

Impact of traditional cardio nephroprotective therapy on cardiovascular risk marker - KLOTHO in Chronic Kidney Disease Patients

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OBJECTIVES: was to evaluate the impact of traditional cardio-nephroprotective therapy on serum Klotho in CKD 1-4 stage patients

MATERIALS AND METHODS: The main group consisted of 110 CKD patients and the control group - of 30 age and sex matched healthy volunteers. All patients were observed in dynamic within 1 year. ELISA was used for serum Klotho study. Blood pressure (BP) including brachial and central (aortic) pressure were measured in all the patients, as well as Pulse Wave Velocity (PWV) with a Sphygmokor(Australia) device; ECG, EchoCG.

RESULTS: Dynamic of Klotho serum levels, when compared to serum phosphate and PTH, resulted in Klotho changed already from stage 3A of CKD whereas the others started to increase only from stage 4-5. When comparing the degree of BP (both brachial and central) and serum Klotho it turned out that Klotho was sensitive to the hypertension severity [$r = -0,564$; $p < 0,01$ and $r = -0,675$; $p < 0,01$]. (Fig.1)

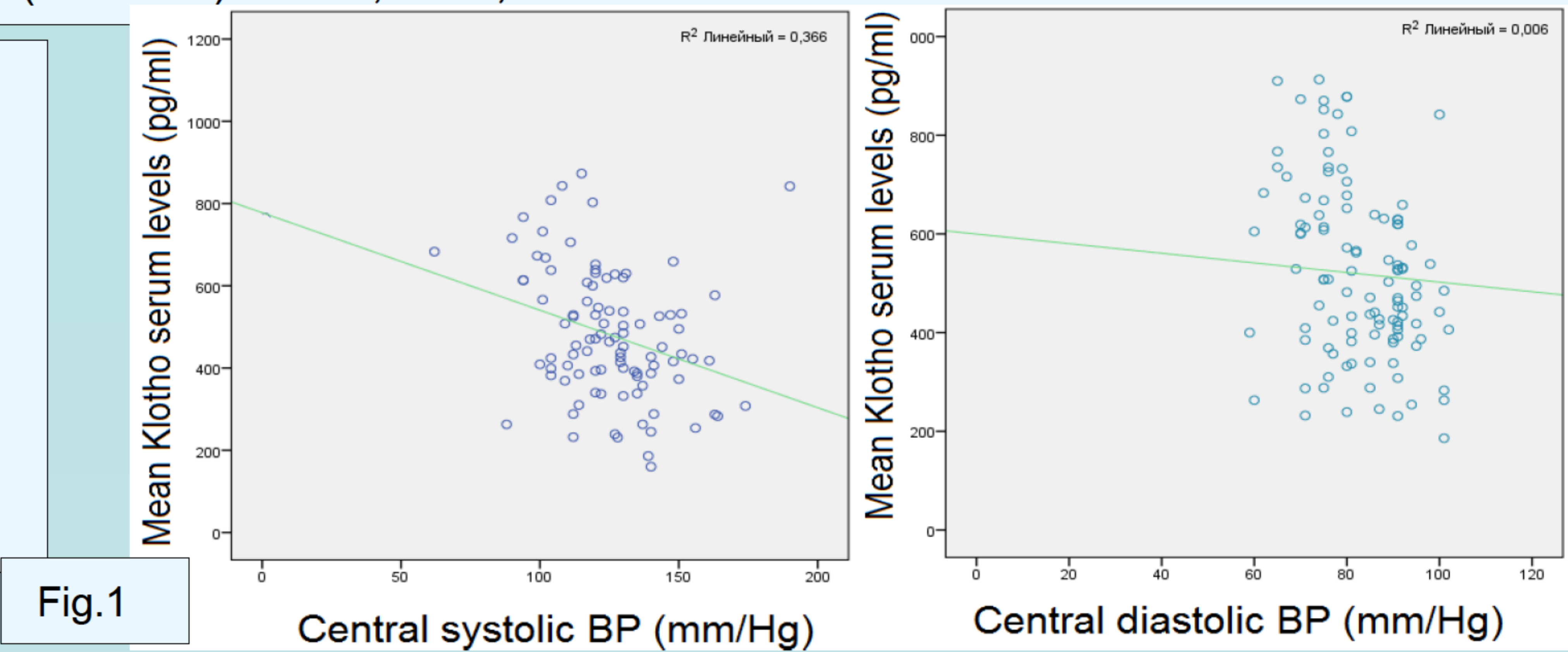


Fig.1

In addition, a negative correlation between Klotho and PWV [$r = -0,647$; $p < 0,01$] as well as with the heart calcification degree [$r = -0,612$; $p < 0,01$] were obtained. (Fig.2,3)

