

PROGNOSTIC VALUE OF COMBINED EVALUATION OF NUTRITION AND HYDRATION WITH BIVA METHOD IN CHRONIC DIALYSIS PATIENTS: A 2 YEARS OUTCOME ANALYSIS



Authors: Marta Codognotto, Paola Piasentin, Antonio Piccoli.

Hospital: Department of Medicine - DIMED - University of Padova, Italy.

OBJECTIVES

Malnutrition identification is crucial for a correct patient handling. Since 2000 the National Kidney Foundation has recommended the use of the Subjective Global Assessment (SGA) for assessing the nutritional status of dialysis patients. Furthermore patient hydration cannot be evaluated with SGA.

In a former cross-sectional study, Piccoli et al. [1] demonstrated that bioelectrical impedance vector analysis (BIVA) is a potential instrument for evaluating hydration and nutrition status in the chronic hemodialysis patient. They furthermore demonstrated that impedance vector distribution is associated with the nutrition SGA score.

The aims of the current study were:

- 1) to evaluate whether a significant relationship between hydration and nutrition status, measured by BIVA, and mortality at 24 months could be;
- 2) to evaluate whether a significant relationship between nutrition status, measured by SGA, and mortality could be found.

METHODS

The study was conducted on 73 patients undergoing chronic hemodialysis three times a week at the Padova University Hospital, who survived after the former study (130 patients, 46 dead patients, 8 patients underwent transplant).

All the patients were classified into three groups, on the basis of their SGA score. BIVA was performed before and after hemodialysis.

The impedance vector components of resistance (R) and reactance (Xc) in Ohm were transformed into bivariate Z scores $Z(R)=(R-\text{mean } R)/SD$ and $Z(Xc)=(Xc-\text{mean } Xc)/SD$ [2].

Uremia causes and comorbidities were investigated; furthermore laboratory and clinic nutrition parameters, ultrafiltration, weight and blood pressure before and after hemodialysis were analyzed.

RESULTS

The mean vector position of the well nourished patients was at the lower pole of the 50% tolerance ellipse; the mean vector position of the patients in group SGA-B was into the 75% tolerance ellipse; the mean vector position of malnourished patients (SGA-C) was out of the 95% tolerance ellipse. For each group the "slope of migration" was calculated as the angle of the vector migration during the dialysis session (Fig 1). The mean vector migration of SGA-C group showed reduced gradient (slope) and little migration during the dialysis session. The survival analysis showed that the SGA classification was associated with mortality (Fig.2). In addition, the analysis of the survival curves showed that values of $Z(Xc_0 / H)$ less than -1.2 and slope values of less than 0.57, are associated with a significantly worse prognosis, with survival at 24 months, respectively, equal to 57% and 52% ($P = 0.02$ and $P = 0.001$).

Figure 1. Z-score graph of the mean vectors pre and post dialysis for the SGA groups (SGA-A, SGA-B and SGA-C). Vector migration along different pathway is determined by hemodialysis session.

