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# Assessment of Serum NT-Probnp Level in Acute Decompensated and Chronic Heart Failure Patients in a Tertiary Care Hospital

**Dr. Nitin Jadhav , Dr. Pavan Patel , Dr. Shruti Nair, Dr. Rutuja D Pundkar**
Department of Medicine, Krishna Institute of Medical Sciences, Karad, Malkapur, Maharashtra, India

**Original Research Article**

***Corresponding author**
*Dr. Pavan Patel*

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**Abstract:** Heart failure is an increasingly common disorder with prevalence about 2% in developed countries. It is characterized by poor prognosis and quality of life to patient and is responsible for high healthcare cost. A prospective study was carried out among 1500 patients having heart failure. Patients coming to the OPD of department of Medicine of tertiary care centre and having inclusion criteria were considered for the study. Clinically patients complained of chest pain among 89%, breathlessness among 72% and sweating among 60%. B-type natriuretic peptide levels >4000 were among 30% cases. Cut off of 2734.6 pg/ml has 100% sensitivity and 92% specificity in predicting heart failure. Rapid measurement of B-type natriuretic peptide is useful in establishing or excluding the diagnosis of congestive heart failure in patients leading to heart failure.
**Keywords:** Chronic heart failure, Dysnea, B-type natriuretic peptide.

## INTRODUCTION

Heart failure is an increasingly common disorder with prevalence about 2% in developed countries. It is characterized by poor prognosis and quality of life to patient and is responsible for high healthcare cost [1, 2]. Dyspnae, fatigue, edema are the main symptoms of heart failure, but these symptoms are also common in other with respiratory diseases. This challenge has been overcoming by upcoming specific biomarkers for heart failure [3].

Recently it has been recognized and shown that test for B-type natriuratic peptide and NT-ProBNP are useful and accurate markers for heart failure. Although derived from same precursor BNP and NT-ProBNP are considerably different from many ways. BNP is biologically inactive and cleared rapidly from circulation, while NT-ProBNP is biologically inactive component and it has got long life both in vivo and in vitro. So N-Pro BNP assay may be more sensitive than BNP in certain scenarios [4, 5].

Use of NT-pro BNP or BNP for management of heart failure is warranted in view of increasing prevalence of this serious condition and the need consider a broadening spectrum of dysfunction for treatment[6,7]. In this study, the focus is on analyzing the data of patients on whom NT-Pro BNP level are measured will help to determine the change in acute and chronic heart failure.

## AIM AND OBJECTIVES

To asses of serum NT-ProBNP level in acute decompensated and chronic heart failure patients.

## MATERIAL AND METHODS

A prospective study was carried out among 1500 patients having heart failure. Patients coming to the OPD of department of Medicine of tertiary care centre and having inclusion criteria were considered for the study. Inclusion criteria: shows clinical symptoms, ECG changes, serum biochemical changes of heart failure were included in this study. And patients with no history of cardiac failure and patients with renal failure were excluded from the study. Ethical clearance was taken from the institute prior. Written consent was taken from the patients in the language they understand. Pretested, predesigned and semi structured proforma was used for the interview. Immune assay was done to test serum NT-proBP levels. And data was also collected from cardiology ICU and Medical record department. Data was collected and compiled in Microsoft excel. Appropriate statistical test were

applied for analysis. 't' test and chi square test were used.

## RESULTS

Present study had 70% males and 30% females and mean age was 59.12±10 years.