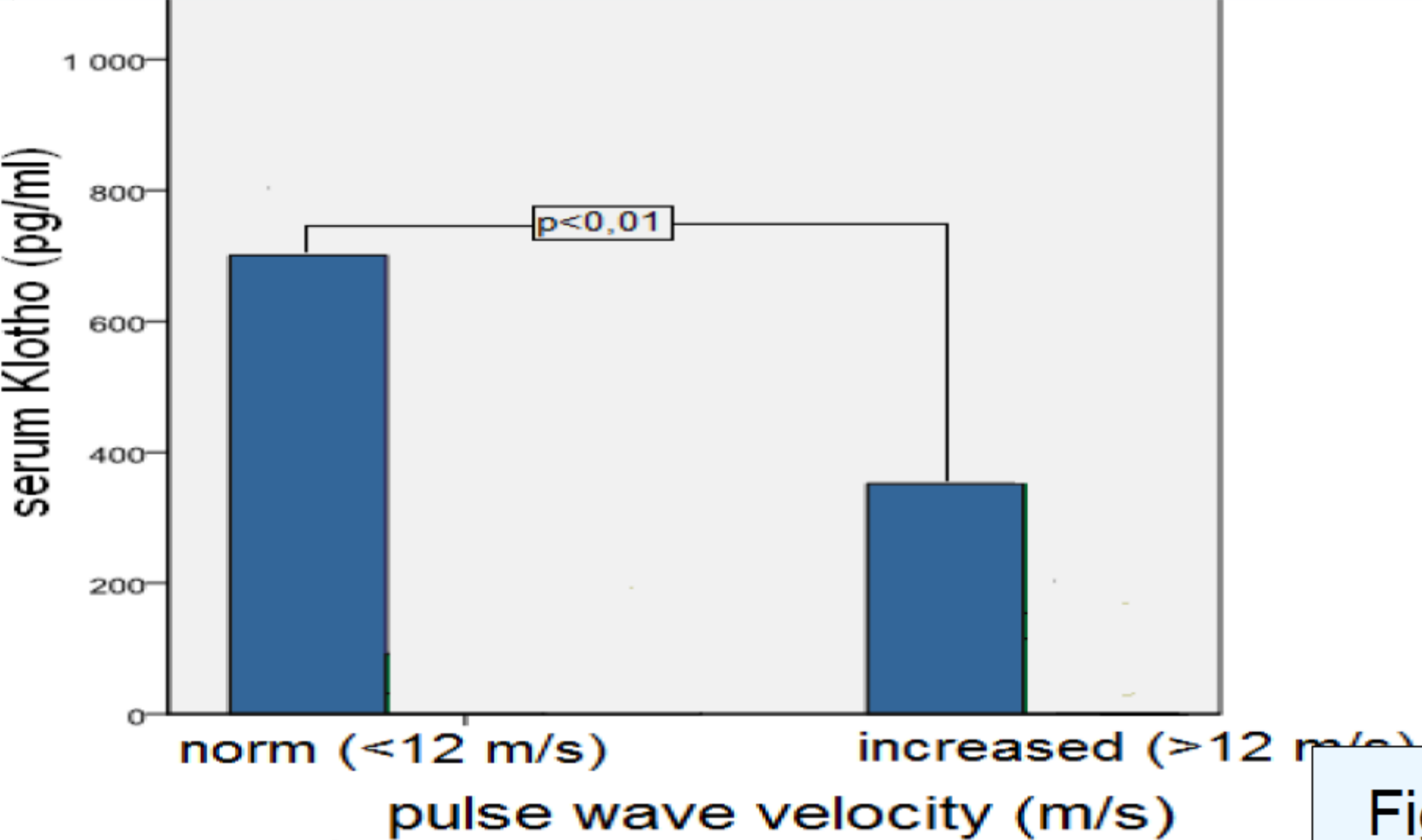


Fig.2

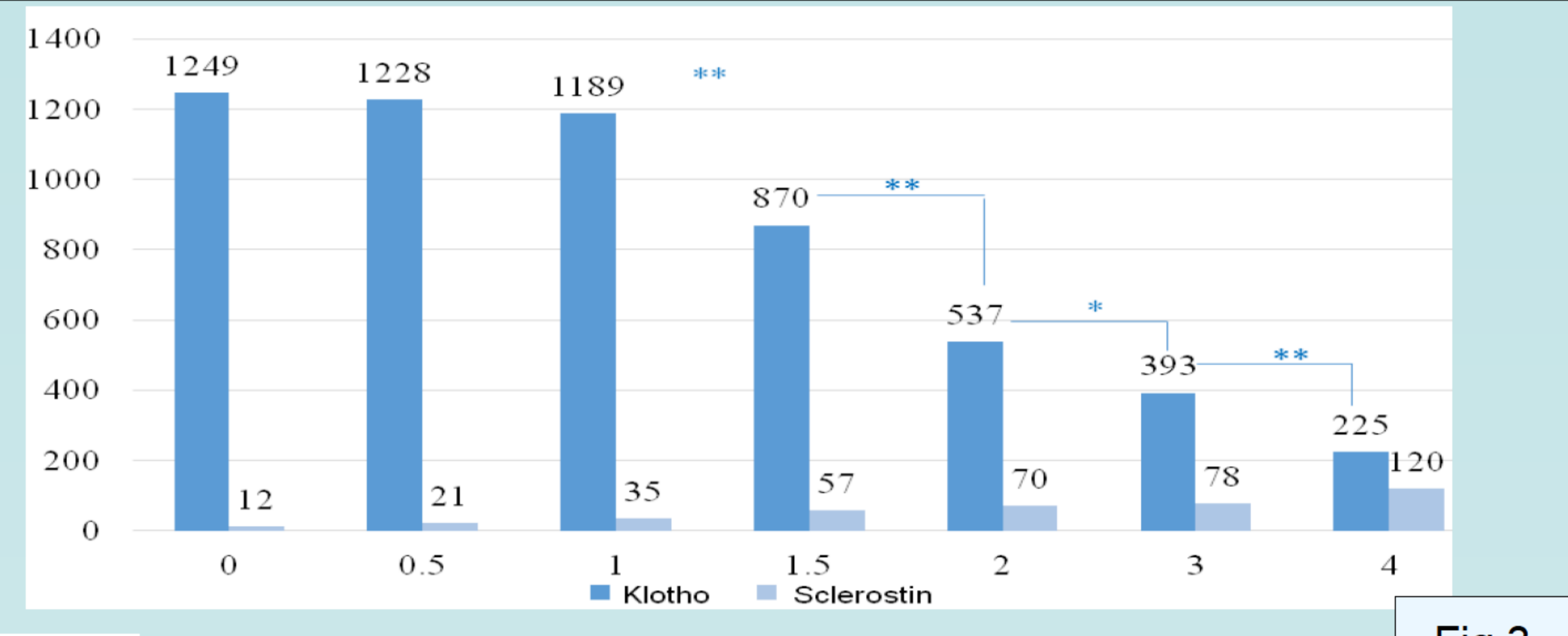


Fig.3

According to the ROC-analysis the values of serum Klotho below 347 pg/ml testified the myocardium calcification with 80% sensitivity and 75% specificity (AUC-area under the curve 0,83)(Fig.4)

