Explore the relationship between BNP level and measures of systolic and diastolic function on Tissue Doppler Imaging (TDI) in patients with aortic stenosis.

**Objectives**: To validate the accuracy of mitral annular motion (MAM) assessed by Doppler Tissue Imaging (DTI) & M-mode Echocardiography (MME) as a surrogate for left ventricular function.

**Methods**: A series of 133 patients with a variety of cardiac pathologies referred for echocardiography and 20 healthy age & sex matched volunteers as a control were included in the study. TID recordings of the mitral inflow, MME and PWTDI data (from each of 4 mitral annular sites, inferior, anterior, septum, and lateral) were obtained. Mean peak (S) MAM velocity (Sm), mean annular early (E) velocity (Em) by PWTDI and mean mitral annular plane (S) excursion (MAPSE) by MME were calculated by averaging at each annular site.

**Results**: MAPSE < 12 mm determined by MME had 95% sensitivity, 88% specificity & 86% accuracy for detection of LV EF <50%, while these values were 94%, 93% & 95% respectively for (S) MAM (Sm). BNP levels determined by PWTDI were correlated with early transmitral velocity (Em). A BNP level > 100 pg/ml gave an AUC of 0.8 for the septal systolic velocity and 0.7 for the E/Em ratio. An E/Em ratio > 10 gave a sensitivity of 78% and specificity of 90% for a high BNP while a ratio > 15 gave a sensitivity of 67% and specificity of 87%. A systolic velocity < 5 cm/s was 100% specific and below 8 cm/s 100% sensitive for a high BNP.

**Conclusion**: These results show that Tissue Doppler indices are related to the BNP level. A systolic velocity < 5 cm/s or E/Em ratio > 15 reliably predict a high BNP level.