presence of an IAB.

**Results.**— Forty patients were studied. Scleroderma was of the limited type in 32 patients, and of the diffuse type in 8. Forty percent of patients were found to have IAB at Doppler study. These patients were significantly older. After adjustment for age, they had more severe symptoms, lower 6WD, higher NT proBNP and creatinine levels, and longer P wave duration than patients without IAB. No difference was found regarding LV dimension and LVEF. LV mass was higher, E/A and E/e’ ratios were significantly different, LA volume was significantly higher, TAPSE was lower, and TRV was higher. Most importantly, IAMD correlated well with 6WD (r = 0.72, P = 0.0001).

**Discussion.**— IAB prevalence among scleroderma patients is high (40%). IAMD was found to be associated with lower exercise capacities, altered LV diastolic function, decreased LA and RV function,