PREDICTORS OF VASCULAR RESISTANCE INCREASE IN PATIENTS IN DIALYSIS

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INTRODUCTION AND AIMS:

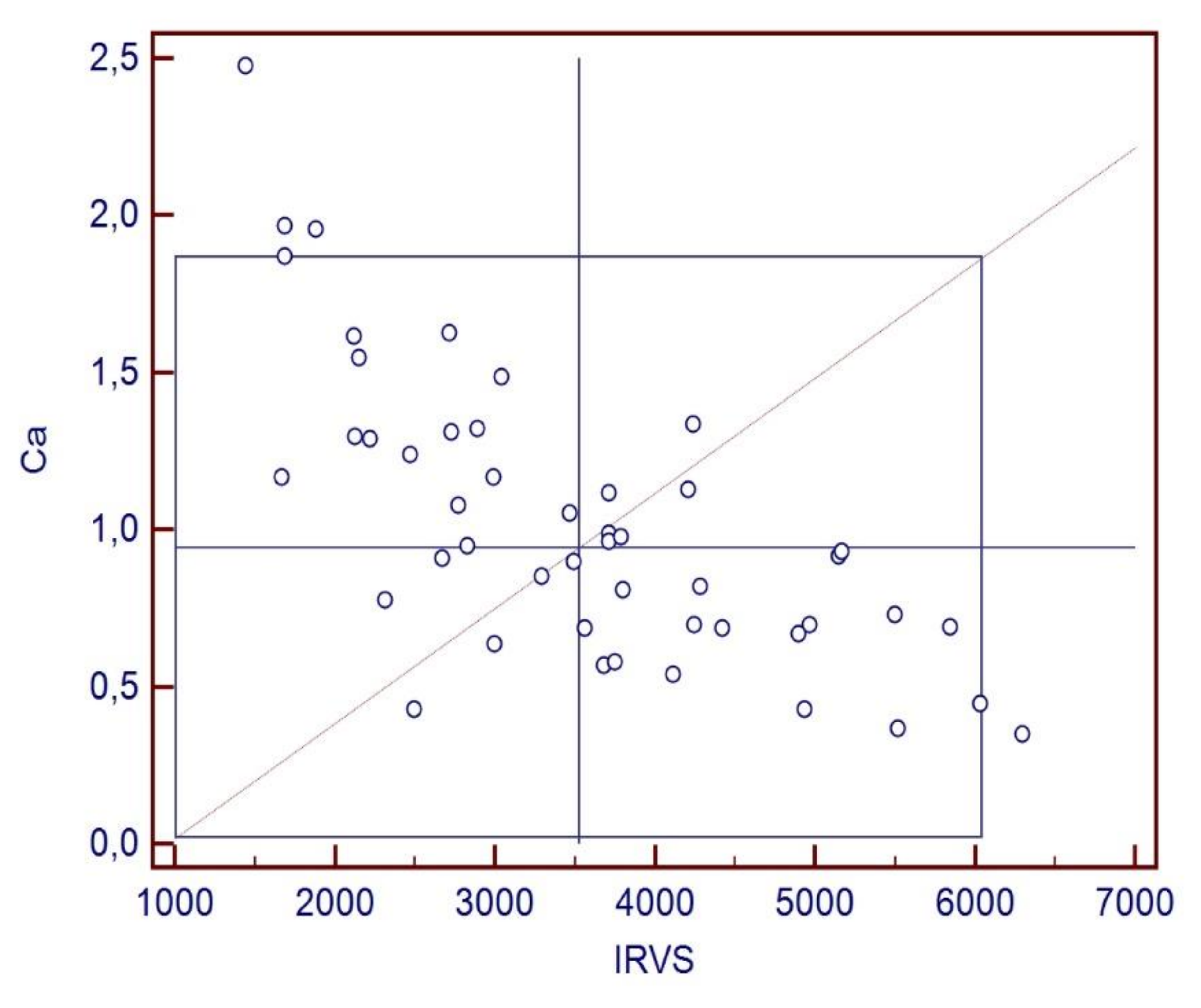
Some authors explain the increase in vascular resistance in dialysis patients as a physiological response to the state of volume contraction after dialysis. Others, however, attribute it to different metabolic changes such as iron deficiency, changes in plasma levels of potassium, sodium or calcium. Our objectives were to first analyze whether the increase in peripheral resistance is associated with a specific hemodynamic and / or metabolic profile, and then to try to determine independent predictors of increased peripheral resistance in dialysis patients.

METHODS:

We studied 68 patients in a cardiovascular evaluation program of dialysis patients (CEMIC-PRECADIA). The patients were studied on interdialysis day and within this evaluation a hemodynamic determination by impedance cardiography (Team Z logic-Exxer SA) was performed taking into account the following variables: stroke volume (SV), heart rate (HR), systemic vascular resistance index (SVRI) and thoracic fluid content (TFC), arterial compliance indec (ACI),contractility acceleration (CA). In addition, the following variables were considered: age, BMI, brachial blood pressure (SBP, DBP, PP) central blood pressure (SBPc, DBPc, PPc), pulse wave velocity (PWV) and augmentation index(AIX) measured with Mobil-O-Graph, hemogram, calcium, phosphorus, PTH, ionogram, c-reactive protein(CRP) and extracellular water (BCM-FMC). SVRI was analyzed in increasing quintiles (ANOVA). Independent predictors of increased peripheral resistance were determined by univariate and multivariate correlations.

RESULTS

- We included 59 patients (age: 61.3 ± 14.85 years, SBP: 140 ± 33.49 mmHg, DBP: 79.64 ± 14.24 mmHg, women 53.8%). In the quintile comparison, the 5th quintile was characterized by a higher BMI (p = 0.013), higher AIX (relative to the quintile 1,3 and 4, p = 0,0339) and lower DS (p = 0.000001). AC (p = 0.0112), ACI (p = 0.000009), hematocrit level (Hto) (p = 0.02), hemoglobin (Hb) (p = 0.04) and calcium(Ca) (p = 0.000023). There were no significant differences in the prevalence of hypertension, DBT, enf cv, as well as in medication, type of dialsyis and time in dialysis. In the univariate correlations SVRI was significantly correlated with BMI (Corr.Coef.:0,3313 p = 0.0118), and was inversely correlated with SV (Corr.Coef .: -0.676 p <0.0001), AC (Corr.Coef .: -0.443 p = 0.0016), ICA (Corr.Coef .: -0.776 p <0.0001), Hto (Corr.Coef .: -0.3148 p = 0.0152), Hb (Corr.Coef .: -0.263 p = 0.0442), Ca (Corr.Coef .: -0.689 p <0.0001). In multiple regression (adjusted for age, BMI, BP and hydration status), SV, HR, ECW / H, calcium and CRP were independent variables of IRVS.



CONCLUSIONS: In our study, patients who had higher vascular resistance were characterized by a hemodynamic profile with lower DS, accompanied by lower arterial compliance. Regarding HR as well as hidratation status (measured by both CFT and ECW / H) there were no significant differences between the quintiles, however in the multivariate analysis they were found to be significant variables. Regarding metabolic variables, the level of Ca in blood and CRP were inversely associated with vascular resistance. These findings may help us to better understand how the metabolic status of these patients can directly influence their hemodynamics

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