LOW SUBENDOCARDIAL VIABILITY RATIO IS ASSOCIATED WITH MORTALITY IN CHRONIC KIDNEY DISEASE PATIENTS

[1,2] Assoc. Prof. Dr. Robert Ekart, MD, PhD, [2,3] Assoc. Prof. Dr. Sebastjan Bevc, MD, PhD, [1,2]Nina Hojs, MD, PhD, [1]Nejc Piko, MD, [2,3] Prof. Dr. Radovan Hojs, MD, PhD

[1]University Medical Centre Maribor, Clinic for Internal Medicine, Department of Dialysis, Maribor, Slovenia

[2]University of Maribor, Medical Faculty, Maribor, Slovenia

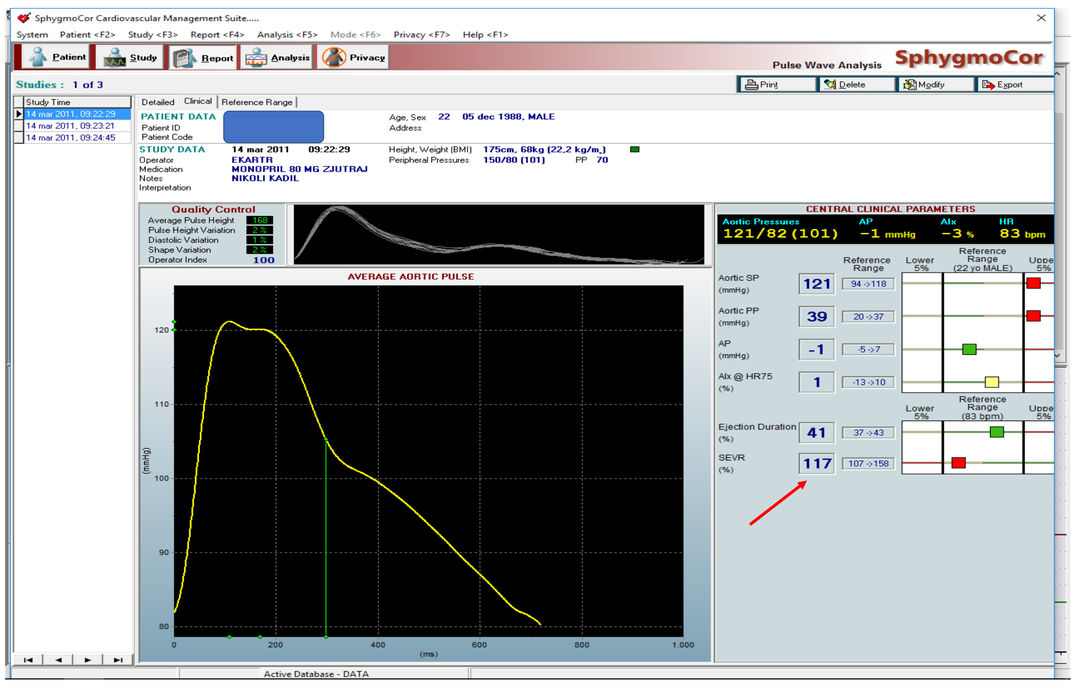
[3]University Medical Centre Maribor, Clinic for Internal Medicine, Department of Nephrology, Maribor, Slovenia

- **Introduction:** Chronic kidney disease (CKD) is a well-known risk factor for mortality. Radial artery pulse wave analysis is a simple method to assess different hemodynamic parameters in the central aorta. Subendocardial viability ratio (SEVR) represents a non-invasive measure of coronary perfusion and is defined as diastolic to systolic pressure-time integral ratio. The aim of our study was to assess the impact of SEVR on mortality in non-dialysis CKD patients.

- **Methods:** We examined 88 CKD patients (mean age 60±13.4 years, 66% men, 24% diabetics, 44% smokers, mean cystatin C 2.3 mg/L). SEVR was noninvasively assessed by applanation tonometry (SphygmoCor®, Atcor, Australia) (Figure 1). According to the manufacturer instructions regarding normal SEVR values, patients were divided to a low (SEVR≤130%, n=24) and normal SEVR group (SEVR>130%, n=64). Kaplan-Meier survival curves and Cox regression model were used in statistical analyses. Patients were observed from the date of the SEVR measurement until their death or maximally up to 2234 days or 6.1 years (mean 1747 days or 4.8 years).