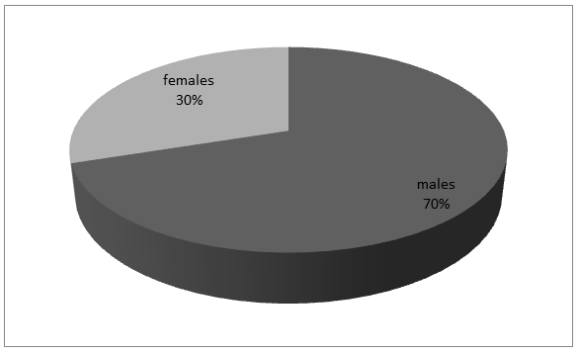


**Fig-1: Gender distribution**

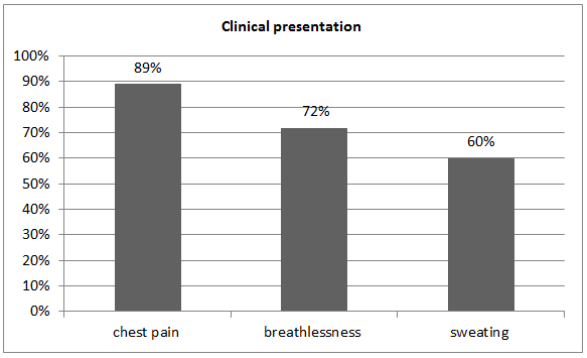


**Fig-2: Clinical presentation**

It was seen that majority 89% had chest pain followed by 72% had breathlessness and 60% sweating.

**Table-1: Risk factors**

| Risk factors | Percentage |
|---|---|
| DM | 66% |
| HTN | 40% |
| Smoking | 50% |
| History of IHD | 16% |

Table 1 show that majority 66% had DM, 50% were smokers, 40% had hypertension and only 16% had history of IHD.

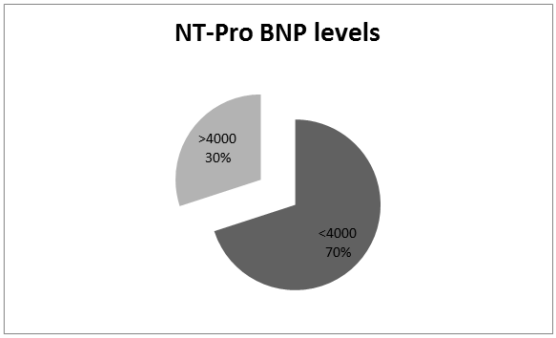


**Fig-3: NT-Pro BNP levels**

70% of the population showed NT-Pro BNP levels <4000 and only 30% had values >4000.

**Table-2: Complications seen among the study population**

| Complication | Percentage |
|---|---|
| Cardiac complication | 40% |
| No cardiac complications | 60% |

It was also seen that majority had no cardiac complications whereas 40% showed presence of cardiac complications in the form of cardiac failure, conduction blocks or arrhythmias. Association between complication and NT pro BNP showed statistical significance. (p=0.03). Cut off of 2734.6 pg/ml has 100% sensitivity and 92% specificity in predicting heart failure.

## DISCUSSION

Present study showed that means age was 59.12±10 years. Study by Mrinal *et al*.[4] showed that mean age was 58.73 years. Mrinal[4] also showed that 70% were males and 30% were females. Rao *et al*. [5] in their study showed that all patients had chest pain, 82% had sweating and 64% had breathlessness whereas in present study 89% had chest pain, 72% had breathlessness and 60% had sweating.

In present study majority 66% had DM, 50% were smokers, 40% had hypertension and only 16% had history of IHD. Study by Hossain Z [6] *et al*. showed that 53% were smokers, 54% were hypertensive, 46% had DM and 20% had positive Family history. Study by Kunj *et al.*[4] showed that majority were below 2000 pg/ml whereas in present study 70% of the population showed NT-Pro BNP levels <4000 and only 30% had values >4000.

Kunj *et al*.[4] showed that 32.5% had cardiac complications and Hossain Z *et al*.[6] showed that 25% had cardiac complications. Whereas 40% had cardiac complications in present study. Kunj *et al*.[4] also showed that NT-proBNP cut off of 1691.50 pg/ml has 100% sensitivity and 88.9% specificity in predicting the occurrence of heart failure.

## CONCLUSION

Rapid measurement of B-type natriuretic peptide is useful in establishing or excluding the diagnosis of congestive heart failure in patients with acute dyspnea. Whether therapeutic strategies aimed to lower NT-proBNP levels modify prognosis warrants future investigation.

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