Risk assessment of cardiovascular disease in Young adults affected by the metabolic syndrome using the Correlation between plasma total cholesterol/high-density lipoprotein cholesterol ratio and other biological variables

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Abstract

Background and aims: The correlation between distinct variables in selected pathological situations may contribute to the identification of possible cause-to-effect links. In such a perspective, the present study refers to the correlation between the plasma TC/HDL-C ratio as dyslipidemia related-insulin resistance key predictor and selected markers of MetS in young adults. Materials and methods: The population under study, i.e. a cohort of 100 patients (60 men and 40 women) aged between 30 and 40 years, living in western Algeria and affected by the MetS. Fifteen classical markers of the latter syndrome, as well as BMI, were measured both in the patients and in 20 control subjects of the same age. The patients were considered as non-diabetic or diabetic based on their plasma glucose concentration below or above 7.0 mM. The strength between the plasma TC/HDL-C ratio and other parameters of MetS were quantified using Pearson correlation coefficient (r). Results: The TC/HDL-C ratio averaged 5.34 ± 0.08 and 4.26 ± 0.08 in male and female patients, as distinct ($p<0.001$) from 2.82 ± 0.09 in control subjects. Four correlations achieved statistical significance in both male and female, i.e. those concerning the TC/HDL-C and either LDL-C, TGs, BMI or hs-CRP, here mentioned in order of decreasing probability. Incidentally, in the male subjects, significant correlations were also observed between the TC/HDL-C ratio and adiponectin, TNF-α, leptin, HOMA, IL-6 and GLP-1, the latter two correlations yielding a negative Pearson r. Likewise, comparable correlation results were recorded in the diabetic patients, but not so in the non-diabetic patients.

Conclusion: The selection of the TC/HDL-C ratio as a key variable was motivated by its relevance to atheromatous complications. The close correlations between this ratio and either LDL-C, TGs or BMI reinforce the concept of a close interdependency between obesity, hyperlipidemia and cholesterol status suggesting TC/HDL-C ratio as a relevant marker for the MetS severity in clinical practice in term of cardiovascular risk assessment.

Biography:

Mohammed Ilyes BELHAYARA is a PhD student in Health and Development Sciences at Department of Biology, Faculty of Natural and Life Sciences, University of Oran, Algeria. His research interests lie in promising biomarkers that are associated with metabolic diseases such as obesity, metabolic syndrome, type 2 diabetes, and cardiovascular diseases. Med Ilyes is also interested by risk factors associated with nutrition-related diseases in North Africa countries and their associations with dietary behaviors as nutrition transition is unfolding in the region.

Speaker Publications:

1.Belhayara, M. I. et *al*. Relationship between the insulin resistance and circulating predictive biochemical markers in metabolic syndrome among young adults in western Algeria. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 13, 504–509 (2019).

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