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RESEARCH ARTICLE

NT-proBNP AS A DIAGNOSTIC MARKER IN CCF

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ABSTRACT

Background: Heart Failure prevalence is increasing with more than 20 million affected worldwide. Making the correct diagnosis is challenging and confirmatory in only 40-50% of cases. Heart being an endocrine organ produces and releases hormones. NT-pro BNP thought to be produced in response to mechanical stretching, increase in intra vascular volume & CCF. Several studies have shown that plasma natriuretic peptide improves diagnostic accuracy and this lead these markers being recommended in international guidelines.
Objective: To measure NT pro BNP levels in suspected cases of CCF and to evaluate NT pro BNP as a diagnostic marker.
Materials and Methods: The study was conducted on 60 patients- 30 cases and 30 controls between 40-70 years attending Out and In-patients Clinics in KIMS, Bangalore.
30 were cases who had sudden onset of breathlessness suspected to be due to CCF on the basis of symptoms and signs. 30 were controls without CCF and did not meet the exclusion criteria. All patients underwent relavant blood investigations. NT pro BNP detected by ELFA technique and it was correlated with ECHO findings.
Results: In our study group of total 60 patients 30 were cases with dyspnoea who were suspected to have CCF, 30 were controls without CCF. Among cases 24 had CCF and elevated NT pro BNP levels. Other 6 did not have CCF and Nt pro BNP was within normal limits. Among 30 controls 29 had NT pro BNP normal for there age. NT pro BNP was significantly elevated in cases compared to controls. There was a strong correlation between NT pro BNP and CCF with a P value of <0.001. NT-Pro BNP levels Increased with decreasing EF. There was a strong correlation between EF and NT- Pro BNP levels with a P value of <0.001.
Conclusion: NT pro BNP can be used as diagnostic marker in suspected cases of CCF and has inverse correlation with Ejection Fraction.

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INTRODUCTION

- Heart failure prevalence is raising throughout the world.
- The overall prevalence of HF is thought to be increasing because current therapies for cardiac disorders, such as Myocardial Infarction(MI), Valvular Heart Disease, and Arrhythmias, are allowing patients to survive longer.
- American Heart Association(AHA) guidelines define HF as a "Complex clinical syndrome that results from structural or functional impairment of ventricular filling or ejection of blood, which in turn leads to the cardinal clinical symptoms of dyspnea and fatigue and signs of HF namely edema and rales".
- Making the correct diagnosis in patients with Suspected Acute Heart Failure is challenging, and confirmatory in only 40-50% of Cases.
- Several Studies have shown that when added to routine history, Clinical Examination and Conventional investigations measurement of plasma natriuretic peptide levels improve diagnostic accuracy.
- B-type natriuretic peptides (BNP) that are synthesized by the left and right atria in response to cardiomyocyte stretching.
- The human BNP gene encodes a 108 amino acid pro hormone named proBNP.
- ProBNP is cleaved in to a biologically active 32-amino acid C-Terminal polypeptide (BNP) and a 76-amino acid N-terminal fragment termed NT-proBNP.
- Both these polypeptides are released in to the circulation and can be detected in blood samples.

MATERIALS AND METHODS

- The study was conducted on 60 patients between the age group of 40-70 years attending the inpatient and outpatient clinic at Kempegowda Institute of Medical Sciences, Bangalore.
- It was a case control comparative study of 60 patients (30 cases and 30 controls) during the study period from November 2013 to October 2015.
- Informed consent was obtained from all patients /care takers of the patients enrolled for the study.
- The data of the patients was collected in a well designed platform.