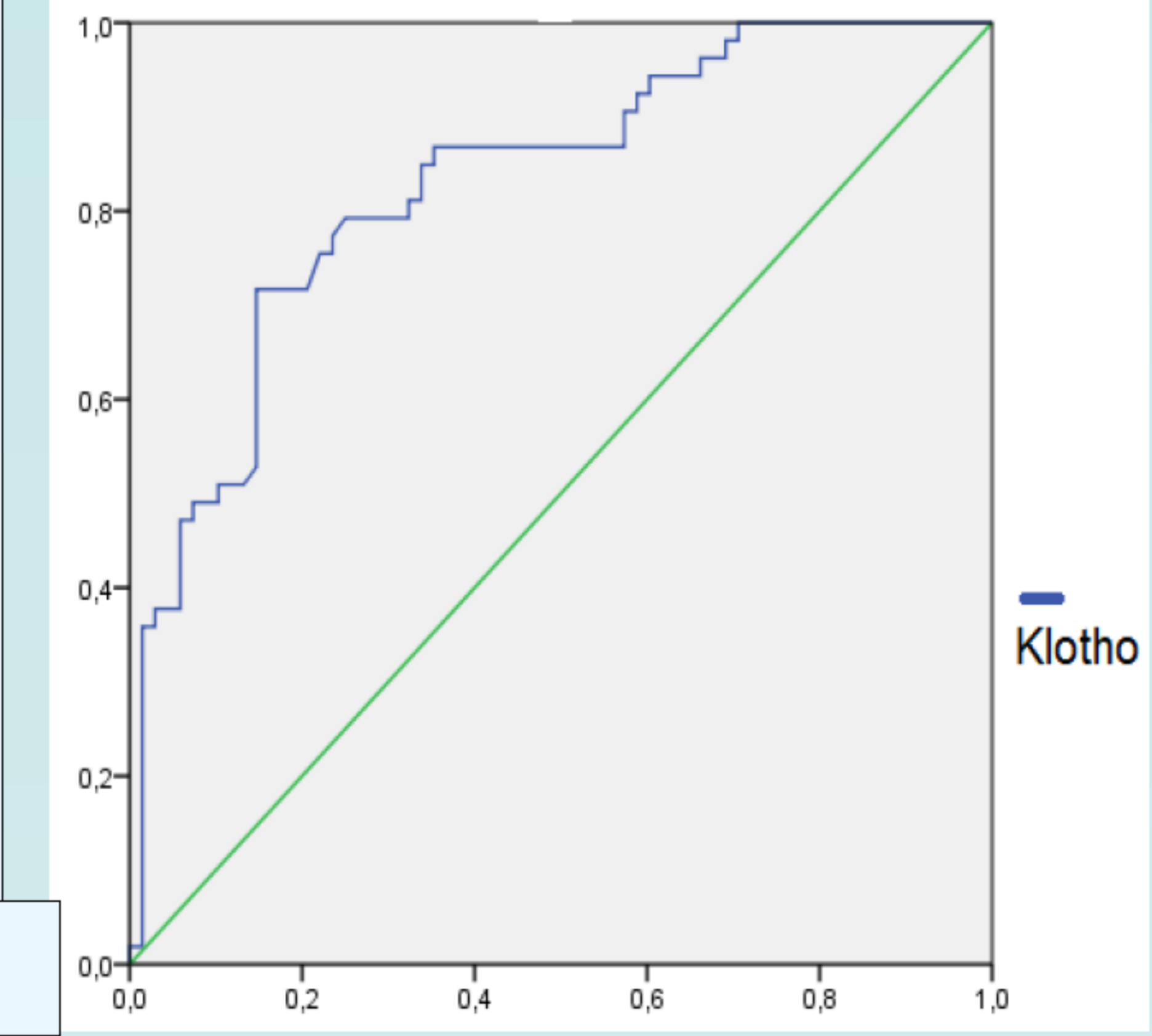


Fig.4

We stratified the risk of cardiovascular complications, depending on the serum Klotho.(Fig.5)

