

PROGNOSTIC VALUE OF THE 5-MINUTE HEART RATE VARIABILITY DURING ORTHOSTASIS IN HEMODIALYSIS PATIENTS

Bilevich OA^{1,2}, Ovsyannikov NV^{1,2}, Tereshchenko VU²

¹ Omsk State Medical University, Omsk, Russian Federation

² Kabanov Omsk City Clinical Hospital №1, Omsk, Russian Federation

INTRODUCTION AND PURPOSE

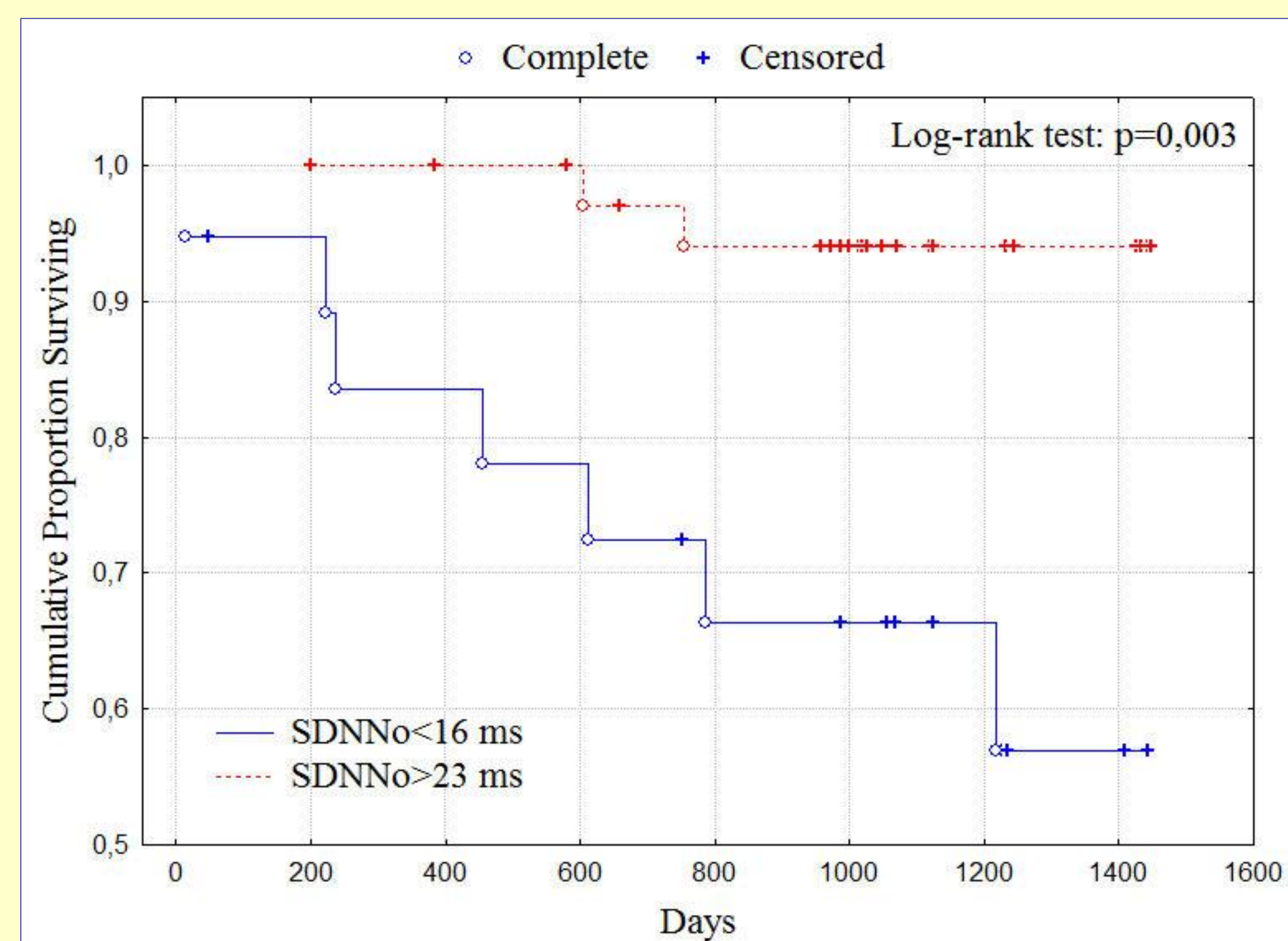
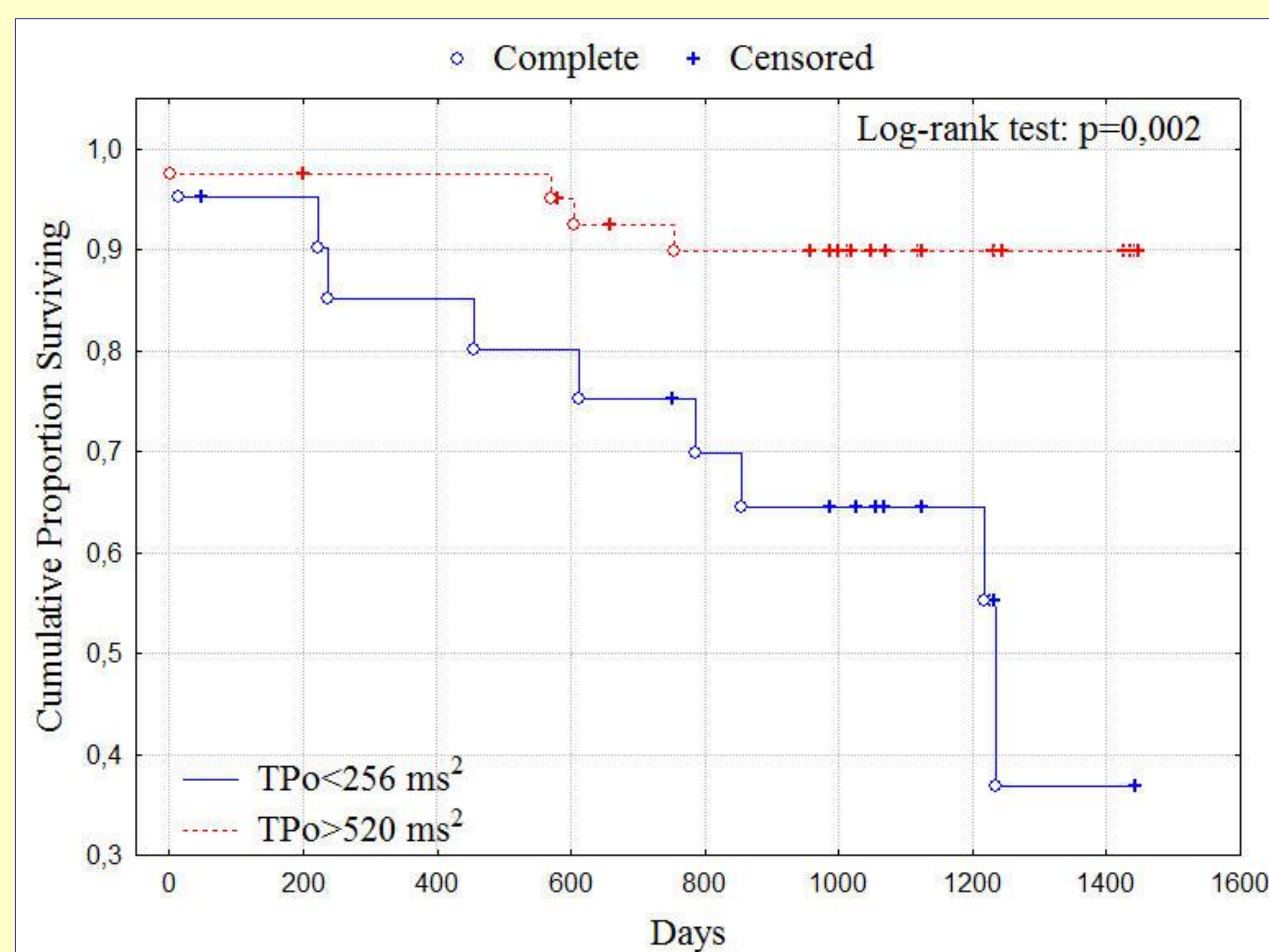
Patients with end-stage renal disease on hemodialysis have an increased risk of death from cardiovascular events. Some studies have shown that the decrease of heart rate variability (HRV) on 24-hour electrocardiography is a predictor of cardiovascular death in patients on hemodialysis. Prognostic value of the HRV on 5-minute electrocardiography with carrying out orthostatic test in hemodialysis patients has not been established.