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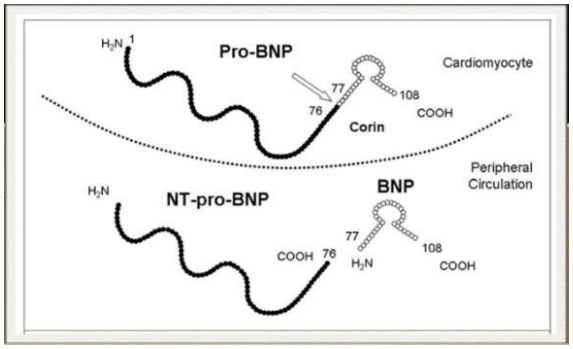


- Relevant data about diabetes mellitus, hypertension and Renal disease was taken in the history.
- CBC, Urine Microscopy, RFT, LFT, RBS, Serum Electrolytes, Lipid profile, ECG, Chest X-RAY and 2D Echocardiography was done for all patients.
- Serum NT-proBNP levels were measured by ELFA (Enzyme linked fluorescence Assay) technique.
- STASTICAL ANALYSIS: Unpaired t test and chi-square test.
- **Cases:** Patients suspected to have heart failure based on history, Clinical examination and ECG (Age and Sex Matched individuals).
- **Controls:** Patients without heart failure and diseases mentioned in Exclusion Criteria.
- In our study cutoff levels for NT-pro BNP was
  1. >450 pg/ml for those aged < 50 years.
  2. >900 pg/ml for those aged 50-70 years.

Inclusion criteria

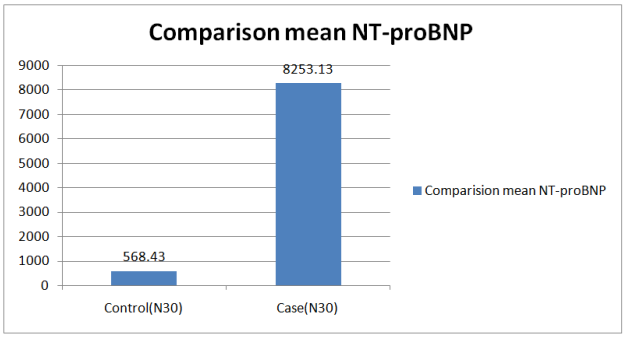
1. Age 40-70 years
2. Complains of sudden onset dyspnea suspected to be due to cardiac causes.
3. Patients who signed the written informed consent.
4. Patients who did not meet the exclusion criteria.

Exclusion criteria

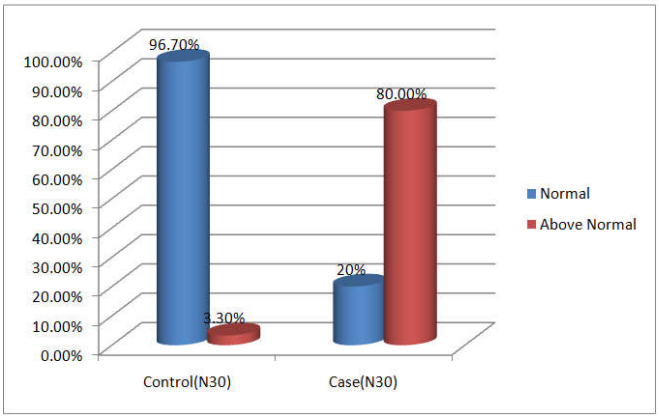
1. Corpulmonale.
2. Sepsis.
3. Lung Cancer.
4. Pulmonary Embolism.
5. ARDS.
6. Liver Cirrhosis.
7. Renal failure.
8. Patients not willing to participate in the study.

