

# NEW INSIGHTS INTO OXIDATIVE STRESS PARAMETERS IN HEMODIALYSIS PATIENTS

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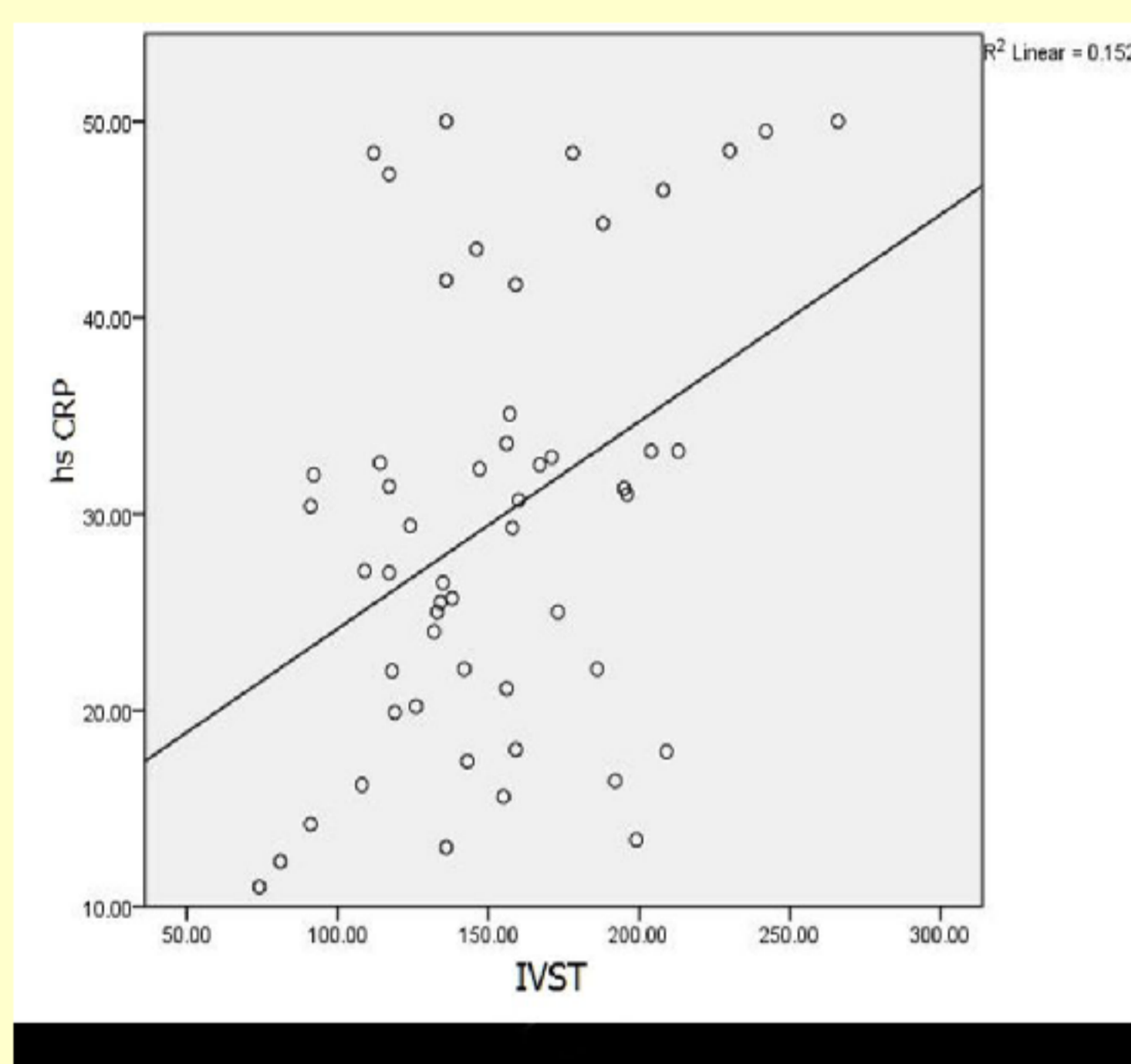
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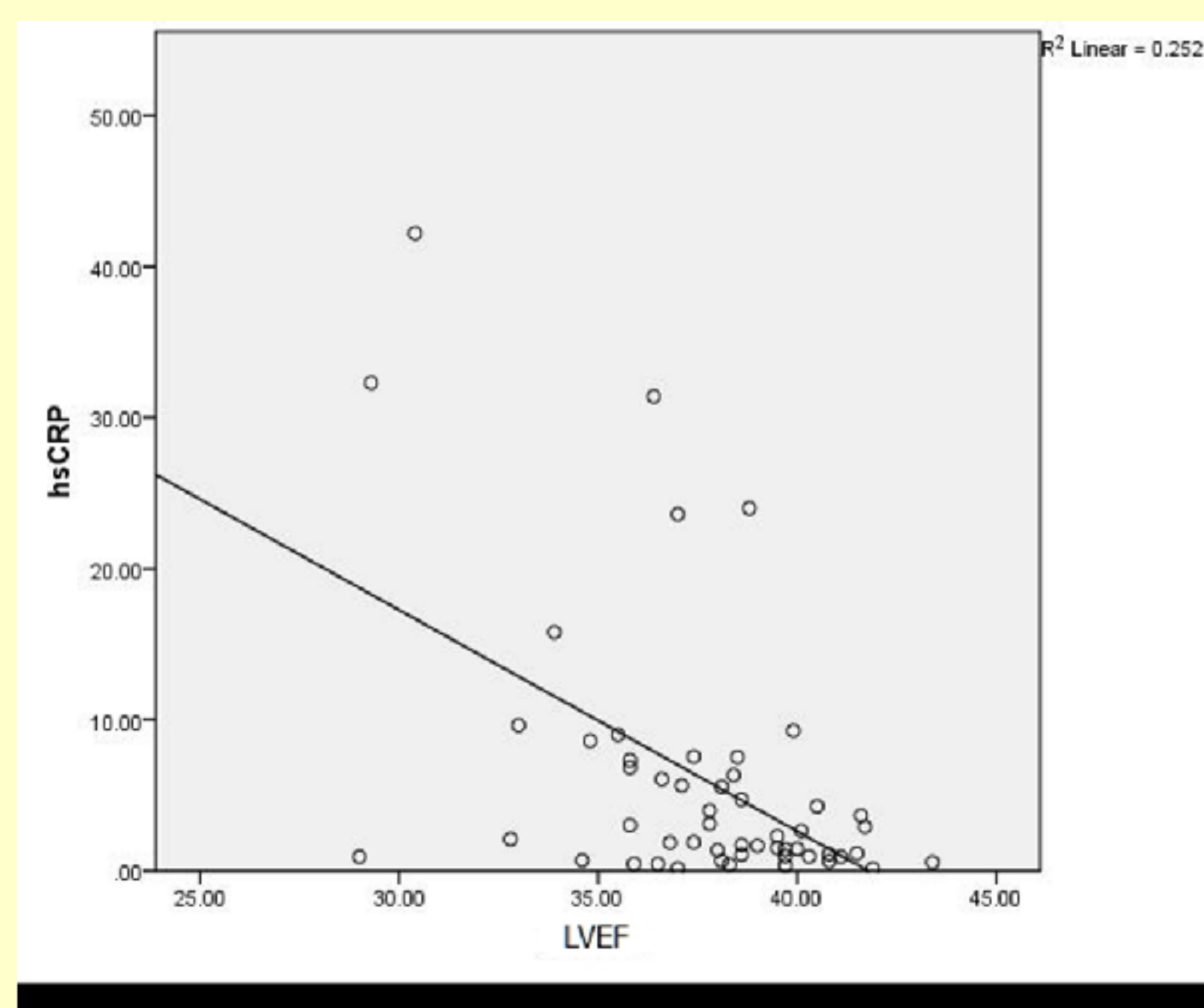