METHODS

The open prospective study covered 83 non-diabetic hemodialysis patients (43 males, 40 females, aged 56(43;61) years, hemodialysis vintage 37(14;66) months). Time and frequency rates of HRV during 5-minute electrocardiography were assessed in the supine position and in orthostasis with the help of "VNS-Micro" ("Neurosoft", Ivanovo) device.

RESULTS

During the 4-year follow-up observation period, 18 patients died from cardiovascular events (7 - stroke, 6 - sudden deaths, 5 - fatal myocardial infarction). The patients who died from cardiovascular events did not differ from the rest by of age (54,5 (44; 60) vs 55 (43; 61) years, $p=0,981$), hemodialysis vintage (40,5 (20,0; 82,5) vs 34 (9; 56) months, $p=0,097$). There was also no statistically significant in heart rate variability among those groups patients in the supine position: standard deviation of all normal RR intervals (SDNN) 21,3 (11,5; 22,5) vs 27,4 (15; 28,5) ms, $p=0,1$; total power (TP) 443 (162; 557) vs 598 (230; 777) ms^2 , $p=0,2$. Although, patients who died from cardiovascular events had lower HRV parameters in orthostasis: SDNNo (20,8 (8,5; 21,5) vs 32,1 (17; 30,5) ms, $p=0,011$) and TPo (450 (115; 520) vs 731 (347; 891) ms^2 , $p=0,005$). From Kaplan-Meier survival curves, patients with the HRV parameters above than median level (SDNNo >23 ms; TPo >520 ms^2) were associated with higher survival rate as compared with the patients with HRV parameters below the lowest quartile level (SDNNo $<16,5$ ms; TPo <256 ms^2).



Abbreviations: TPo – total power in ortostasis; SDNNo - standard deviation of all normal RR intervals in ortostasis

CONCLUSION

The decrease of heart rate variability during 5-minute electrocardiography in orthostasis is a predictor of cardiovascular events in non-diabetic hemodialysis patients.

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