**CARDIAC BIOMARKERS LACK PREDICTIVE UTILITY IN END STAGE RENAL DISEASE**

**Background:**

The utility of N-terminal pro brain natriuretic peptide (NT-proBNP) in the diagnosis and determining prognosis of heart failure (HF)is well reported. However, its use for screening asymptomatic HF, in particular patients with end-stage renal disease (ESRD), is less explored. High sensitivity Troponin T (hsTNT) in conjunction with NT-proBNP is shown to be a useful biomarker for guiding prognosis. The levels of both markers are known to be altered with advancing chronic kidney disease.

**Aims:**

This study aimed to analyse the utility of NT-proBNP and hsTNT in screening patients with end stage renal disease (ESRD) for subclinical HF**.**

**Methods:**

This cross-sectional observational study was conducted in patients enrolled in the Chronic Renal Insufficiency Standards Implementation Study-Haemodialysis (CRISIS-HD) who had baseline NT-proBNP, hsTNT and echocardiographs. Data collected at baseline included demographics, cardiovascular history, medications and echocardiographic parameters. Sub-clinical HF was defined as patients who had minimal or no symptoms of HF at baseline. Pearson’s correlation coefficient was used to compare the association between serum biomarkers and echocardiographic parameters. Area under the receiver operating characteristic (AUROC) analysis ascertained the diagnostic accuracy of biomarkers. Based on the European Society of Cardiologists' guidelines, the cohort was split into three groups and analysed (NTproBNP<125pg/ml as normal, >125pg/l as abnormal, and>400pg/l as requiring secondary care referral). Any HsTNT value >14pg/l was considered to be abnormal.

**Results:**

175 of 287 patients from CRISIS-HD had biomarkers and echocardiographic results at baseline recruitment. The mean age of our cohort was 62 years with the majority (73%) being males. Mean blood pressure was 140/70mmHg. 24.6% had a history of ischemic heart disease with 14.3% having congestive cardiac failure. 87% had some form of echocardiograph abnormality at baseline. By Pearson’s correlation analysis, NTproBNP showed positive correlation with echocardiograph parameters including global longitudinal stain (GLS) and diastolic dysfunction (E/E’) and a negative correlation with biplane ejection fraction (EF) (p<0.05). Similar correlations were not observed with hsTNT. However, AUROC and sensitivity analysis showed that both biomarkers had limited role in the screening of patients with sub-clinical HF (NTproBNP>125pg/l: 0.54, NTproBNP>400pg/l: 0.42 and Troponin T >14ng/l: 0.537) (Figure 1). The sensitivity and specificity of the serum biomarkers in screening for sub-clinical HF is illustrated in Table 1.

**Conclusions:**

The serum cardiac biomarkers NTproBNP and hsTNT had limited utility in screening for subclinical HF in ESRD patients. Caution must be observed when using these biomarkers in this group of patients.

**Figure-1: ROC comparing serum biomarkers as tools to predict HF**

**Table 1: Sensitivity and specificity of the serum biomarkers at screening HF**

|  |  |  |
| --- | --- | --- |
| Biomarker | **Sensitivity (%)** | **Specificity (%)** |
| NTproBNP >125 (pg/l) | 60 | 48 |
| NTproBNP >400 (pg/l) | 12 | 72 |
| Troponin T >14 (ng/l) | 56 | 51 |