



CORRELATION BETWEEN ECHOCARDIOGRAPHIC PARAMETERS OF LEFT VENTRICULAR AND GLYCOSYLATED HEMOGLOBIN IN CHILDREN WITH TYPE 1 DIABETES MELLITUS

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Keywords: children, Diabetes Mellitus, left ventricle.

Introduction. Deterioration of left ventricular (LV) parameters in diabetes Mellitus (DM) can exist in the absence of other combined cardiac problems. An association between glycosylated hemoglobin (HbA1c) and changes of the LV parameters in DM has been reported. However, data regarding this association model in children with type 1 DM (T1DM) are limited.

The purpose of the work. To investigate the association between HbA1c and the LV parameters in pediatric patients with T1DM.

Material and methods. We studied 28 children with T1DM ((aged 10-18 years, gender M (15) / F (13)). All patients were diagnosed with T1DM (duration of T1D \geq 5 years) and received insulin therapy only. We analyzed the clinical (standard medical examination) and paraclinical (biochemical dosage – HbA1c, echocardiography - LV functional and structural parameters) data. The research received a favorable opinion of the Research Ethics Committee of the "Nicolae Testemitanu" SUMPh. Statistical analysis – SPSS version 20.

Results. The mean \pm SD for age of the patients was 13.7 \pm 2.35 years, weight (kg)=53.0 \pm 17.0, height (cm)=157.2 \pm 36.7, body mass index (kg/m²)=19.0 \pm 4.5, systolic blood pressure (mm Hg)=115.7 \pm 12.3, diastolic blood pressure (mm Hg)=75.2 \pm 8.7, HbA1c (%)=9.2 \pm 2.4, aortic root diameter (mm)=24.5 \pm 6.0, left atrium (mm)=26.8 \pm 6.2, right atrium^{1,2} (mm)=29.0 \pm 7.3/30.1 \pm 7.2, right ventricle (mm)=15.1 \pm 4.0, LV diastolic diameter (mm)=41.3 \pm 9.6, LV systolic diameter (mm)=25.4 \pm 5.9, septal wall thickness (mm)=7.5 \pm 1.9, posterior wall thickness (mm)=7.4 \pm 1.8, LV diastolic volume (ml)=81.9 \pm 24.6, LV systolic volume (ml)=25.2 \pm 7.7, ejection fraction (%)=65.7 \pm 14.8, fractional shortening (%)=36.7 \pm 8.4.

Duration of T1DM (years)=6.51 \pm 3.2. The correlational study between the HbA1c and the LV parameters revealed a statistically significant positive correlation coefficient with height (cm) (r=0.7**, p<0.001), weight (kg) (r=0.5*, p<0.5), body mass index (kg/m²) (r=0.5*, p<0.5), systolic blood pressure and diastolic blood pressure (mm Hg) (r=0.3*, p<0.5), aortic root diameter (mm) (r=0.7**, p<0.001), left atrium (mm) (r=0.8**, p<0.001) right atrium^{1,2} (mm) (r=0.6**, p=0.003), right ventricle (mm) (r=0.6**, p=0.003), LV diastolic diameter (mm) (r=0.7**, p<0.001), LV systolic diameter (mm) (r=0.7**, p<0.001), septal wall thickness (mm) (r=0.5*, p=0.036), posterior wall thickness (mm) (r=0.5*, p=0.032), LV diastolic volume (ml) (r=0.5*, p=0.025), LV systolic volume (ml) (r=0.6**, p=0.01), ejection fraction (%) (r=0.7**, p=0.001), fractional shortening (%) (r=0.6**, p=0.002).

Conclusions. The results of the study show that in children with type 1 Diabetes Mellitus, the increase value of the HbA1c is associated with a consensual and proportional increase in the values of the parameters of the left ventricle. Periodic cardiac evaluation with both conventional and tissue Doppler echocardiography is recommended for early detection of the modifications of left ventricular parameters, depending on the value of glycosylated hemoglobin, and initiation of the treatment (or prevention), if necessary.