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ST2 in heart failure- a prognostic marker

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Introduction: ST2 (growth STimulation expression gene 2), a member of the interleukin family, has emerged as a novel biomarker in patients with heart failure (HF). It acts as a trigger for fibrosis and the cascade of events leading to cardiac remodelling. The heart is subjected to greater stress in the presence of high levels of soluble ST2, leading to cellular death and tissue fibrosis, reduced cardiac function, and increasing the rate of disease progression. While Brain Natriuretic Peptide (NTpro-BNP) is more useful for diagnosis of HF, ST2 is of particular value in prognostication. Patients with ST2 >35 ng/ml are documented to have a 2.8x higher risk of adverse outcomes within 30 days. Good response of ST2 to therapy is associated with a better future course of the disease. **Purpose:** To study and correlate ST2 biomarker release with NTpro-BNP, left ventricular ejection fraction (LVEF) and other parameters at the time of admission in patients presenting with heart failure in a single tertiary centre. **Methods:** 150 patients, 93 males and 57 females who presented with clinical evidence of cardiac failure were evaluated with echocardiography and estimation of NTpro-BNP, ST2 and other blood investigations at time of admission. Patients were divided into four groups: GROUP A: 49 patients with ST2 <35ng/dl (normals), GROUP B: 60 PATIENTS with ST2 between 35 to 100ng/dl and GROUP C: 41 patients with ST2 between 100 to 200ng/dl or more. **Results:** Overall there was a correlation of ST2 with age, renal dysfunction and diabetes. There was also a significant correlation of ST2 with NTpro-BNP. Overall ST2 did not correlate with LVEF and 30% of HF patients on admission had normal ST2. However 43% of patients with ST2 over 100ng/dl had LVEF less than 30% compared with 26% when ST2 was normal. On follow up after discharge, no patient with normal ST2 (Group A) died, whereas 5 deaths and one cardiac transplant occurred in the abnormal groups put together (B, C and D). No difference was seen within groups B, C and D, suggestioning any high value was associated with poorer prognosis. **Conclusion:** Though there is a correlation between ST2 and NTpro-BNP values, ST2 is a better biomarker for risk stratification but not for diagnosis of HF. In this study, 30% of patients had normal ST2 levels on admission confirming this. ST2 was able to identify amongst HF patients those who had a poorer prognosis, as seen from the greater number of deaths in the high ST2 groups in this study. Correlation of high ST2 values with increasing age, renal dysfunction and diabetes in this study, could be a factor in poorer prognosis. We are closely following our patients for further clinical events and biomarker changes.