Obesity is one of the significant risk factors in the development of atherosclerosis, the most common metabolic disorder which the world’s health organization classified as an epidemic disease.

**Aim** Point to frequency of obesity in children, risk factors significant for the onset of atherosclerosis in obese children and association of these factors.

**Methods** 2069 children aged 2–19 were examined. Body mass index (BMI) (Body weight/Body height²) (kg/m²) was calculated. Tables of international standards for BMI of children corresponding to BMI in adults were used for the assessment of nutrition. Obesity is classified with BMI> 30 kg/m². Blood pressure (BP/mmHg), systolic and diastolic was measured. Total cholesterol (TC), high density lipoprotein cholesterol (HDL-C), triglycerides (TG) concentrations were determined. Low density lipoprotein (LDL-C), non-HDL cholesterol (TC-HDL-C) were calculated. 2016 ESC/EAS guidelines for the management and European guidelines for prevention, diagnosis and treatment of high BP in children and adolescents (2010) were used to estimate the results.

**Results** There were 10.45% obese and 15.6% overweight children. BP (Systolic, Diastolic) were significantly higher in obese (105.71/65.82) than in normal weight children (94.58/79). In the obese there was a really significant connection between BMI and BP, Systolic (r = 0.625) and diastolic (r = 0.541). TC, LDL-C, TG and nonHDL-C values were significantly higher in obese (4.25; 2.53; 1.13; 3.02 mmol/l) than in normal weight (4.06; 2.31; 0.92; 2.73 mmol/l). LDL-C values were significantly lower (<0.001). The percentage of children with increased values of SBP, DBP, and SBP and DBP was higher in obese children (15.35%; 6.64%; 5.81%) than in normal weight (1.26%; 1.08%; 0.42%).

The percentage of children with lipid and lipoprotein values which are a high risk factor for the development of cardiovascular diseases in adulthood was higher in obese children and also was the percentage of children with more associated values.

**Conclusion** Blood pressure values, lipids and lipoproteins values, which are significant risk factors for the onset of atherosclerosis, were higher in obese children. It is necessary to detect obese children on time and apply all preventive measures in its control and elimination. The chosen doctor plays a major role in this. It is necessary to have continuous parents and teachers education about proper children diet and the role of physical activity, smoking and alcoholism prevention. The whole community should also be involved.