

## MP1-11

### Comparison of echocardiographic findings and insuline resistance in obese children

Giannisi F. (1), Keivanidou A.(1), Sakellari I. (2), Hassapidou M.(2), Makedou A. (1), Giannopoulos A. (1)

2nd Pediatric Department, Aristotle University of Thessaloniki, AHEPA General Hospital, Thessaloniki, Greece (1)

Alexander Technological Educational Institute of Thessaloniki, Department of Nutrition and Dietetics, Thessaloniki, Greece (2)

**Introduction :** Obesity in children and adolescents has increased over the past decades and is considered a strong risk factor for future cardiovascular morbidity and mortality. Obesity has been associated with myocardial structural alterations that may influence cardiac mechanics. The aim of this study was to detect early changes in LV structure and function in obese normotensive children and whether they are associated with anthropometric measurements and insuline resistance.

**Methods:** A total of 51 children aged 7-12 years (34 obese and 17 normal-weight (NW) children) were studied. The obese children were divided into two groups according to BMI z-score ( Overweight (OW):  $>+1SD$  (N=13), obese (OB):  $>+2SD$  (N=21)). All children had normal resting blood pressure. Homeostasis model of insulin resistance was calculated by the formula  $[\text{fasting glucose}(\text{mg/dl}) \times \text{fasting insulin} (\mu\text{IU/ml})] / 405$ . Two-dimensional ultrasound was performed to assess the LV mass index (LVMI), calculated as  $\text{LV mass}/\text{height}^2$  and pulsed-wave doppler to assess transmitral early and late diastolic inflow peak velocities (E & A ). Tissue Doppler imaging was used to record the mitral annular velocities (e' & a').

**Results:** The three children groups (NW,OW,OB) didn't differ significantly regarding age and sex. Waste-to-hip ratio ( $0,91 \pm 0,13$  and  $0,95 \pm 0,03$  versus  $0,845 \pm 1,33$ ,  $p=0,012$ ), HOMA-IR index ( $2,76 \pm 1,8$  and  $2,9 \pm 1,2$  versus  $1,67 \pm 0,63$   $p=0,025$  and LVMI ( $37,6\text{g}/\text{m}^2.7 \pm 7,6$  and  $41,96\text{g}/\text{m}^2.7 \pm 10,8$  versus  $27,4\text{g}/\text{m}^2.7 \pm 5,5$ ,  $p<0,001$ ) were significantly higher in OW and OB children compared to controls. Mitral valve E/A ratio was significantly higher in NW compared to OB ( $2,21 \pm 0,84$  versus  $1,68 \pm 0,32$   $p=0,016$ ) reflecting better diastolic function, but in all the patient groups, the mitral valve E/A ratio was  $>1$ , within the normal range. Tissue Doppler Imaging measurements of e' and a' velocities as well as E/e' ratio didn't differ between cases and controls.

**Conclusions:** In paediatric obesity, myocardial size and diastolic function seem to be affected early so cardiac ultrasound should always be considered when assessing obese children.