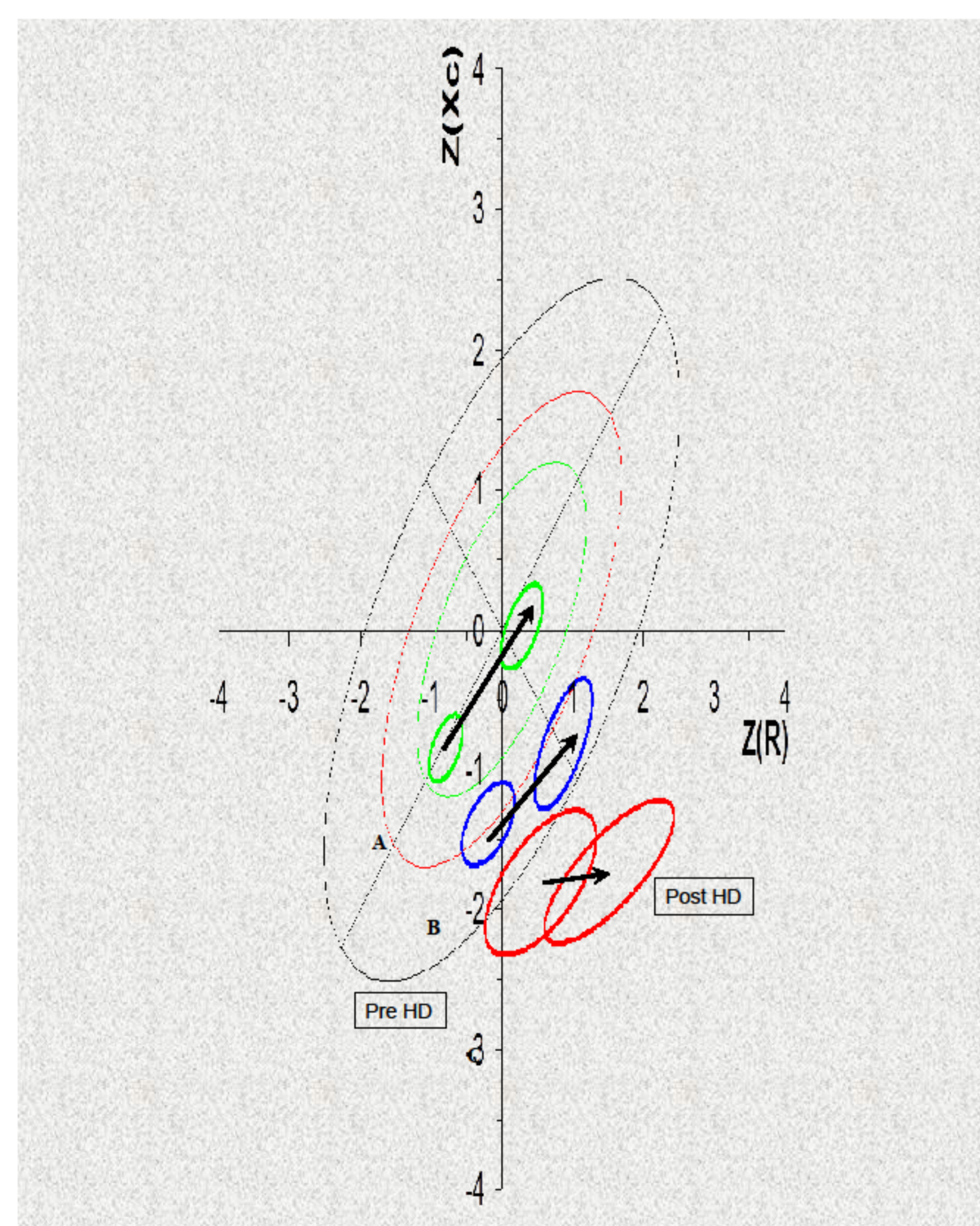
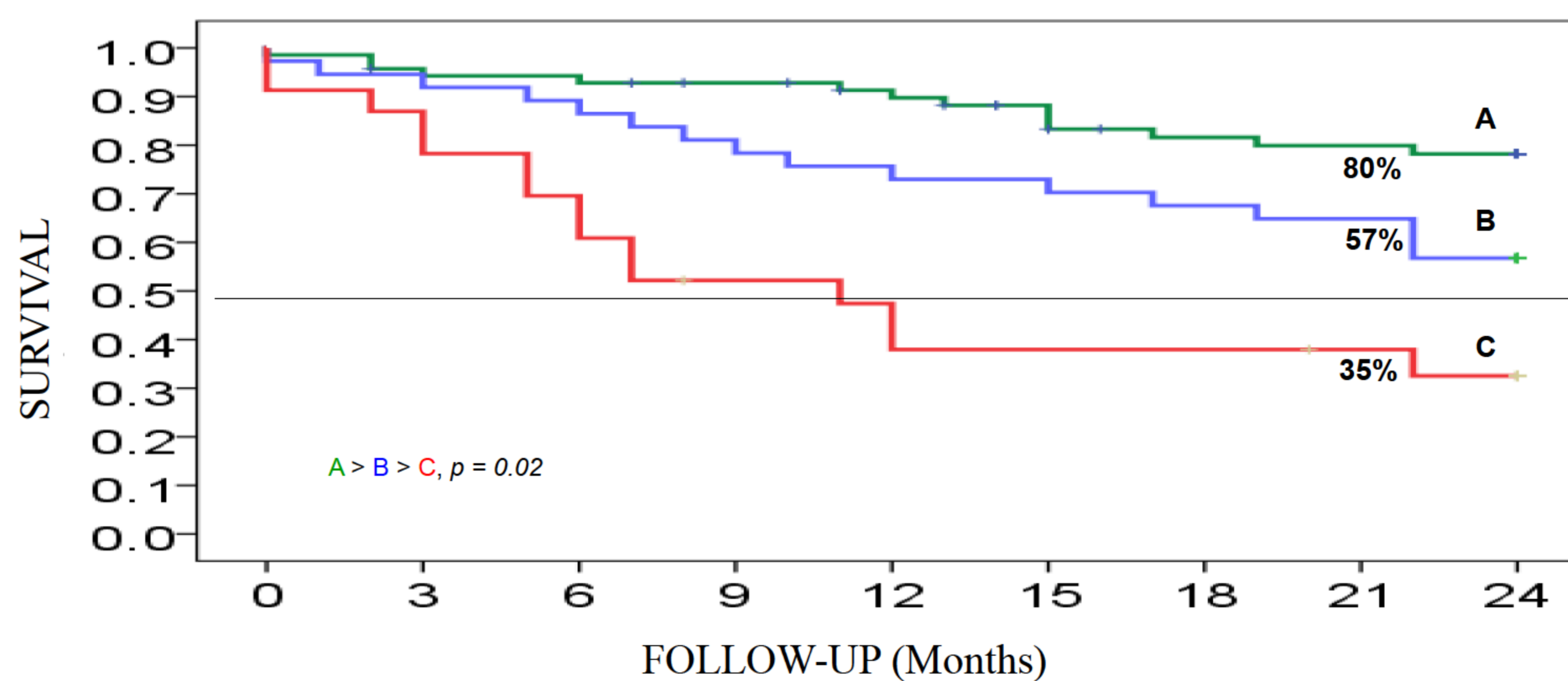


Figure 2. Survival curves for the SGA groups. (* Gehan)



CONCLUSIONS

This study demonstrated that BIVA allowed to find malnourished patients, showing worse prognosis, by observing impedance vector migration slope.

REFERENCES

1. Combined evaluation of nutrition and hydration in dialysis patients with BIVA. Piccoli A, Codognotto M, Piasentin P, Naso A. Clin Nutr. 2013 Aug 31.
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