

Serum endocan levels predict cardiovascular events in hemodialysis patients



Tomasz Hryszko¹, Karolina Dworzańczyk¹, Szymon Brzóska¹, Alicja Rydzewska-Rosołowska¹, Beata Żelazowska-Rutkowska², Beata Naumnik¹

1 I Department of Nephrology and Transplantation with Dialysis Unit, Medical University of Białystok, Poland

2 Department of Pediatric Laboratory Diagnostics, Medical University of Białystok, Poland

Introduction And Objectives

Maintenance hemodialysis (HD) patients are decimated by cardiovascular disease (CVD). Endothelial dysfunction plays a crucial role in CVD initiation and progression. Endocan is a soluble proteoglycan, expressed by endothelial cells. It is suggested that it may serve as a novel marker of endothelial function. There is no data regarding endocan levels in HD patients. The study was undertaken to measure endocan concentration in HD patients and to assess endocan utility as a predicting factor of future cardiovascular events (CVE) in HD patients.

Methods

Study type: prospective, single-center, observational study in which 85 chronic HD patients were followed-up until CVE occurrence for 24 months

CVE definition: occurrence of stroke, myocardial infarction or ischaemic event due to peripheral artery disease during the follow-up.

Measurements: Serum endocan levels were measured with commercially available ELISA kit before HD session at the beginning of the trial.

Statistics: Logistic regression was used to search for possible associations between CVE and variables of interest.

Results

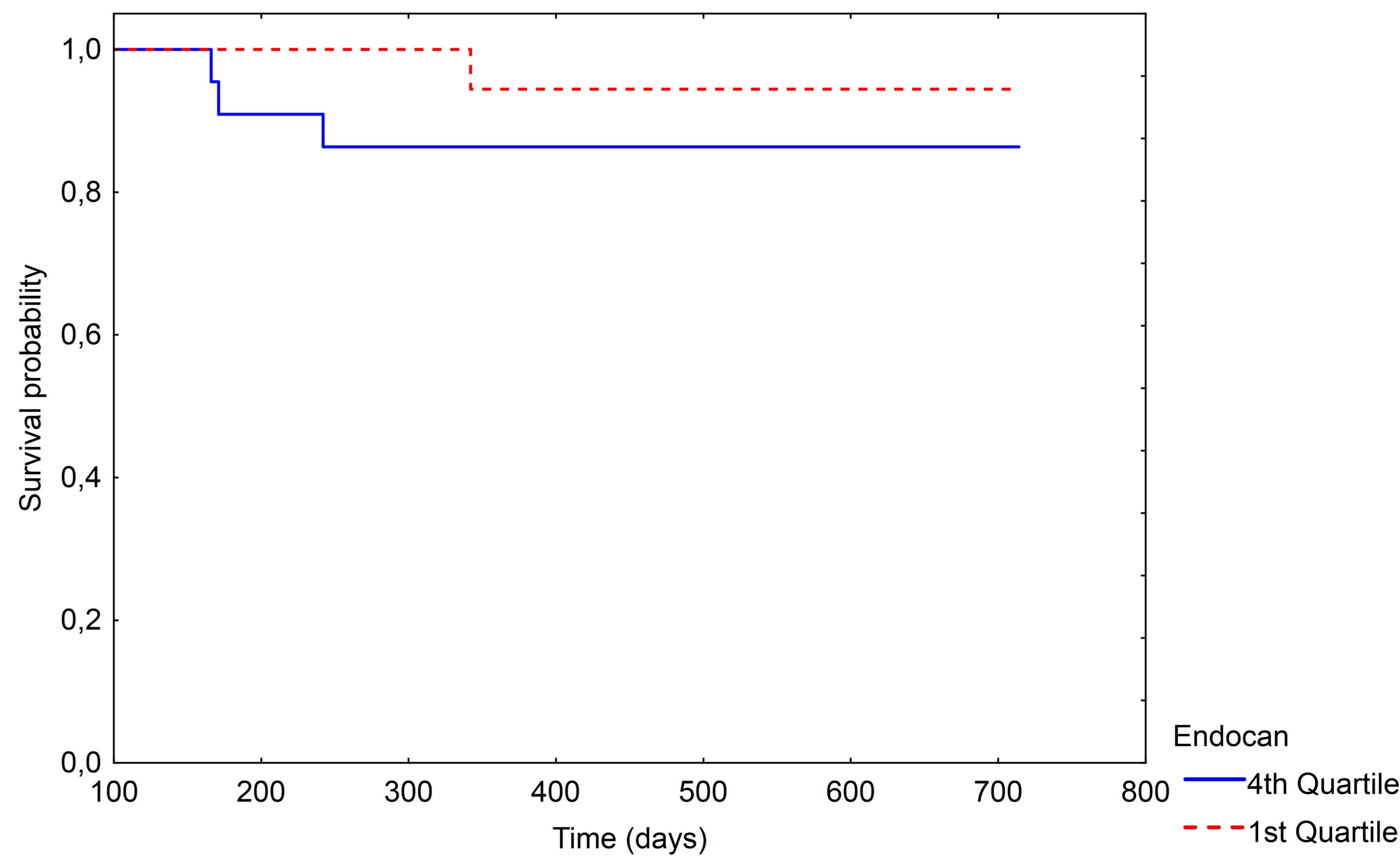
| Demographic and clinical characteristic | |
|---|-------------------|
| Age (years) | 62 (23-85) |
| Female, n (%) | 42 (49) |
| Diabetes mellitus, n (%) | 26 (31) |
| Smoking, n (%) | 49 (58) |
| RRT vintage (years) | 3 (IQR 1-6) |
| History of CVD, n (%) | |
| Ischaemic heart disease | 28 (33) |
| Stroke | 10 (12) |
| ESRD etiology, n (%) | |
| unknown | 29 (34) |
| Diabetes mellitus | 18 (21) |
| ADPKD | 12 (14) |
| glomerulonephritis | 11 (13) |
| other | 15 (18) |
| Systolic pressure, mm Hg | 137 ± 23 |
| Diastolic pressure, mm Hg | 71 ± 13 |
| Endocan, ng/ml | 1.7 (IQR 1.5-2.3) |