## INTRODUCTION AND AIMS

Beside traditional CVD (cardiovascular disorders) risk factors, microinflammation and oxidative stress have very important role in CVD pathogenesis. The role of inflammation in the propagation of atherosclerosis and susceptibility to cardiovascular (CV) events in ESRD is well established. Together oxidative stress and inflammation contribute to development and progression of CKD and the associated complications including atherosclerosis, CVD, EPO-resistant anemia, immune deficiency, cachexia, among others. Among many inflammatory biomarkers that have been studied, high-sensitivity C-reactive protein (hsCRP) has received the most attention in screening and as a predictor of risk and clinical response in this population.



Graph 1. Correlation between hs CRP and IVTS



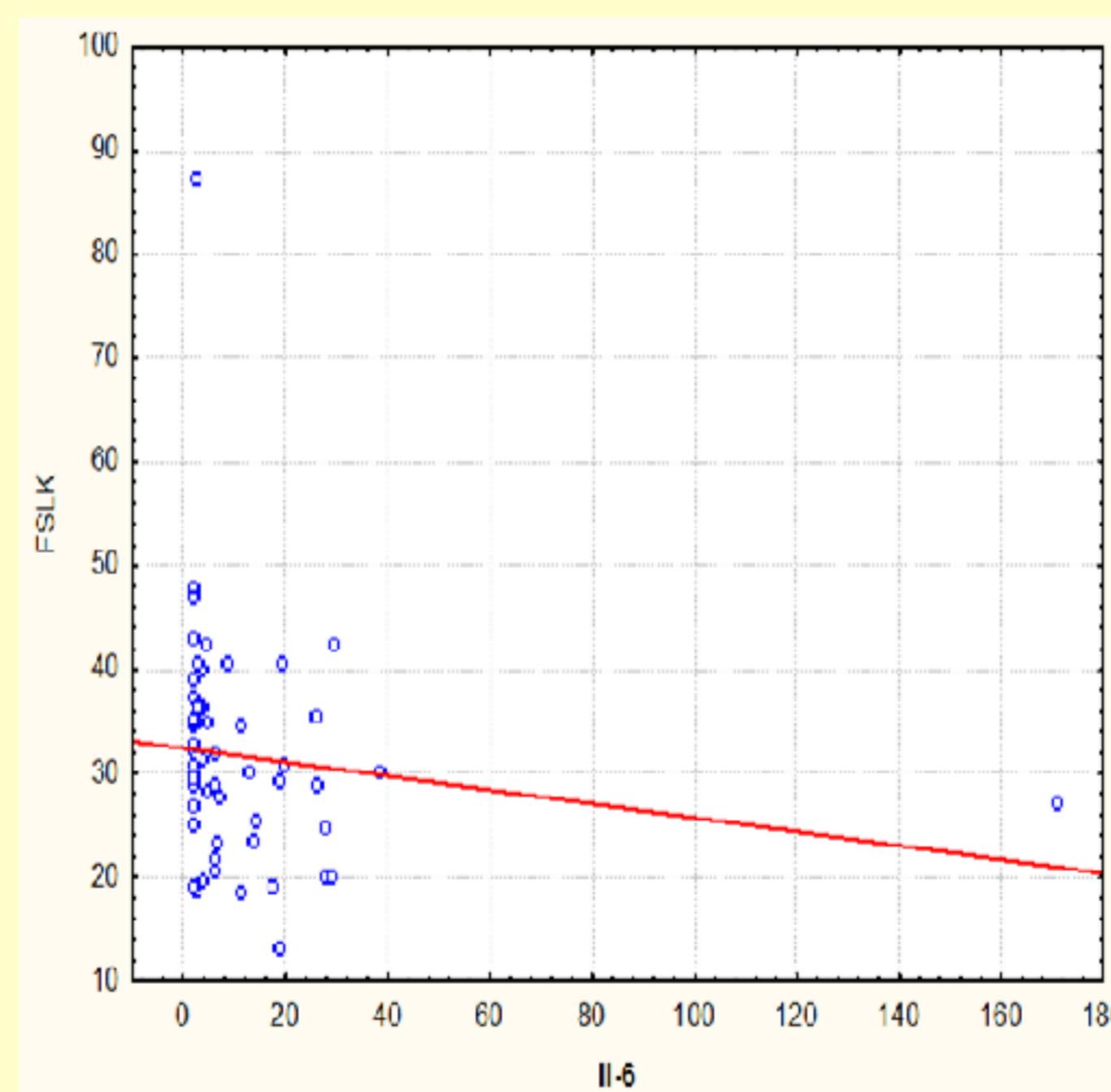
Graph 2. Correlation between hs CRP and LVEF

