EDITORIAL

TG/HDL-c Ratio as a Predictor of Cardiovascular Risk

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Referent to the article: Optimal Cutoff of the TG/HDL-c ratio for Cardiovascular Risk in Hypertensive and Diabetic Patients Monitored by Primary Health Care in a city in Minas Gerais

Cardiovascular diseases (CVD) continue to be an important public health problem and one of the main causes of morbidity and mortality worldwide, generating economic and social impacts.[1,2] In Brazil, CVD costs have been increasing significantly and are the highest when compared to other causes of hospitalization. Moreover, as the population ages, and with the increase in CVD prevalence, these expenses tend to be even higher.[3] Therefore, early detection and possible changes in cardiovascular risk factors can be important in order to reduce hospitalization and negative outcomes, as well as to improve the population's quality of life.

In an attempt to identify asymptomatic individuals with a greater predisposition for the disease and define therapeutic goals, many evaluation tools have been developed to estimate risks for CVD, such as Framingham's Global Risk Score (GRS), adopted by the Department of Atherosclerosis of the Brazilian Society of Cardiology (SBC-DA, in Portuguese) and which evaluates the risk of cardiovascular events over a 10-year period through the variables of age, sex, high-density lipoprotein cholesterol (HDL-c), total cholesterol, systolic blood pressure, smoking, and diabetes.[4]

Based in this premise, other indexes have been proposed to predict the cardiovascular risk, among which, what stands out are the ratio between triglycerides (TG) and HDL-c (TG/HDL-c), which reflects small and dense particles of low-density lipoprotein (LDL), which are more atherogenic than the larger floating LDL particles.[5,6] The TG/HDL ratio has proven to be a good predictor for myocardial infarction[7,8], and was associated with the incidence of cardiovascular diseases, type 2 diabetes mellitus, and metabolic syndrome.[9] In addition, it was reported that a high TG/HDL-c relationship is significantly associated with an increase in the resistance to insulin in apparently healthy individuals, thus suggesting that this measure can serve as a simple and clinically useful method to identify apparently healthy young individuals who are resistant to insulin and who present an increased cardiometabolic risk.[10]

In the current edition of the *International Journal of Cardiovascular Sciences*, Silva et al.,[11] evaluated 833 individuals, of whom 62.8% were women, with an average age of 62 years, with high blood pressure and/or diabetes, who received medical care at the Family Health Unit in the city of Viçosa, Minas Gerais, Brazil. Exams showed that the cut-off values of the TG/HDL-c ratio that reflect a cardiovascular risk were ≥ 3.26 for men and ≥ 2.72 for women. Moreover, for women with multiple risks, the chance of an alteration in the TG/HDL-c ratio increased by 90%.

The cut-off values considered by Silva et al.,[11] were different from those observed in other populations, such as in Argentina (>3.5 in men; >2.5 in women)[12], Iran (>4.42 for men; 3.76 for women, and 3.68 for both sexes)[13], and Spain (>2.75 for men and > 1.65 for women).[14] Wakabayashi e Daimon[5] compared the discrimination for cardiovascular risk for different cut-off values of the TG/HDL-c relationship and observed that the optimum cut-off value was of 2.967 in men and 2.237 in women. As observed, the values are diverse among the population, which can possibly be explained by genetic factors, the geographic region, race/ethnicity, and the age of the individuals.

Keywords

Cardiovascular Disease, Risk Fators, Dyslipidemias, Hypertension; Diabetes Mellitus

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In Brazil, studies that evaluate the cut-off values of the TG/HDL-c ratio are scarce, which hinders the comparison with the results obtained by Silva et al.,[11] and show the importance of this investigation for scientific literature. However, the results cannot be extrapolated to the Brazilian population in general, since the results were obtained in a specific population in the state of Minas Gerais. Brazil has a high degree of miscegenation and the TG/HDL-c ratio can be influenced by ethnicity; therefore, representative samples of each region should be used so that the results can be more broadly generalized.

In conclusion, the TG/HDL-c ratio is an easy, accessible, and economical measure that can be useful in predicting the cardiovascular risk in routine exams and triage in Primary Health Care. Nevertheless, more studies are warranted in order to establish the optimum cut-off point. Studies should also include confounding factors, such as socioeconomic status, food consumption, and physical activity.

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