RESULTS

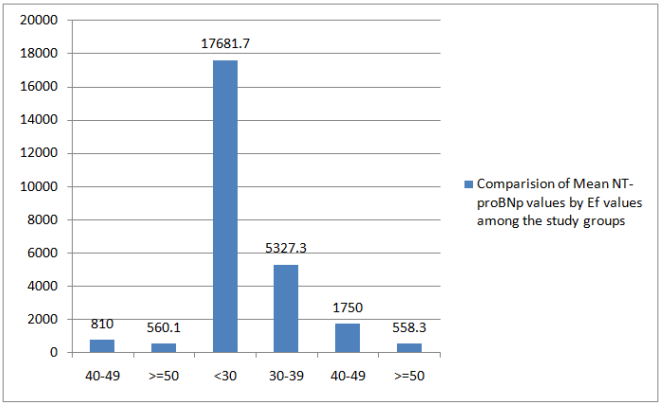
Comparison of mean NT-proBNP



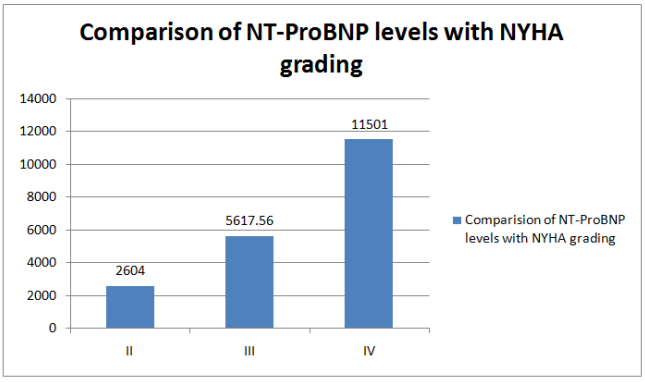
Comparison of NT-proBNP among cases and controls



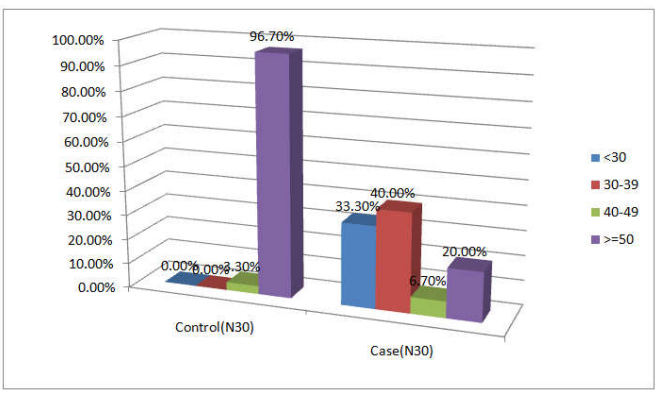
Comparison of Mean NT-proBNp values by Ef values among the study groups



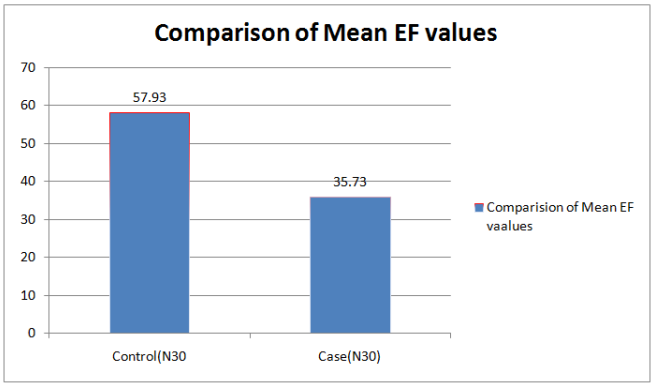
Comparison of NT-proBNP levels with NYHA grading