## METHODS

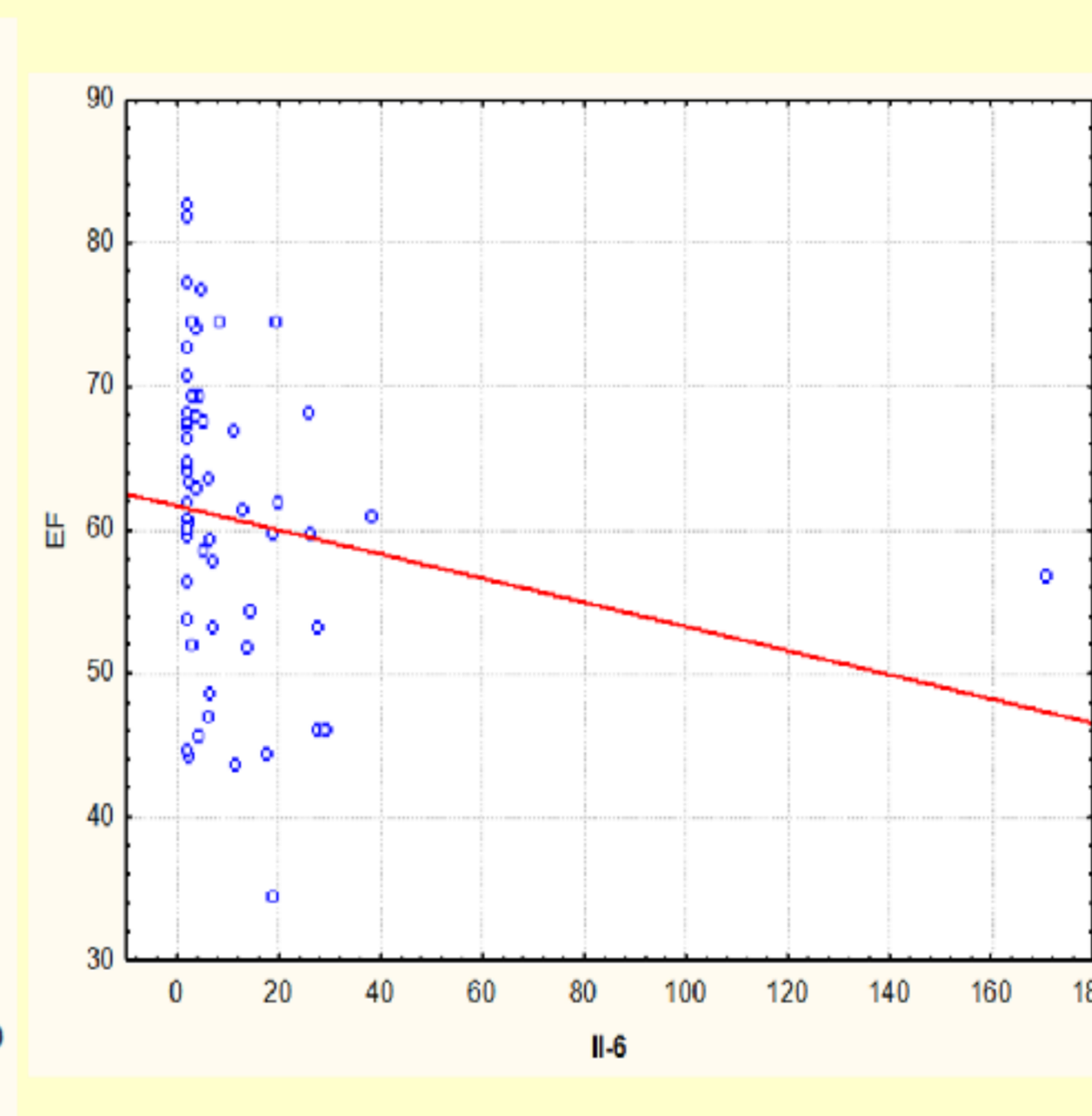
The aim of study was to examine the correlation between the different parameters of oxidative stress and microinflammation and correlation between these parameters and structural and functional changes of the heart in hemodialysis patients. Cardiac structural and functional disorders were measured by echocardiography indexes.

