School of Human Movement and Quality of Life,
Department of Nursing, University of Peloponnese, Sparta, Greece

URIC ACID AND TRIGLYCERIDES/HDL RATIO AS A PREDISPOSING FACTOR FOR METABOLIC SYNDROME IN CHILDREN

Maria Efthymia Katsa, Anastasios Ioannidis, Sofia Zyga, Tsironi Maria, Koutsovitis Paraskevas, Athanasios Sachlas, Petros Kolovos, Maria Magana, Maria Daratsianou, Andrea Paola Rojas Gil

Metabolic Syndrome is defined as a group of disorders including diabetes mellitus, central obesity, dyslipidaemia, and hypertension. Uric acid and Triglycerides/HDL ratio are an important risk factor for cardiovascular diseases and insulin resistance.

Aim: To investigate how Triglycerides/HDL ratio and uric acid are correlated with children's biochemical and anthropometric characteristics, depending on the predisposition for Metabolic Syndrome (MetSyn)

Methods:
110 students, 6-12 years old, living in Sparta-Greece, participated in our research. Anthropometric and biochemical analyses were performed

Results

Total Population

- ❖ **39.1% of children had BMI%≥85%**
- ❖ **71.7% had waist circumference (WC)%≥95%**
- ❖ **3.64% had uric acid≥5.5mg/dl**
- ❖ **8.2% glucose≥100mg/dl**
- ❖ **3.64% triglycerides≥150mg/dl**
- ❖ **12.7% cholesterol≥200mg/dl**
- ❖ **no child with HDL≤40mg/dl**

17.27% of them were predisposed for MetSyn

The triglycerides/HDL ratio was:
- ❖ **2:1 in 3.6%**
- ❖ **≥3:1 in 3.6% of children**

- ❖ **Triglycerides/HDL** ratio was positively correlated with
  - ❖ **Cholesterol** ($p=0.006$),
  - ❖ **LDL** ($p=0.001$),
  - ❖ **ALT/SGPT** ($p=0.033$),
  - ❖ **GGT** ($p<0.001$) and
  - ❖ **CAD** (cholesterol/LDL) ($p<0.001$)
- ❖ **Uric acid** increased
  - ❖ **WC%** ($p=0.043$) and
  - ❖ **triglycerides** ($p=0.008$)
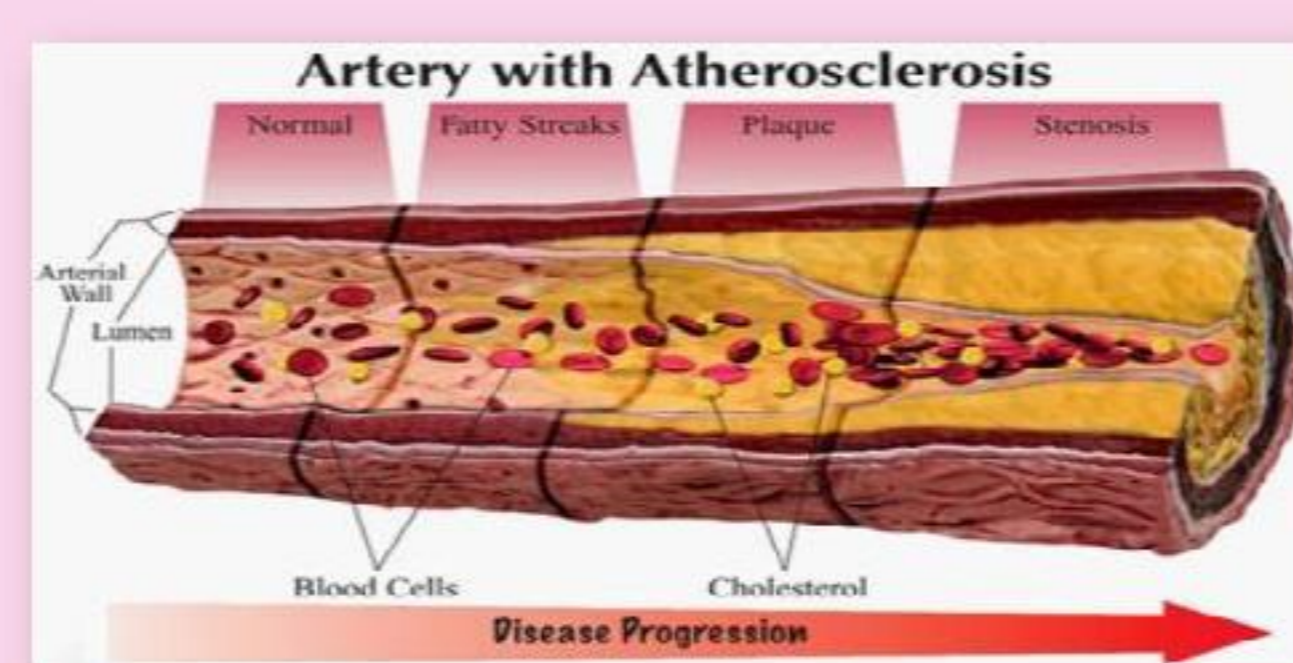- ❖ **Uric acid** decreased **HDL** ($p<0.001$)

Children without predisposition for MetSyn

- ❖ **Triglycerides/HDL ratio** was positively correlated with
  - ❖ **body weight** ($p=0.035$),
  - ❖ **uric acid** ($p=0.002$),
  - ❖ **CAD** ($p<0.001$) and
  - ❖ **white blood cells** ($p<0.001$)
- ❖ **Uric acid** increased
  - ❖ **WC%** ($p=0.027$) and cholesterol ($p=0.035$)
- ❖ **Uric acid** decreased **HDL** ($p<0.001$)

Children with predisposition for MetSyn

- ❖ **Triglycerides/HDL** ratio was positively correlated with
  - ❖ **CAD ($p<0.001$)**
- ❖ **Uric acid** was positively correlated with
  - ❖ **triglycerides ($p=0.003$)**
- ❖ **Uric acid** was negatively correlated with **HDL ($p=0.023$)**

Conclusion

- ❖ Despite the fact that HDL was normal in all children, **triglycerides and uric acid levels were increased** in a small percentage of children, making them important **predisposing factors** for the acquisition of **metabolic disorders.**
- ❖ The deposition of **visceral fat** can supercharge the **lipid profile** and raise the concentration of **insulin,** reducing **renal clearance,** resulting in **hyperuricemia.**
- ❖ At the same time, **uric acid** has a mechanistic role in **atherosclerosis** through the removal of nitric oxide which may be an early indicator of **endothelial dysfunction and cardiovascular diseases.**