**Abstract**

Background: Pediatric obesity has increased worldwide over the last decades, being diagnosed at ever-younger ages.

Objective and hypotheses: Evaluation of clinical and biological parameters and changes that occur in children with obesity; metabolic syndrome (MetS) identification in the studied groups; identification, evaluation, analysis and correlation of the adipogenic factors with the carotid intima media thickness (CIMT).

Method: A cross-sectional study was conducted over a period of 1 year (April 2014–April 2015). 68 obese patients with mean age 11.83 years were included, distributed as follows: 17 (25%) were aged between 5 and 9, 35 (51%) between 10–14 and 16 (24%) between 15 and 18. Blood pressure, lipids, glucose, leptin, adiponectin and high-sensitivity C-reactive protein (hs-CRP) were determined. Oral glucose tolerance test was performed in all children. Insulin resistance (IR) was assessed by HOMA. CIMT was measured in all patients.

Results: MetS was present in 18 patients (26.14%), with a higher prevalence among the 15–18 age group (11.76% vs 22.85%). A strong correlation between CIMT and other metabolic factors has been observed (r=0.83). Lower levels of adiponectin, higher levels of leptin, higher sensitive CRP and CIMT values have been observed in the 15–18 age group.

Conclusion: Metabolic risk increases with age. There is a correlation between CIMT and adiponectin, leptin, hs-CRP. CIMT is a known marker for subclinical atherosclerosis; it is a cheap and noninvasive method.

Extensive population studies are required to establish threshold values for CIMT in children.

Key words: cardiovascular risk, obesity, child

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**Introduction**

Pediatric obesity has increased worldwide over the last decades, being diagnosed at ever-younger ages.

Noninvasive and inexpensive methods of detecting subclinical atherosclerosis are useful in preventing cardiovascular diseases.

**Aim:**

- Evaluation of clinical and biological parameters and changes that occur in children with obesity;
- MetS identification in the studied groups;
- Identification, evaluation, analysis and correlation of the adipogenic factors with CIMT.

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**Material & Methods:**

- A cross-sectional study
- Period: 1 year (April 2014–April 2015)
- 68 obese patients with mean age 11.83 years were included

<table>
<thead>
<tr>
<th>Age</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>5-9</td>
<td>8 (24%)</td>
<td>9 (28%)</td>
<td>17 (25%)</td>
</tr>
<tr>
<td>10-14</td>
<td>16 (48%)</td>
<td>19 (54%)</td>
<td>35 (51%)</td>
</tr>
<tr>
<td>15-18</td>
<td>9 (27%)</td>
<td>7 (20%)</td>
<td>16 (24%)</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>35</td>
<td>68</td>
</tr>
</tbody>
</table>

Analysed variables:

- Presence of MetS or its components (according to Weiss criteria)
- HOMA-IR
- Adiponectin
- Leptin
- Hs-CRP
- CIMT – determined by B Mode ultrasound

**Results:**

MetS was present in 18 patients (26.14%), with a higher prevalence among the 15–18 age group (11.76% vs 22.85%).

**CIMT** in the MetS group was significantly increased as compared with non MetS group (0.0624 cm vs. 0.05694 cm)

**Discussion:**

- MetS is directly correlated with leptin and hs-CRP, and indirectly correlated with adiponectin; these relationships strengthen with age;
- Multiple regression analysis demonstrated a statistically relevant influence of leptin, adiponectin and hs-CRP on CIMT;
- Statistical analysis identified hs-CRP and CIMT as important markers in establishing cardiovascular risk;
- CIMT was higher in obese children with MetS, suggesting that vascular lesions may be present since childhood.

**Conclusions:**

- Metabolic risk increases with age.
- There is a correlation between CIMT and adiponectin, leptin, hs-CRP.
- CIMT is a known marker for subclinical atherosclerosis; it is a cheap and noninvasive method.
- Extensive population studies are required to establish threshold values for CIMT in children.

**Disclosure statement:** No conflict of interest

**References:**

2. Jie Fang, Jian Ping Zhang, Cai Xia Luo et al. Carotid intima-media thickness in childhood and adolescent obesity relates to abdominal obesity, high triglyceride level and insulin resistance. International Journal of Medical Sciences2010; 7(5):278-283