## RESULTS

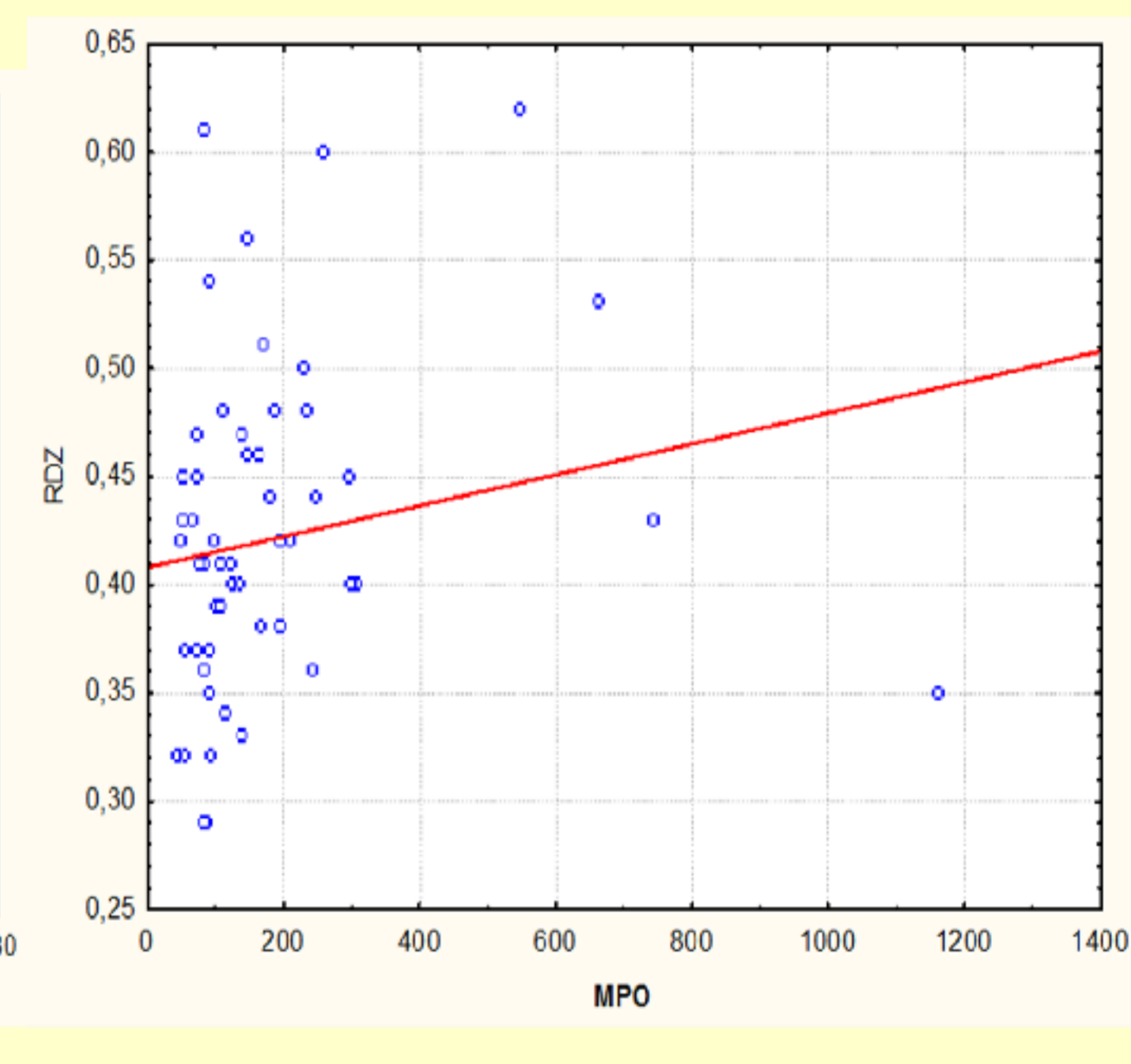
Sixty four hemodialysis patients were enrolled in this study (33 males and 31 females, mean age 56,47±11,79 years and had undergone dialysis for 72 to 6491 days. The presence of systemic inflammation was found in 59,4% patients. Compared with the measurements in the normal hs-CRP group, the interventricular septal thickness (IVST) measurements in the increased hs-CRP group were increased, whereas the LVEF (left ventricular ejection fraction) significantly reduced in this group. We found statistically significant correlation between elevated levels of hs-CRP and interventricular septal thickness (IVST) (graph 1.). We also found statistically significant correlation between high levels of hs-CRP and reduced LVEF (graph 2.). There was statistically significant positive correlation between hs CRP and left atrial pressure of the heart. There was statistically significant positive correlation between levels of creatinine before and after hemodialysis with levels of homocysteine. There was statistically significant positive correlation between levels of serum albumins and level of homocysteine. There is statistically significant correlation between myeloperoxidase (MPO) activity and right ventricle pressure (graph 5.). We found statistically significant correlation between IL – 6 (interleukin 6) and fractional shortening of left ventricle, reduced LVEF and left atrial pressure (graph 3. and 4.). We also found statistically significant correlation between testosterone level and fractional shortening of left ventricle.



Graph 3. Correlation between IL-6 and FSLK



Graph 4. Correlation between IL-6 and LVEF



Graph 5. Correlation between MPO and RVP

## CONCLUSIONS

Thickening of the cardiac wall was observed in addition to the manifestation of reduction in heart functioning of patients with elevated proinflammatory parameters. The changes in cardiac structure and function may be caused by the microinflammatory state in hemodialysis patients and changes in hs-CRP levels may be an important cause of the changes. Correlations found in this study indicate the importance microinflammation and condition of chronic oxidative stress in hemodialysis patients and represent a new field of research of treatment and prevention in these patients.

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