

Left and Right Ventricular Functions may be Impaired in Children Diagnosed with Subclinical Hypothyroidism

Background: Subclinical hypothyroidism may influence left and right ventricular functions. Tissue Doppler Imaging (TDI) is a useful method used for the assessment of the effect of subclinical hypothyroidism on cardiac functions.

Methods: We compared left ventricular mass index (LVMI) and TDI parameters of patients with subclinical hypothyroidism (SH) and children with euthyroidism. SH was diagnosed when thyroid stimulating hormone (TSH) level was higher than the reference value of the laboratory ($>4.2\text{mIU/L}$) and free thyroxine (fT4) level was in normal range.

Results: The study included a group of 35 patients with SH and a control group of 38 healthy children with euthyroidism (mean age was 7.6 ± 3.5 years and 9.0 ± 2.4 years, respectively). LVMI was significantly higher in the patient group ($p=0.005$). TDI parameters including mitral septal ejection time (ET) was lower ($p=0.003$) and mitral septal myocardial performance index (MPI) was higher ($p=0.009$) in the patient group. Right ventricular TDI revealed that tricuspid lateral E/Ea and tricuspid septal E/Ea were higher ($p=0.015$ and $p=0.024$, respectively) and tricuspid septal Ea/Aa and ET were lower ($p=0.018$ and $p=0.017$, respectively) in the patient group. Intraventricular septal Aa was higher ($p=0.022$) and Ea/Aa was lower ($p=0.032$) in the patient group.

Conclusions: Subclinical hypothyroidism may lead to increase LVMI. Left ventricular systolic and diastolic TDI parameters (lower mitral septal ET, higher mitral septal MPI) as well as right ventricular systolic (lower tricuspid septal ET) and diastolic (higher tricuspid septal and lateral E/Ea, lower tricuspid septal Ea/Ea) functions may be also impaired in children with SH.