ABDOMINAL AORTIC CALCIFICATIONS PREDICT ALL-CAUSE MORTALITY IN PERITONEAL DIALYSIS (PD) PATIENTS

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OBJECTIVES

Peripheral arterial disease (PAD) contributes significantly to the adverse clinical outcomes and mortality in dialysis patients (1). The aim of this study was to evaluate the prognostic role of abdominal aortic calcifications and PAD on mortality in PD patients. We used methods which are easily available in everyday clinical practice.

METHODS

We enrolled 249 PD patients (mean age 61 years, 67% male, 31% diabetic) in this prospective, observational, multi-center study during years 2009-2013. The primary outcome was death due to any reason. Abdominal aortic calcification score (AACs) was assessed by lateral X-ray (2). AACs 0 was defined as normal, 1-6 as moderate and 7-24 as severe calcification. At baseline, ankle-brachial index (ABI) was evaluated by a Doppler device, and patients were divided into 3 groups: normal ABI, 0.9–1.3; low ABI, <0.9 (indicating PAD); high ABI >1.3 or non-compressible ankle artery (suggesting a calcified vessel).

FIGURE

Survival by three AACs classes
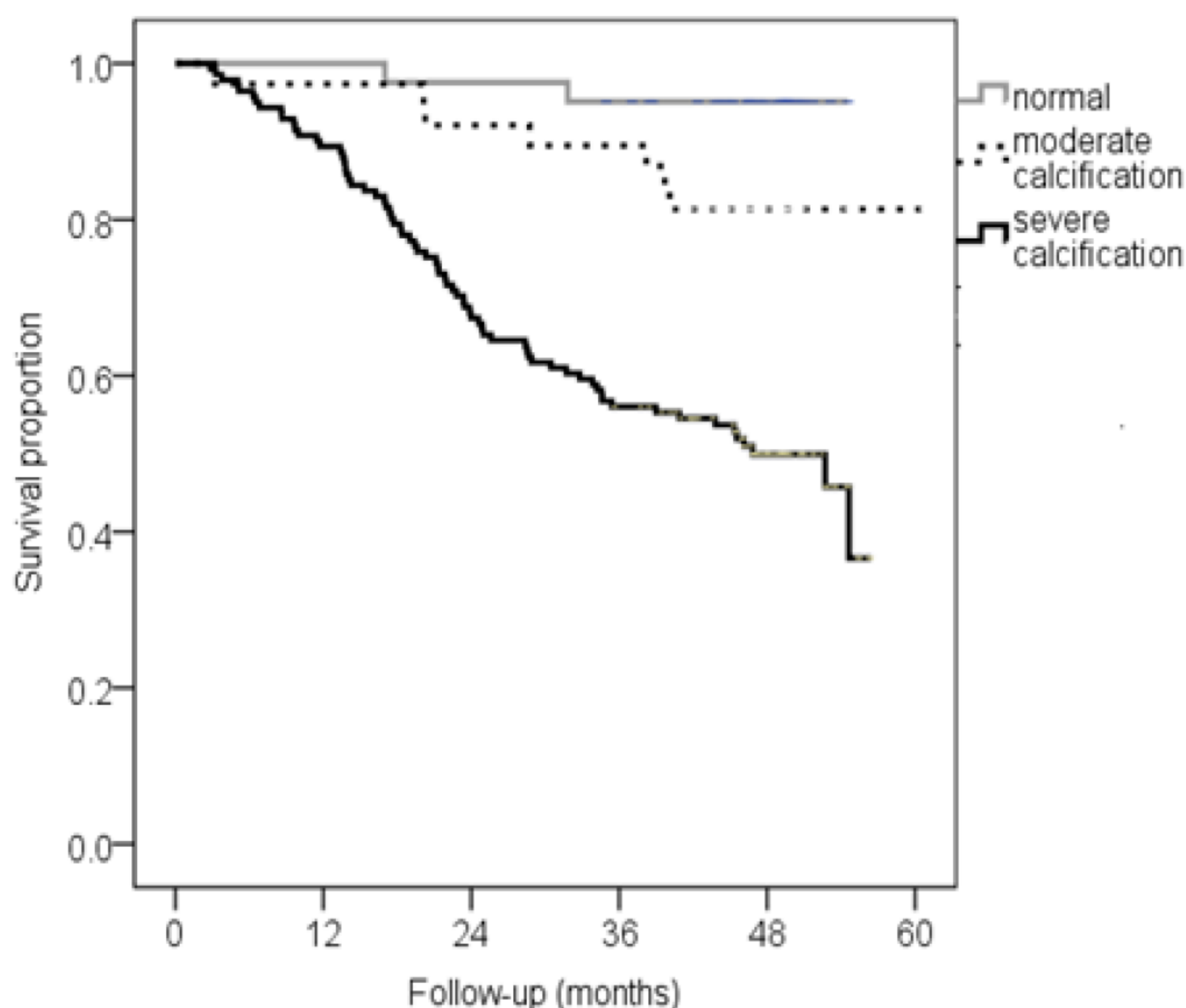
RESULTS

The median AACs was 11 (0-24). In 58% of the patients, all 4 segments showed deposits, while 19% of patients had no visible deposits. ABI was normal in 49%, low in 17%, and high in 34% of patients. Severe calcification was present in 86% of patients with a low ABI, and in 68% patients with high ABI. However, also 55% of patients with normal ABI had a high AACs. Altogether 91 patients died during the median follow-up of 46 months. Specifically, only 2 patients (5%) with AACs 0 died compared to 50% of patients with AACs ≥7 (p<0.001, Figure). The adjusted HR for mortality was 5.3 (95% CI 1.2-24.5) for severe calcification, 3.7 for diabetes, 2.0 for male gender, and 1.1 for age. Low or high ABI were not independently associated with mortality.

CONCLUSIONS

Severe calcification was a strong predictor of all-cause mortality in PD patients, while PD patients with normal AACs had a favorable outcome. High AACs was associated with low and high ABI, but also over half of patients with normal ABI had a high AACs. The evaluation of AACs by lateral X-ray is a simple and easily accessible method that allows the identification of high risk patients.

REFERENCES

1. Liu J-H, Lin H-H, Yang Y-F, et al. Subclinical Peripheral Artery Disease in Patients Undergoing Peritoneal Dialysis: Risk Factors and Outcome. Perit Dial Int 2009;29:64-71.
2. Kauppila LI, Polak JF, Cupples LA, et al. New indices to classify location, severity and progression of calcific lesions in the abdominal aorta: a 25-year follow-up study. Atherosclerosis 1997;132:245-50.