MEIR MEDICAL CENTER
Affiliated with the Sackler Faculty of Medicine
Tel Aviv University

INTRA CRANIAL AND HEART VALVES CALCIFICATIONS IN HEMODIALYSIS PATIENTS
K.Cohen-Hagai, F. Fanadka, T. Grumberg, G. Topaz, N. Nacasch, M. Greenberg, T. Zitman-Gal, S. Benchetrit

CLALIT 100 years

INTRODUCTION

Arterial calcification is an integral component of active atherosclerosis and is an independent risk factor for cardiovascular disease. Intra-cranial arterial calcification in dialysis patients has a prevalence of about 90%, and its severity is correlated with age, hemodialysis vintage and mineral bone disease. Calcification of the mitral and aortic valves is a frequent echocardiographic finding in dialysis patients, and it is estimated to be four to five times more prevalent than in the general population. Heart valves calcifications may also be considered as a local manifestation of atherosclerosis. Both intra cranial calcifications and valvular calcifications have been associated with poor cardiovascular outcomes.

OBJECTIVES

To assess the clinical impact of valvular and Intra-cranial arterial calcifications on mortality in chronic hemodialysis patients

METHOD

A blinded neuroradiologist graded Intra-cranial arterial calcification (ICC) of all hemodialysis patients who underwent non-contrast brain computerized tomography (CT) from 2015 to 2017 in our institution. Valvular calcifications were assessed by echocardiography study.

RESULTS

This retrospective study included 119 chronic hemodialysis patients.
- Mean age was 70.6±12.6 years
- 57.1% of study cohort were male
- Mean dialysis vintage was 25.8±42.6 months

Figure 1 : Study cohort (N=119)

19 (16%) had no valvular or intra cranial calcifications and 65 (54.6%) had both valvular and intracranial calcifications.
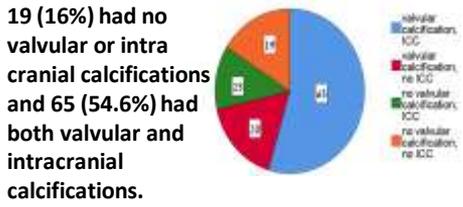

Figure 2: 1-year mortality rate according to ICC and valvular calcifications

Mortality rate was highest among patients with both valvular calcifications and intra cranial calcifications compared with other subgroups (p=0.006). Considering the patients with no calcification as the reference group yielded adjusted odds ratios for all-cause mortality of 3.68 (95%CI 1.55-8.75) among patients with any brain calcifications (p=0.002).
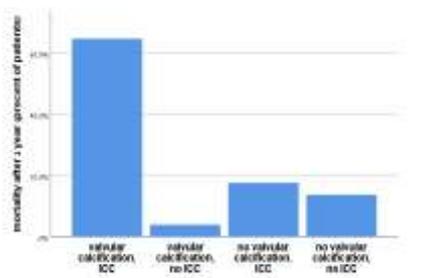

Figure 3: Survival curves of study subgroups

Survival curves showed significant difference between subgroups (p=0.001). Patients with intra cranial arterial calcifications had the worse survival curve with median survival of 118 days compared with overall median survival of 527 days (p=0.001). ICC was the most important predictor of mortality in logistic regression analysis.
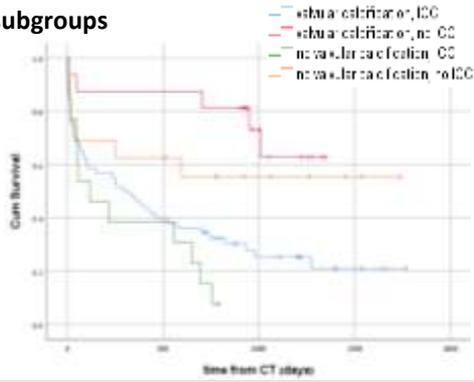
CONCLUSIONS

We found an independent association between ICC and the risk of death among hemodialysis patients. Assessing ICC in non-contrast CT may contribute to the risk stratification of HD patients. These calcifications are not less important compared to valvular calcifications.