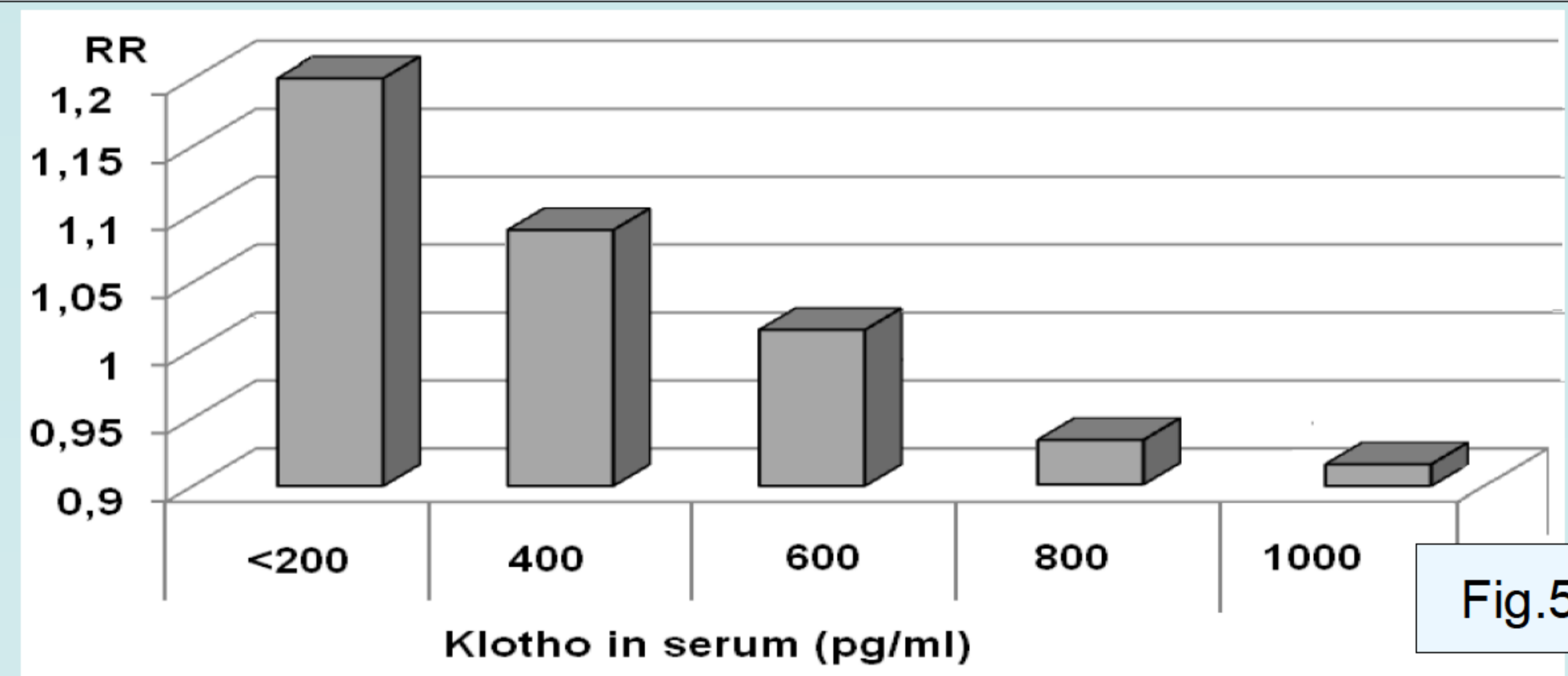


Fig.5

In this regard, it is clear the need to influence to Klotho in order to increase its level in patients with CKD

In studied CKD 1-4 stage patients we evaluated the effects of antihypertensive therapy. The highest Klotho were observed in patients, whose target values of BP were achieved predominantly with angiotensin receptor blockers compared those who used other drug groups [$p < 0,01$] or who unreach target BP levels [$p < 0,01$].(Fig.6)

