

## ABSTRACT

**Aim of this study** is to study the relation of BNP levels to symptoms , severity and echocardiographic parameters in patients with chronic organic mitral regurgitation

**METHODS** : 2D Echocardiography was done in 70 patients within this study:

Group1 consisted of 50 patients with moderate or severe organic MR with mean age was  $35.8 \pm 13.2$  years . 36 of the patients were female (72%), 14 of the patients were male (28%).14 patients had moderate MR and 36 patients had severe MR.

Group II consisted of 20 patients with mild organic MR or patients with normal valves, with mean age was  $31.8 \pm 12.0$  years . 15 of the patients were female (75%), 5 of the patients were male (25%)

Patients with moderate to severe mitral stenosis, moderate to severe aortic valve disease, ischemic heart disease, hypertension, and serum creatinin  $>2.5$ mg/dl were excluded from the study.

Mitral regurge severity was assessed by Jet area ,vena contracta width, ERO area and regurgitant volume. Left ventricle ejection fraction was calculated using, M-mode and biplane modified Simpson's rule. LA dimension and volume , LV Volume , right ventricular dimension , and RV function measured by FAC ,and TAPSE method was assessed.

BNP was measured using The RayBio BNP Enzyme Immunoassay (EIA) kit , based on the principle of Competitive Enzyme Immunoassay.

**Results:** BNP was significantly different for different degrees of Symptoms , and was significantly Higher in patients with NYHA Class II-III Compared with Patients class I or asymptomatic ( $P < 0.001$ ), and was significantly higher in patients with severe MR compared with moderate and mild Mitral Regurgitation ( $P < 0.001$ ), ROC curve analysis showed that B.N.P 53 Pg/ml had a 97% sensitivity and 87% specificity for predicting symptomatic patients with mitral regurgitation and B.N.P level of 61 Pg/ml mm had a 97% sensitivity and 89% specificity for predicting patients with severe mitral regurgitation ( $(P < 0.0001)$ ).

Correlation analysis between BNP and echocardiographic variables in both groups shows good Significant Correlation between B.N.P and LA dimensions and volumes ,LV dimensions and volumes, vena contracta width, regurgitant volumes and effective orifice area and E waves, and no Correlation between BNP level and septal wall thickness, posterior

wall thickness, RV dimensions, RV Functions measured by(Fractional area change-TAPSE method- S<sup>1</sup> Tricuspid annulus),degree of tricuspid regurgitation and Pulmonary artery systolic pressure.

Significant Correlation was found between BNP level and Left atrium size below and above 40 mm, Left atrial volume indexed below and above 34 ml/m<sup>2</sup> (P value <0.001), and between BNP and Left ventricle end diastolic dimension below and above 58 mm ,Left ventricle end systolic dimension below and above 40 mm, Left ventricle end diastolic volume indexed below and above 97 ml/m<sup>2</sup>, and left ventricular end systolic volume indexed below and above 43 ml/m<sup>2</sup>.

**CONCLUSION:** BNP in organic MR reflect ventricular and atrial consequences and correlates with disease severity, and symptomatic status. Therefore, BNP in organic MR is an emerging biomarker of severity of MR and it may helpful in assessing patients indicated for surgical intervention.

**Keywords:** Mitral regurgitation , natriuretic peptides, BNP