INTRODUCTION AND AIMS: Over the last few years besides routine ultrasound (US), ultrasound elastography (UE) is used to evaluate the stiffness of parenchymatous organs. Kidney biopsy, which is associated with risk for numerous complications, remains to be the gold standard in diagnosing chronic allograft nephropathy. Although it is largely implemented to evaluate the stiffness of liver tissue, there are few literature references about using UE on kidney transplant (KTx). The aim of this study was to assess the feasibility of UE for kidney transplant stiffness measurements compared normal to overweight patients.

METHODS: This cross-sectional prospective study involved consecutive 100 KTx patients (pts) (59 males, 41 females) ranged from 22-79 years who were grouped according to their BMI (<25, >25), and time from transplantation (Tx < 5 or > 5 years). US and UE were performed with Philips Affiniti 70 device. Following measurements were registered: kidney length and width, skin-graft distance, cortical thickness, resistive index (RI). Tissue stiffness (the Young modulus of elasticity) expressed in kilopascals (kPa) is calculated from the speed of shear-wave propagation speed (m/s). From the measured UE values for every patient were further analysed only those with suitable variations in measurements range - accordingly below 30%. The quantitative data were expressed as the standard deviation intervals (mean±SD). A P value <0.05 was considered to be statistically significant. The means of the groups were compared using the Student’s T-test. The Spearman Rank Order Correlations were used to assess the bivariate relationships.

RESULTS: Total mean BMI in study population was 26.6±4.86; in BMI<25 group the mean was 22.1±2.39 (N=42) and in BMI>25 group the mean BMI was 29.8±3.33 (N=58). Mean eGFR was almost similar in both groups: <25 group 54.3 and >25 group 53.4 ml/min. When compared two study groups mean elastography results were found statistically different (p<0.0002) BMI<25 (11.41±2.95 kPa) and BMI>25 (6.26±2.10 kPa). Significant correlation was found between elastography variations and the depth of the measurement (r=3, p<0.05

CONCLUSIONS: The variations in UE stiffness values were smallest in patients group with lower BMI. Bigger variations were significantly associated with deeper measurements (longer skin-graft distance). Therefore, we consider UE a promising tool for kidney transplant evaluation especially in patients with lower BMI.