

SUBENDOCARDIAL VIABILITY RATIO AND PROTEINURIA IN PATIENTS WITH CHRONIC KIDNEY DISEASE AND IN HEALTHY PEOPLE

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OBJECTIVES

Applanation tonometry uses an extremely sensitive pressure sensor placed at the radial artery to obtain an accurate measurement of intravascular pressure. With this simple non-invasive measurement we gain different hemodynamic information. One of them is the subendocardial viability ratio (SEVR) which represents a non-invasive measure of myocardial perfusion related to left ventricular function. It is related to the work of the heart, oxygen consumption and the energy supply of the heart. Chronic kidney disease (CKD) is associated with higher prevalence of cardiovascular disease than in general population. Proteinuria is a marker of CKD and cardiovascular disease. The aim of our study was to investigate the importance of SEVR in proteinuric CKD patients and healthy people.

METHODS

We performed a cross sectional study in a cohort of 89 non-dialysis CKD patients and 56 healthy controls. SEVR was assessed by radial applanation tonometry (SphygmoCor, Atcor, Australia). Blood samples and urine albumin-to-creatinine ratio (UACR) were analyzed. CKD patients were divided in 4 groups according to UACR and eGFR:

- CKD group 1: UACR>1000mg/g and eGFR<30 ml/min,
- CKD group 2: UACR>1000 mg/g and eGFR >30 ml/min,
- CKD group 3: UACR <1000 mg/g and eGFR<30 ml/min,
- CKD group 4: UACR<1000 mg/g and eGFR >30 ml/min.

RESULTS

The mean age of patients was 60±13.3 years, 66.3% were men, 43.8% were smokers, 24.7% had diabetes. The mean age of healthy controls was 54.5±15.6 years, 39.3 % were men, 26.8% were smokers. Other descriptive data for all patients are presented in Table. Using one-way ANOVA, post hoc test, we found statistically significant difference in SEVR only between CKD group 1 and all other CKD and healthy control groups (P<0.027).

TABLE: Characteristics of the study population

Variable	CKD group 1 UACR>1000 mg/g eGFR<30 ml/min N=21	CKD group 2 UACR>1000 mg/g eGFR>30 ml/min N=6	CKD group 3 UACR<1000 mg/g eGFR<30 ml/min N=37	CKD group 4 UACR<1000 mg/g eGFR>30 ml/min N=25	Healthy controls N=56	p value
Age (years)	58.9±12.2	54.7±18.4	62.4±12.8	58.6±13.9	54.5±15.6	0.13
UACR(mg/g)	2482±1802	2257±2049	322±260	278±286	13.3±23.4	<0.000
eGFRml/min/1.73 m ²	15.7±6.5	57.8±25.1	18.7±7	52.2±23.1	84.5±10.4	<0.000
LDL cholesterol (mmol/L)	3.02±0.99	3.73±0.74	2.73±0.91	3.57±1.24	3.33±1.15	0.008
HDL cholesterol (mmol/L)	1.34±0.42	1.2±0.52	1.16±0.38	1.22±0.3	1.44±0.41	0.36
BMI (kg/m ²)	28.03±5.9	28.4±4	27.9±4.4	29.9±6	27±4.8	0.22
SEVR (%)	133.9±32	168.7±39	154.7±33	160±34	152.8±32	0.05

CONCLUSIONS

Results of our study show that only CKD patients with **albuminuria more than 1g** and **eGFR below 30 ml/min** have **significantly lower SEVR**.

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