

Ceruloplasmin and its Clinical Relevance as Predictor for Metabolic Syndrome and Risk of Future Cardiovascular Disease in Adolescents

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Introduction: The metabolic syndrome (MetS) is defined in adults as a set of risk factors of metabolic precursors of atherosclerotic cardiovascular disease and type 2 diabetes mellitus (DM2). However, data on children and adolescents are still scarce, in part, because of difficulties in transposing the definition from adults. The identification of risk factors for the development of MetS at an early age is essential for prevention purposes with low-grade inflammation acting as a determinant for the association among the MetS components. The aim of this study was to investigate the associations of the MetS with systemic markers of inflammation and ceruloplasmin in a population of adolescents.

Methods: A cross-sectional study performed on 976 adolescents (13.2 ± 1.2 y) randomly recruited from schools in south-east Spain. Interleukin-6 (IL-6) and tumor necrosis factor- α (TNF- α) were determined by ELISA. High-sensitivity C-reactive protein (hs-CRP) was determined by a solid-phase chemiluminiscentimmunometric assay. Ceruloplasmin was measured by immunoturbidimetry.

Results: MetS adolescents exhibited higher levels of TNF- α , IL-6, CRP, and ceruloplasmin compared to non-MetS individuals. TNF- α , IL-6, and CRP showed strong correlations with the MetS components and insulin resistance but not relevant predictive values according to ROC curves (AUC values 0.544- 0.555). In contrast, ceruloplasmin only showed significant correlations in non-MetS individuals, but exhibited a very high predictive value (AUC=0.941, $P < 0.001$).

Conclusions: Ceruloplasmin have an elevated predicted value for MetS in adolescents. The determination of serum ceruloplasmin in adolescents might be a useful tool to identify patients with the highest risk of future cardiovascular disease.

Biography:

Ángel Fernández-Aparicio is researcher at Granada University, Granada, Spain. Recently, she finished her nursing studies in 2015, and in this year she is going to start a master entitled "Health Care for the Promotion of the People's Autonomy and the Attention to the Processes of the End of Life".