Methods.— Standard 2D echocardiography, mitral TDI and 2D speckle strain imaging were prospectively performed in type 1 diabetic children and compared healthy control subjects. Standard echocardiographic indices of global systolic and diastolic function, early peak diastolic mitral velocity (Ea), longitudinal strain (LS), radial strain (RS) and circumferential strain (CS) were investigated. A possible correlation was examined for HbA_{1c} and diabetes duration.
Results.— Overall 100 consecutive type 1 diabetic children (age: 11.3 ± 3.6 years, 52 boys, duration of diabetes ranged from 1.1 to 16 years) were compared to 79 control children. The diabetic and control children were comparable with respect to age, sex, heart rate, systolic, diastolic and mean blood pressure. Although obese patients were excluded, diabetic patients had significantly higher *z*-scores for BMI (0.32 ± 1.17 vs. -0.16 ± 0.73; $P = 0.001$). There were no significant differences between the two study groups with regard to LVEF, LV-EDD, IVS-EDD, LVPW-EDD, standard diastolic function parameters (A, E/A, and MDT) and TDI parameters. E-wave was significantly lower in the diabetic group (102.7 ± 16 vs. 108.4 ± 17.6 cm/s; $P = 0.025$). The LS was significantly lower in the group of diabetic children (-17.1 ± 1.7 vs. -20 ± 1.6; $P < 0.001$), while the circumferential strain and the radial strain did not differ. LS was positively correlated with HbA_{1c} (r: 0.34; $P < 0.01$), while there was no correlation with the duration of the diabetes ($r = 0.12$; $P = 0.22$).
Conclusion.— We demonstrated that left ventricular longitudinal myocardial deformation is decreased in young patients with uncomplicated type 1 diabetes. Metabolic control may be the main risk factor for these myocardial changes. This finding might be considered a very early preclinical alteration potentially related to subsequent development of diabetic cardiomyopathy.

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Detection of major coronary artery anomalies in a pediatric and adult population: A prospective echocardiographic study

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Objectives.— We sought to describe our experiment with major coronary anomalies (MCA) diagnosed in transthoracic echocardiographic (TTE) in a large adult and pediatric population.
Background.— MCA may have serious clinical consequences. No echocardiographic study has identified prospectively all potentially serious coronary anomalies in a general adult and pediatric population.
Methods.— From June 2008 to January 2012, a systematic search for major coronary anomalies was conducted in children and adults patients, coming for a TTE.
Results.— Three thousand five hundred and two patients (84% adults and 16% children) received a TTE. Fourteen coronary anomalies left coronary artery from pulmonary artery, three single coronary arteries, and one coronary fistula. Cardiac symptoms initiated investigation in seven patients. Five patients underwent specific surgery: two coronary reimplantations, three coronary bypass grafting. Ten patients had already received at least one TTE without the anomalous coronary artery being either diagnosed or suspected.
Conclusions.— MCA is a rare condition which can be identified through an accurate exploration of coronary anatomy by TTE. The search for potentially lethal congenital coronary anomalies should be included in a standard echocardiographic examination.

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Aortic root dilatation in adult patients with repaired tetralogy of Fallot

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Intro.— Aortic root dilatation is commonly observed among patients with repaired tetralogy of Fallot. The aortic root is mostly involved, at all levels. Nevertheless, the prevalence of aortic root dilation and its rate of growth remain to be defined.
Methods.— We conducted a retrospective study, reviewing aortic MRI measurements at different levels (sinuses of Vasalva, sinotubular junction, ascending aorta, horizontal aorta, isthmus, and descending aorta) from 51 consecutive adult patients with repaired tetralogy of Fallot. Matched controls for age and sex were recruited in a healthy population of patients undergoing a cardiac MRI study for other reason.
Moreover, the annual rate of aortic growth was determined by MRI for 28 patients with repaired tetralogy of Fallot.
Results.— Fifty-nine percent of patients with repaired tetralogy of Fallot suffered from an aortic dilation located at the level of the sinuses of Vasalva, versus 6% in the control group, according to the Roman criteria ($P < 0.001$). Compared to the control population, aortic segments are significantly larger at all ascending levels, including the horizontal segment in patients with repaired tetralogy of Fallot: at the sinuses of Valsalva, mean aortic diameter is 20,4 mm in the tetralogy of Fallot group, versus 15.6 mm in the control group ($P < 0.001$). There is no difference between the two groups at the descending level of the aorta (9.9 mm in patients with repaired tetralogy of Fallot, versus 9.8 mm in control patients, $P = 0.267$).
Among patients with repaired tetralogy of Fallot, the rate of aortic growth is 0.697 ± 1.6 mm/year at the sinuses of Vasalva and 0.236 ± 1.29 mm/year in the ascending aorta.
Conclusions.— Aortic root dilatation is frequent among patients with repaired tetralogy of Fallot and mostly concerns the aortic root, compared to a control group of healthy patients. Horizontal and descending aortas do not seem to be involved in the dilation. Aortic root dilation needs to be carefully and regularly controlled, as it appears to be a dynamic and progressive phenomenon, although rather slow.

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