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Chronic renal failure and peripheral arterial disease

Nefrologia 2012;32(5):682
doi:10.3265/Nefrologia.pre2012.Jun.11569

To the Editor:

It has been well established that both patients with chronic renal failure (CRF) and those with peripheral arterial disease (PAD) have increased the risk of death due to cardiovascular disease. Red blood cell distribution width (RDW) is a marker for mortality in patients with established cardiovascular disease. It has been demonstrated that for every 1% increase in RDW, the risk of death increases by 14%.[1] Increased levels of N-terminal pro-brain natriuretic peptide (NT-proBNP) are also associated with increased cardiovascular mortality and morbidity rates in the general population.[2] With this in mind, we sought to evaluate RDW percentage and NT-proBNP levels in patients with peripheral arterial disease (PAD) with or without CRF.

We performed a cross-sectional observational study involving 40 patients with PAD (all in stage III or IV on the Fontaine scale), with no signs of heart failure. Of these, 17 had CRF and 23 did not, 33 were male and 7 were female, and the mean age was 68.03±11.10. The patients were evaluated upon admission to the vascular surgery department. After signing an informed consent form (study approved by the ethics committee), we compiled clinical, pharmacological, and laboratory values for each patient. NT-proBNP was measured using a solid phase radial partition immunoassay (Acute Care® for Stratus® CS, Siemens). Statistical analyses were performed using SPSS statistical software, version 15.0.

The 40 patients with PAD had the following mean values: body mass index: 26.32±4.71kg/m^2; systolic blood pressure: 133.82±19.10mm Hg; diastolic blood pressure: 75.78±11.30mm Hg; and heart rate: 78.18±10.95bpm. Fifty percent of the patients were active smokers, 82.5% were ex-smokers, 27 were diabetics, and 27 had hypertension. Upon dividing the patients based on the presence or absence of CRF, we found that patients with an MDRD4 score <60ml/min (mean: 41.57±11.38ml/min) were older (73.75±10.84 years vs 63.87±9.51 years; *P*=.007), more prone to hypertension (88.23% vs 57.14%; *P*=.02), and received treatment with beta blockers (52.94% vs 21.74%; *P*=.041) and angiotensin II receptor blockers (ARBs) (35.29% vs 21.74%; *P*=.038) at a greater rate than patients with an MDRD4>60ml/min (81.54±20.90ml/min), with no other differences found in terms of drugs administered. There were also no differences in terms of sex distribution, frequency of diabetes, or tobacco use between these two subgroups. As regards the objectives of our study, we found that patients with CRF had higher levels of NT-proBNP (2561.18±2526.95mg/dl vs. 805.48±1036.02mg/dl; *P*=.01) and a higher RDW percentage (15.54±2.27% vs 14.74±2.11%; *P*=.044) than patients with PAD and without CRF. The percentage of RDW was positively correlated with NT-proBNP levels (r=0.56; *P*=.001).

Based on these results, and despite the small number of patients examined, we could affirm that patients with PAD and CRF have higher levels of biological markers of morbidity/mortality than those with PAD and without CRF, which would imply a greater associated cardiovascular risk and perioperative risk[3] than in patients without CRF.[3] The finding of a positive correlation between RDW and NT-proBNP in these patients could suggest a possible association with cardiorenal syndrome. Further studies with more patients could affirm whether patients with PAD treated with beta blockers or ARBs have a higher rate of CRF.

Conflict of interest

The authors declare that there is no conflict of interest associated with this manuscript.

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