

# **Brain Natriuretic peptide is a marker associated with stroke in patients with atrial fibrillation**

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## Abstract

### Background and objective

**Introduction:** Atrial fibrillation (AF) patients who have atrial thrombus are at high risk of thromboembolic events. Assessment of left atrium appendage (LAA) function with trans-esophageal echocardiography is useful for identifying these patients. The atrium was reported to be the main source of brain natriuretic peptide (BNP) in AF patients without overt heart failure.

**Aim of the work:** to assess whether BNP levels can serve as a biological marker of Left atrial (LA) thrombus in AF patients with acute ischemic stroke.

**Study design:** This is a randomized multicenter prospective cohort study consisted of forty subjects divided into two main groups: the study group consisted of thirty chronic AF patients with acute ischemic stroke (within one week) and the control group consisted of ten healthy volunteers with no risk factors or co morbidities. The study group was further subdivided into two subgroups according to result of TEE to TEE positive and TEE negative

### Results :

There was a positive significant relation between serum BNP levels and presence of left atrial thrombus documented by TEE (TEE positive) with p value less than 0.001. BNP with cut-off value more than 498 pg /L can be used as diagnostic biomarker for the presence of left atrium thrombus. A positive correlation exists between serum BNP levels and (LA) diameter with P value < 0.001.

A significant positive relation exists between LA diameter and serum BNP in TEE positive subgroup with p value < 0.001; which may implicate that LA dilatation is responsible on increased serum BNP other than presence of thrombus.

There were positive significant relations between TEE positive group and risk factors as HTN,DM, number of attacks of stroke, and AF duration with p value respectively (0.050&0.001&0.002&<0.001)

TEE positive group had significantly higher levels of uric acid with p value 0.002 and lower bilirubin (Total and direct with p values 0.04&0.012), coagulation profile PT, PTT,INR, PC and albumin levels with p value 0.013&0.052&0.017&0.004&<0.001 respectively.

A significant positive relation was detected between TEE positive group and rapid ventricular response (AF rate) with p value<0.001, also statistically significant positive correlation between serum BNP and AF rate was found among all patients with p value<0.001, r =0.955.

A good positive correlation exists between AF duration and serum BNP among patients with P value <0.001, r=0.902.

**Conclusion :** BNP was found to be a good diagnostic biomarker for the detection of left atrial thrombus in AF patients with acute ischemic stroke.

**Key words:** atrial fibrillation, Brain natriuretic peptide (BNP), acute ischemic stroke, Left atrial thrombus, trans-esophageal echocardiography, **LA diameter, Rapid ventricular response.**