**ELEVATED SERA SST2 PREDICTS HEART FAILURE IN MEN UNDER THE AGE OF 50 WITH CLINICAL SUSPECTED MYOCARDITIS**

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**Objective:** Myocarditis is an important cause of heart failure. Men with myocarditis have worse recovery and an increased need for transplantation compared to women, but the reason for the sex difference remains unclear. Elevated sera soluble (s)ST2 predicts mortality from acute and chronic heart failure, but has not been studied in myocarditis patients.

**Method:** In this study we investigated whether sera sST2 levels were associated with low left ventricular ejection fraction (LVEF) or New York Heart Association (NYHA) class in myocarditis patients. Adults with a diagnosis of clinically suspected myocarditis and a heart failure syndrome of less than 6 months symptom duration (n=328, 79% male) were identified according to the 2013 European Society of Cardiology position statement.

**Results:** Sera sST2 levels and cardiac function were also assessed in a mouse model of myocarditis. We found that sera sST2 levels were significantly higher in men (*p*=1x10-7) and women (*p*=4x10-5) with suspected myocarditis compared to controls. sST2 levels were also significantly increased in men with myocarditis compared to women (p=0.0002) who were under 50 years of age (p=0.01). sST2 levels were not increased with a LVEF ≤45% in both sexes (p=0.08) or in men (p=0.09). In contrast, sST2 levels increased in myocarditis patients with NYHA class III-IV heart failure for both sexes (p=0.04) which was driven by men (p=0.006) that were less than 50 years of age (p=0.008). Sera sST2 levels were also significantly higher in male mice with myocarditis compared to females (p=0.005) and levels associated with poor heart function.

**Conclusion:**We show in this well characterized subset of heart failure patients with clinically suspected myocarditis that elevated sera sST2 is associated with an increased risk for heart failure based on NYHA class in men under the age of 50, which may be increased by testosterone based on translational studies in mice with myocarditis.