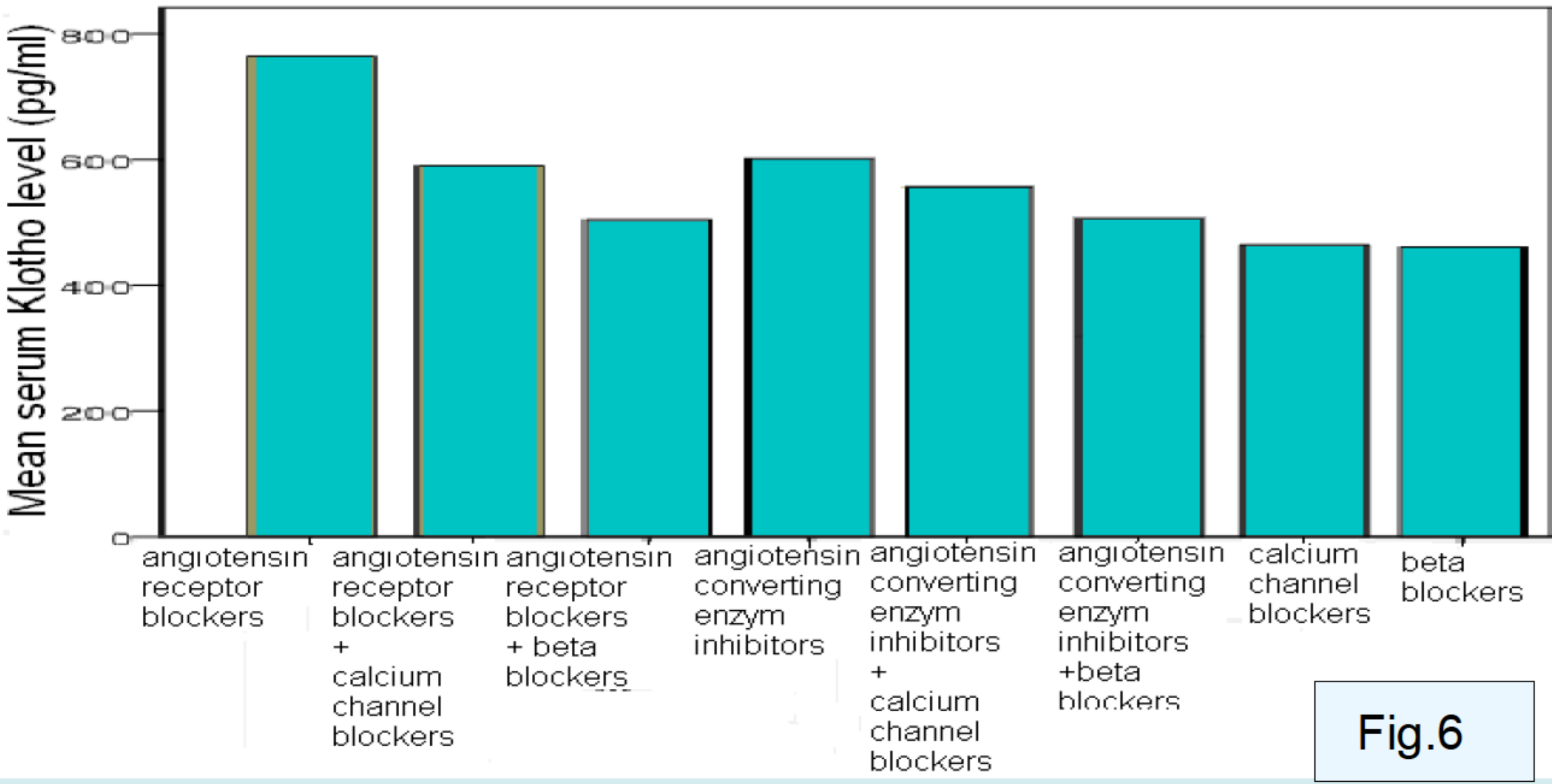


Fig.6

CONCLUSION: The study showed the possibility of practical use of Klotho as an early diagnostic marker of cardiovascular risk and that adequate correction of its changes including of traditional cardio nephroprotective therapy started in predialysis CKD could reduce cardiovascular risk and increase general CKD patients' survival.

REFERENCE: 1. Kidney Disease: Improving Global Outcomes (KDIGO) CKD-MBD Work Group. KDIGO clinical practice guideline for the diagnosis, evolution, prevention, and treatment of chronic kidney disease-mineral and bone disorder (CKD-MBD). *Kidney Int.* 2009; 76 (Suppl.113): 1-130.

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