

A NEW METHOD TO PREDICT SURVIVAL IN HEMODIALYSIS PATIENTS: IMPEDANCE RATIO

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Introduction and Objectives

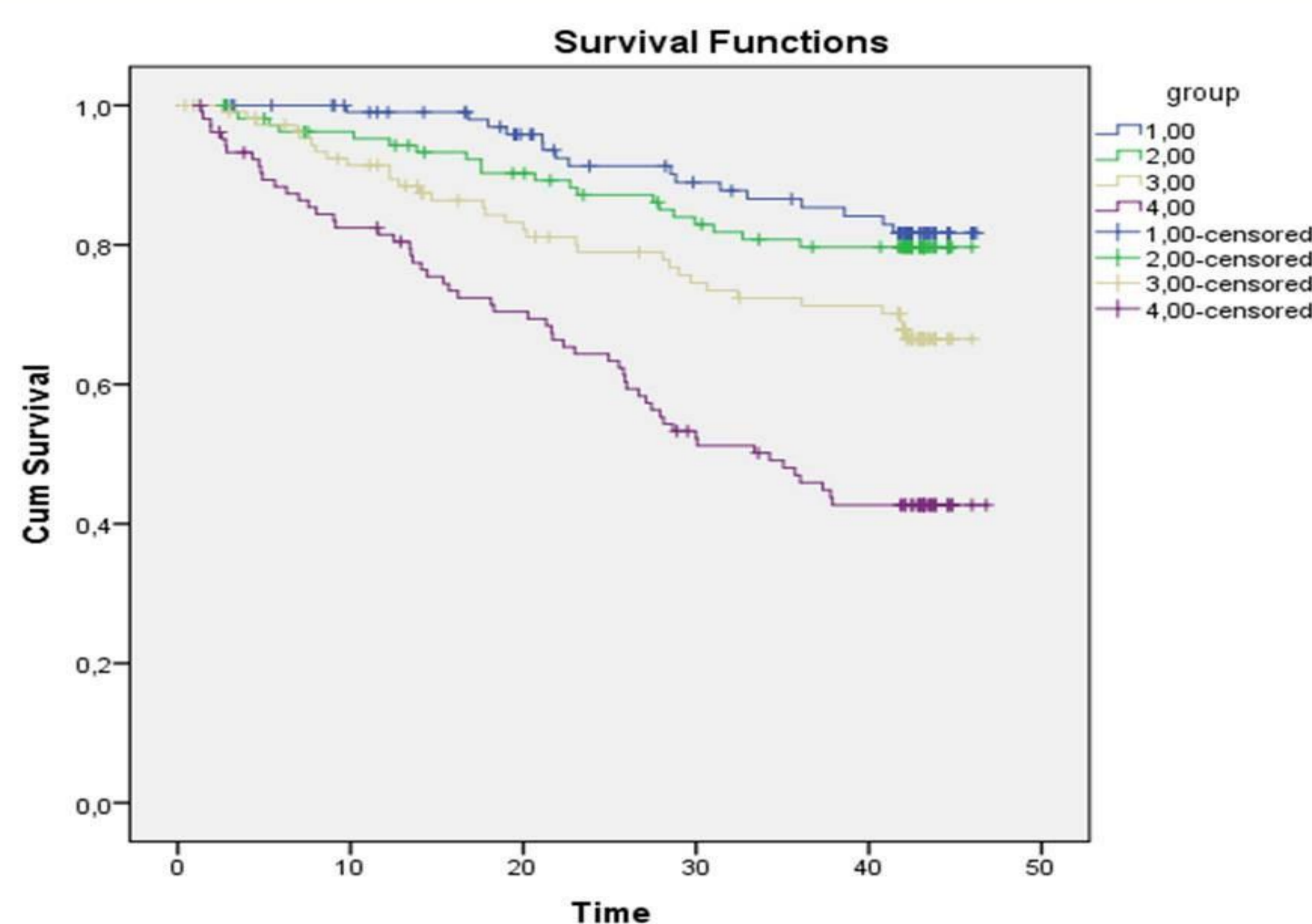
Bioimpedance Spectroscopy (BIS) can be used to determine hypervolemia and malnutrition in chronic hemodialysis (HD) patients. In this prospective observational study, we investigated the survival predictability of impedance ratio (IR) calculated by BIS in HD patients.

Methods

A total of 430 chronic hemodialysis patients out of 500 prevalent chronic hemodialysis patients from Zonguldak city that met the inclusion criteria were investigated. With a mean follow-up of 32.2 ± 14.4 months, BIS performed to all patients. IR percentage (IR %) was calculated by dividing the resistance values using 200 kHz and 5 kHz impulses. Student t test, Cox regression analysis and Kaplan Meier survival analysis were performed and $p < 0.05$ was accepted as statistically significant.

Results

Mean age of 430 patients was 59 ± 15 (10-92) years and 54 % of patients were male. At the end of study 125 (29 %) patients died. Diabetes mellitus observed in 46 % of patients, 67 % of patients used erythropoietin, 41 % of patients used diuretics, mean predialysis systolic blood pressure of patients was 133 ± 26 mmHg and diastolic blood pressure was 79 ± 12 mmHg. IR values were between 73.2 - 94.1 % range. Multi-regression analysis using diabetes mellitus, age, gender, albumin, hemoglobin values showed 16 % increased mortality risk using IR ($p < 0.00$). Evaluation with the quartiles showed decreased survival. Survival in the first quartile group was 42.8 months compared to 30.6 months in the last quartile group (Figure 1 and Table 1).



Group	Survival (Months)	Standard error	(%95 CI) Minimum	(%95 CI) Maximum
1	42.8	0.87	41.1	44.5
2	40.6	1.1	38.4	42.9
3	37.6	1.4	35	40.3
4	30.6	1.6	27.4	33.8
Total	38.3	0.7	36.9	39.7

Conclusion

Impedance Ratio calculated using BIS data can be a useful tool to predict survival of chronic hemodialysis patients. Early awareness of this increased mortality risk is important in means of close follow up and appropriate treatment of these patients. Keywords : Bioimpedance, impedance ratio, survival, hemodialysis.

