

"Screening of Subclinical Atrial Fibrillation in Dialytic Patients Using a Portable Device"

Authors: Adson Patrik Vieira Carvalho, MD, MSc¹; Gabriel Assis L. Carmo, MD, PhD²; Cassia Aparecida Silva, MD³; Antônio Luiz P. Ribeiro, MD, PhD²

¹Post-graduate program Sciences Applied to Adult Health, Federal University of Minas Gerais, Brazil

²Division of Cardiology, Department of Medicine, Federal University of Minas Gerais, Brazil

³Division of Cardiology, Hospital Complex São Francisco, Brazil

Introduction: Chronic kidney disease (CKD) is a public health problem worldwide. Hemodialysis is the main modality of renal replacement therapy with increasing incidence and prevalence. Hemodialysis patients have high cardiovascular morbidity and mortality, increased prevalence of ventricular arrhythmias, sudden cardiac death and atrial fibrillation (AF). The presence of clinical or subclinical AF is an independent risk factor for death and thromboembolic events in dialysis patients, but the proper management of these patients remains uncertain. Knowing the prevalence of subclinical AF is of utmost importance to understand and treat AF in dialytic patients. The use of a portable device would be pioneer in this group of patients, and probably more effective than traditional methods, since any trained professional can easily and quickly do it any time during hemodialysis. The objective of this study is to estimate the prevalence of subclinical AF among patients with CKD undergoing hemodialysis using a portable device.

Methods: hemodialysis patients at Hospital Evangélico (Belo Horizonte, Minas Gerais, Brazil) underwent AF screening during hemodialysis sessions using the MyDiagnostick® portable device (Applied Biomedical Systems, Maastricht, Netherlands). Clinical, electrocardiographic factors and intradialytic changes were collected to assess possible associations.

Results: 388 patients were evaluated, 40.7% female, mean age 56.8 years (\pm 14.7) and median hemodialysis time 27 (IQR=10.57) months. Screening was positive in 16 (4.1%) patients. AF was confirmed by electrocardiogram in 7 (1.8%). Male gender, high age, altered baseline electrocardiogram, increased serum potassium, reduced systolic blood pressure at the beginning of dialysis and stable angina were associated with positive screening. The device had a specificity of 91.74% (95% CI 86.65% to 96.91%) and 100% sensitivity (95% CI 100% to 100%), with a negative predictive value of 100% (95% CI 100% to 100%) for AF screening. The positive likelihood ratio was 12.1 (95% CI 6.5 to 22.6).

Conclusion: The use of a portable device as a screening method proved to be practical, easy to handle, with high sensitivity and excellent negative predictive value. Further studies are needed to assess the prognostic implications of these results.