

## Evaluation of Left and Right Ventricular Functions Using Conventional and Tissue Doppler Echocardiography in Children with Type 1 Diabetes Mellitus

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**Introduction:** Diabetes mellitus (DM) is one of the most common chronic diseases occurring in childhood. Doppler echocardiography has become common in clinical practice, due to its noninvasive nature and reproducibility of the results, ease of application. The aim of the present study was to evaluate the effects of glycemic control on left and right ventricular functions patients with type 1 diabetes mellitus

**Methods:** The study was conducted in the Yüzüncü Yıl University between September 2013 and October 2014. The patient group comprised of 86 patients with type 1 diabetes aged between five and 17 years. The patients with HgA1c levels of 9% or lower were allocated into the well-controlled diabetes group and patients with HgA1c above 9% were allocated into the poorly controlled diabetes group. The control group was consisted from 54 healthy children. M-mode, 2-D, PW Doppler examinations and tissue Doppler imaging studies were performed for all subjects.

**Results:** Mitral annulus PW tissue Doppler showed significantly lower Em and Em/Am ratio in the well-controlled group. Am, IVRT and MPI were found to be significantly higher in the poorly controlled. IVCT, Sm and ET did not significantly differ between groups. The E to Em ratio of the mitral valve was significantly higher in the well-controlled and poorly controlled group. PW Doppler examinations showed that, six patients (13.6% in the well-controlled group and 13 patients (31%) in the poorly controlled group had type 1 diastolic dysfunction. Tissue Doppler examination showed that eight patients (18%) in the well-controlled group and 17 patients (40.4%) in the poorly controlled group had type 1 diastolic dysfunction. None of these patients exhibited a false normal filling pattern.

**Conclusion:** The present study showed that left ventricular systolic functions and right ventricular systolic and diastolic functions are preserved, although left ventricular diastolic function is impaired, during the early period in the poorly controlled group.