Predictive Utility of Endocan for CV Events and All-cause Mortality

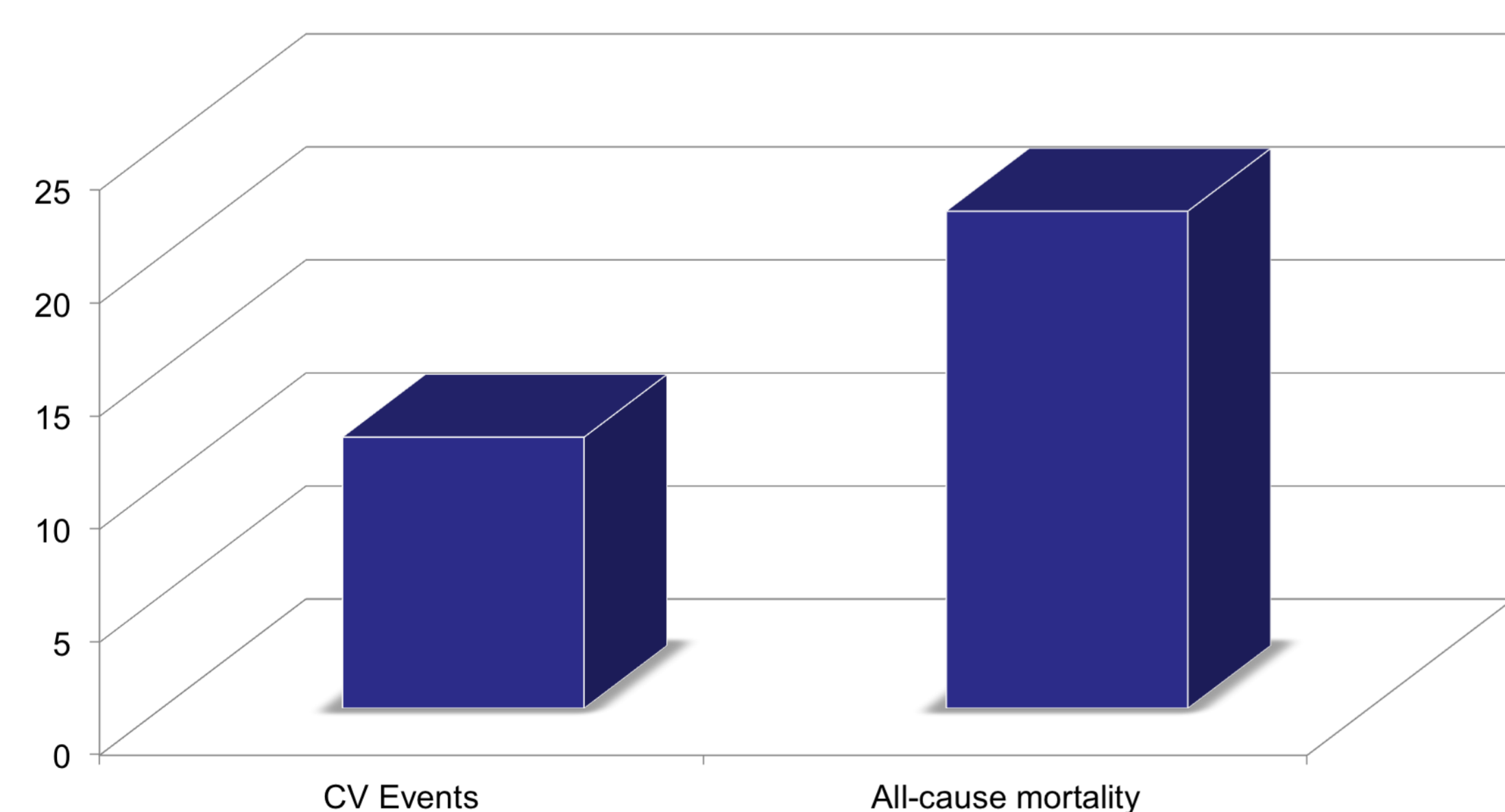
| | All-cause mortality | | CV event | |
|------------|---------------------|-----------|----------|-----------|
| | OR | 95% CI | OR | 95% CI |
| Unadjusted | 1.03 | 0.98-1.07 | 1.05 | 1.01-1.10 |
| Adjusted | | | | |
| Model 1 | 1.03 | 0.98-1.08 | 1.06 | 1.01-1.11 |
| Model 2 | 0.96 | 0.91-1.02 | 1.07 | 1.01-1.13 |

Model 1 was build with the use of all variables, which tended to correlate with dependent variable ($p < 0.1$). Model 2 accounted additionally for age, sex, smoking status, history of stroke or ischemic heart disease, presence of diabetes mellitus and left ventricular hypertrophy

Kaplan-Meier Analysis for CV Events According to Endocan Level



Endpoints during study duration



Conclusions

Serum endocan level, novel endothelial injury marker is associated with CVE in HD patients independently of traditional risk factors.