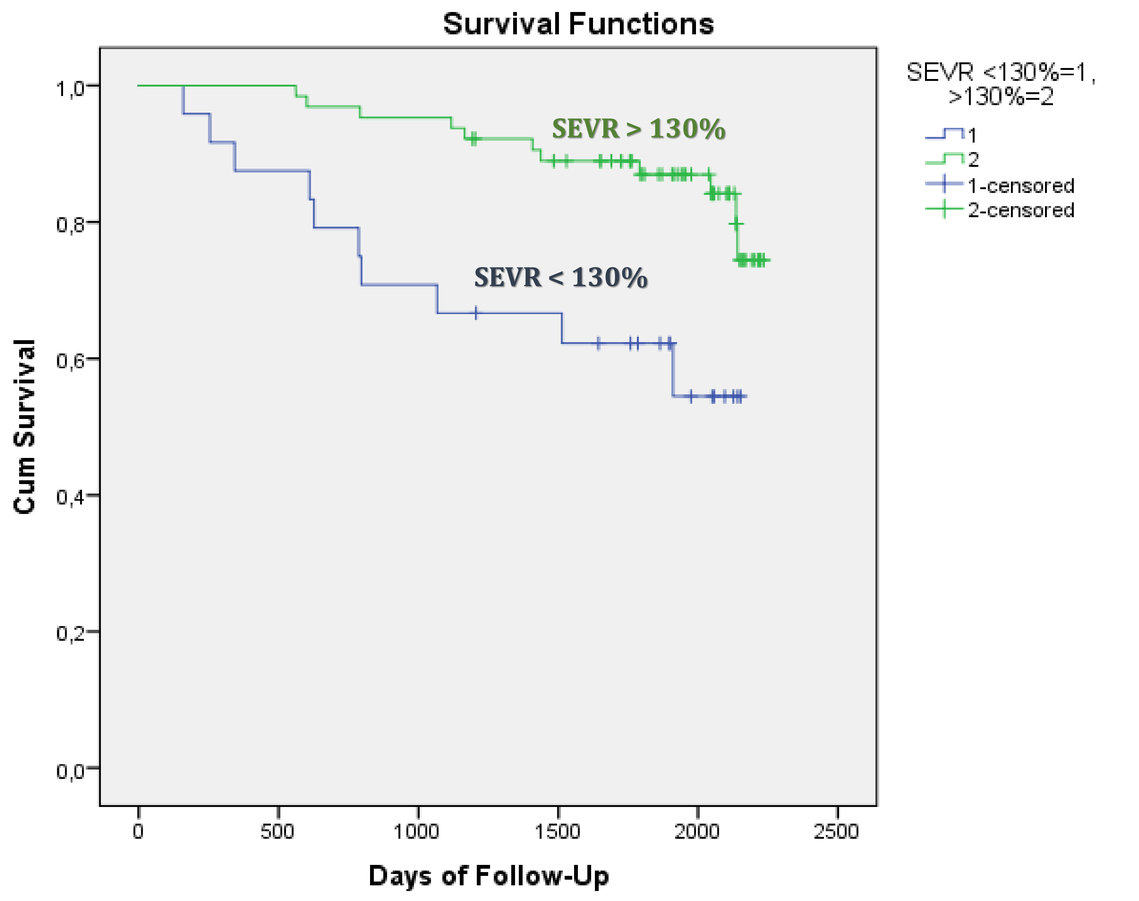
- **Results:** SEVR values in all patients were 79-235% (mean 151.5%; SD±35%). During the follow-up period, 10 (42%) patients in the low SEVR group and 11 (17%) patients in the normal SEVR group died. A Kaplan-Meier curve (Figure 2) showed that the survival rate of the low SEVR group was significantly lower than that of the normal SEVR group (Log Rank test: P<0.003). In a Cox regression model, which included age, smoking, diabetes, cystatin C, cholesterol, high sensitive C-reactive protein, troponin I, 24-hour mean arterial pressure, only age (P<0.0001), diabetes (P<0.004), and SEVR (P<0.028) turned out to be independent predictors of death.

- **Conclusions:** Low SEVR (≤130%) was associated with increased mortality in non-dialysis CKD patients.



Variable	All patients (n=88)	Lower SEVR group: SEVR < 130% (n=24)	Normal SEVR group: SEVR > 130% (n=64)	P-value
Age (years)	60±13.4	62.5±16.1	58.9±12.2	0.25
Cystatin C (mg/L)	2.12±0.87	2.3±0.98	2.05±0.83	0.23
Cholesterol (mmol/L)	5.1±1.34	4.7±0.98	5.2±1.44	0.11
hs-CRP (mg/L)	5.8±11.56	5.9±9.31	5.4±12	0.85
Troponin I (µg/L)	0.022±0.01	0.023±0.01	0.022±0.01	0.159
SEVR (%)	151.5±34.7	109.5±15.9	167.2±25.5	<0.0001
Mean 24h arterial pressure (mmHg)	97.1±5.2	95.9±9.5	97.5±11.2	0.54

Table 1. Descriptive data of the patients and two groups divided according to the SEVR value



References:

Ekart R, Šegula A, Hartman T, Hojs N, Hojs R. Subendocardial Viability Ratio Is Impaired in Highly Proteinuric Chronic Kidney Disease Patients With Low Estimated Glomerular Filtration Rate. Ther Apher Dial. 2016;20(3):281-5. doi: 10.1111/1744-9987.12438.

Ekart R, Bevc S, Hojs N, Knehtl M, Dvoršak B, Hojs R. Albuminuria is Associated With Subendocardial Viability Ratio in Chronic Kidney Disease Patients. Kidney Blood Press Res. 2015;40(6):565-74. doi: 10.1159/000368532.

Di Micco L, Salvi P, Bellasi A, Sirico ML; Di Iorio B. Subendocardial viability ratio predicts cardiovascular mortality in chronic kidney disease patients. Blood Purif. 2013;36(1):26-8. doi: 10.1159/000350582.

DOI: 10.3252/pso.eu.54ERA.2017