

# RELATIONSHIP BETWEEN ARTERIAL STIFFNESS AND $\gamma$ -GLUTAMYL TRANSFERASE VALUES IN CHRONIC HEMODIALYSIS PATIENTS

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## OBJECTIVES

Due to its role in the catabolism of glutathione,  $\gamma$ -glutamyl transferase (GGT) is thought to be involved in atherosclerosis development, but studies performed until present in uremic patients offer disparate results. In the same time, pulse wave velocity (PWV) is a noninvasive technique utilized to assess arterial stiffness which occurs early in the course of atherosclerosis. We conducted a prospective study on a cohort of chronic hemodialysed patients (HD pts) in which we evaluated the relationship between aortic PWV and GGT levels.

## METHODS

During 1 year, we evaluated all the chronic HD pts, permanently or temporary treated in our center, for GGT levels, aortic PWV, and other variables potentially interfering with atherosclerosis process. All patients have performed HD on high-flux polysulfone membranes. Patients with primary (hepatitis or cirrhosis) or secondary liver diseases (liver involvement in cardiac failure or systemic diseases), those with chronic alcoholism and those on drugs possible influencing GGT levels were excluded. GGT levels were measured before and after the mid HD session in the week; in order to eliminate the effect of postdialysis hemoconcentration, the postdialysis values of GGT were adjusted according to the modifications of the hematocrit. Arithmetic means of predialysis and corrected postdialysis values were used in the study. Aortic PWV was measured after HD sessions with the device Mobile-O-Graph-NG. We investigated the relation between increased GGT values and aortic PWV, serum total calcium, serum phosphate, cholesterol, triglyceride, serum albumin, and hsCRP.

## RESULTS

The cohort consisted of 138 men and 103 women, mean age 67.3 years, mean duration of HD 32.5 months (limits 3 months - 4 years). Increased mean values of GGT were recorded in 103 patients (42.74%) - percent higher than those reported in previous literature data. In a univariate analysis, increased GGT was correlated with increased aortic PWV, increased serum calcium, increased serum phosphate, and abnormal hsCRP (each  $p < 0.05$ ). In a multivariate analysis, only PWV correlated with increased values of GGT ( $p = 0.03$ ). No relation between increased GGT levels and serum albumin, cholesterol or triglycerides was revealed at statistical analysis.

## CONCLUSIONS

In this study we found a significant relationship between increased levels of GGT and abnormal PWV in chronic hemodialysis patients. GGT is a rapid and non-expensive test that could be valuable as cardiovascular marker in HD patients. Extensive studies are needed to validate these findings.