

Metabolic syndrome and alanine aminotransferase: a global perspective from the NAVIGATOR screening population

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ABSTRACT

Aims Non-alcoholic fatty liver disease (NAFLD) is associated with features of the metabolic syndrome (MetS) and may be an expression of the syndrome within the liver. Using screening data from the Nateglinide And Valsartan in Impaired Glucose Tolerance Outcomes Research (NAVIGATOR) study (n = 42 149), we examined whether alanine aminotransferase (ALT), a biomarker for NAFLD, clustered with features of MetS and whether the clusters differed across global geographic regions.

Methods Exploratory factor analysis using principle components analysis was applied to data drawn from the NAVIGATOR screening population (n = 41 111). Demographic data, anthropomorphic measurements and blood pressure (BP) collected during the screening visit, as well as blood samples analysed for ALT, total cholesterol, triglycerides, high-density lipoprotein, low-density lipoprotein, and fasting and 2-h glucose measures after an oral glucose tolerance test were used for our analysis.

Results Two factors, interpreted as lipid (Factor 1), and BP/obesity (Factor 2) were identified, explaining approximately 50% of the variance in the overall population. Similar patterns of aggregation were reproducible across all geographic regions except Asia, where fasting glucose loaded more consistently on Factor 1. ALT loaded with mean arterial pressure, fasting glucose and waist circumference except in Asia, where it loaded only with mean arterial pressure and waist circumference.

Conclusions ALT aggregated with components of MetS, and the pattern of aggregation of ALT with other features of MetS was similar across regions except Asia, possibly indicating a different pathophysiology for NAFLD in Asia. Predictive models of NAFLD may need to be adjusted for regional and ethnic differences.