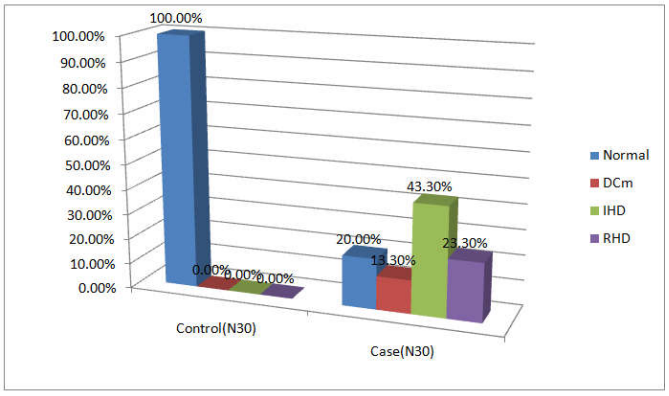
Comparison of EF Values



Comparison of Mean EF Values



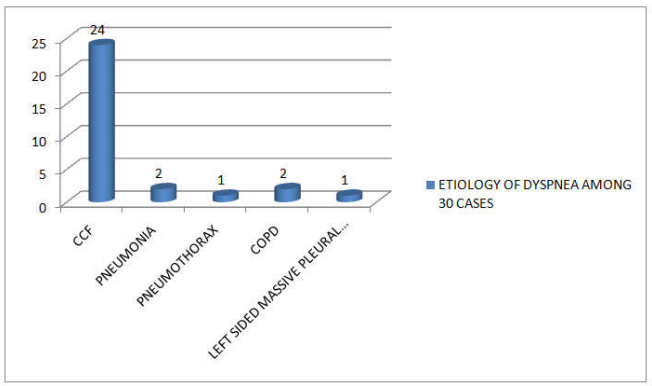
2D-Echocardiography Report Comparison



DISCUSSION

- **Among 30 controls:**
  1. 29 had NT-proBNP levels within normal range for their age.
  2. 1 had elevated level of NT-ProBNP for their age.
- **Among 30 cases:**
  3. 24 had NT-ProBNP level elevated for their age and were diagnosed to have congestive cardiac failure.
  4. 6 had NT-ProBNP levels within normal limits for their age. These 6 patients had a normal 2D-ECHO. Breathlessness in these patients was due to non cardiac cause.

Etiology of dyspnea among 30 cases



DISCUSSION

- The mean value of NT-proBNP raises with decreasing EF. NT-ProBNP values have a inverse relationship with Ef Values. There was a strong correlation between the 2 variable with a p value of <0.001
- There is a raise in NT-proBNP value with increasing NYHA grades. There was a significant correlation between the 2 variables with a 'P' value of 0.049
- The mean NT-ProBNP Value among controls was 568.43 pg/ml. The mean NT-proBNP value among cases as 8253.13pg/ml. It was statistically significant with a 'P' value of <0.001.

Conclusion

1. Serum NT-proBNP levels are significantly elevated in cases compared to controls making it a valuable diagnostic marker in Congestive Cardiac Failure.
2. Serum NT-proBNP levels correlative inversely with the EF levels.

REFERENCES

Dokainish H. 2007. Combining tissue Doppler Echocardiography and B-type natriuretic peptide in the evaluation of left ventricular filling pressures: review of literature and clinical recommendations. *Can J Cardiol*., 23:983-9.

Mann D L. and Chakinala M. 2015 Heart Failure: Pathophysiology and diagnosis.In: Harrison's Principles of internal Medicine 19th ed, McGraw-Hill; Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J eds. Vol 2, Chap 279:2112.

McMurray JJV, Adamopoulos S, Anker SD, Auricchio A, Bohm M, Dickstein K, *et al*. 2012. ESC guidelines for the diagnosis and treatment of acute and chronic heart failure 2012: The task force for the diagnosis and treatment of acute and chronic heart failure 2012 of the European society of cardiology. Developed in collaboration with the heart failure association (HFA) of the ESC. *Eur J Heart Fail*., 14;803-69.

Schocken DD, Benjamin EJ, Fonarrow GC, *et al*. 2008. Prevention of heart failure: A scientific statement from the American heart association councils on Epidemiology and prevention, Clinical Cardiology, Cardiovascular Nursing, and high blood pressure Research; Quality care and Outcomes Research Interdisciplinary Working group; and Functional Genomics and Translational Biology Interdisciplinary Working Group. *Circulation,* 117:2544.

Yancy CW, Jessup M, Bozkurt B, Butler J, Casey DE, Drazner M, *et al*. 2013. ACCF/AHA guideline for the management of heart failure: A report of the American College of Cardiology Foundation/American Heart Association Task Forcw on Practice guidelines circulation, 128:e240-327.

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