

## **Abstract**

Cardiovascular diseases (CVD) have been one of the leading causes of morbidity and mortality in developed countries with an enormous influence on individual health and significant socioeconomic impact as well. The aim of most physicians in recent decades is to seek the best possible predicative risk factor (RF) (or combination of several RF) which could help to determine the individual risk of developing CVD. This risk stratification can be used to identify the high risk patients and treatment intensification or establishment of early preventive measures. Currently, several RF of atherosclerosis and CVD are commonly used to individualize health care. However, individuals with low levels of these RF suffer of CVD, therefore the effort to find as much as possible specific RF still persists. In recent years, the inflammatory markers, crucial in the atherosclerosis development, raise great expectation

In our studies, we focused on investigating the levels of inflammatory parameters in specific groups of patients (obese children and patients with metabolic syndrome) and observed the effect of weight loss following lifestyle changes. Our main concern was lipoprotein-associated phospholipase A<sub>2</sub> (Lp-PLA<sub>2</sub>), oxidized LDL particles (ox-LDL) and myeloperoxidase (MPO).

The results demonstrated significantly elevated proinflammatory state in the obese individuals, especially in patients with metabolic syndrome. This is certainly related to previously documented high risk of CVD development in obese people, which even raises in those who meet criteria of metabolic syndrome. We also observed decrease of inflammatory markers after lifestyle changes including diet and regular physical activity followed by weight loss. Due to repeatedly demonstrated connection of inflammatory markers elevation and CVD incidence we can conclude that weight loss following lifestyle modification reduces individual risk of developing CDV. Among other benefites, suitable regime measures are essential to improve the inflammatory state, thereby eliminating CVD risk and improving patients' prognosis.