Cleveland Clinic

B-type Natriuretic Peptide (BNP) Blood Test

BNP is a substance secreted from the ventricles or lower chambers of the heart in response to changes in pressure that occur when heart failure develops and worsens. The level of BNP in the blood increases when heart failure symptoms worsen, and decreases when the heart failure condition is stable. The BNP level in a person with heart failure – even someone whose condition is stable – is higher than in a person with normal heart function.

Preparation

To test the BNP level, a small amount of blood is taken and placed in a machine that detects the level of BNP in your blood. The test takes about 15 minutes. The BNP level helps to determine if you have heart failure, rather than another condition that may cause similar symptoms. In addition, BNP help the physician make decisions about hospitalizations, aggressive treatments, and future prognosis.

Results

- BNP levels below 100 pg/mL indicate no heart failure.
- BNP levels of 100-300 pg/mL suggest heart failure is present.
- BNP levels above 300 pg/mL indicate mild heart failure.
- BNP levels above 600 pg/mL indicate moderate heart failure.
- BNP levels above 900 pg/mL indicate severe heart failure.

BNP Research

In a recent study reported in the January issue of the ***Journal of the American College of Cardiology*** *<LINK: http://www.acc.org/ > **, BNP accurately detected heart failure 83% of the time and reduced clinical indecision from 43% to 11%.

The study evaluated 321 patients presenting to the emergency department with acute dyspnea (shortness of breath). Patients had the BNP blood test and were also examined by physicians. Physicians were blinded to BNP levels and asked to give their probability of the patient having CHF and their final diagnosis. In addition, two physicians reviewing the patients symptoms, baseline characteristics, and clinical history were also asked to provide their level of clinical certainty in giving or ruling out a diagnosis of CHF.

The study showed that the BNP blood test provided an accurate diagnosis 81.1% of the time (sensitivity of 90%, and specificity of 74% at a cutoff of >100 pg/mL). In contrast, clinical judgment alone, yielded an accurate diagnosis 74% of the time. The BNP test also reduced uncertainty regarding the diagnosis from 43% to 11%. Average BNP levels also correlated well with New York Heart Association functional class levels and was able to distinguish heart failure symptoms from those of pulmonary causes of shortness of breath.

The authors conclude that the BNP test is a quick, inexpensive test which enhances current diagnostic assessment tools, and enables doctors to make the correct diagnosis of heart failure. Future research is evaluating the use of BNP to determine prognosis and decisions regarding treatment.

Resources:

- *How Heart Failure Is Diagnosed*, Cleveland Clinic Health System
- **Breathing Not Properly trial indicates BNP tests should be incorporated into ACC/AHA CHF guidelines, heartwire** <LINK: http://www.theheart.org/ > *, March 19, 2002
- Morrison LK, Harrison A, Krishnaswamy P, et al. *Utility of a rapid B-natriuretic peptide assay in differentiating congestive heart failure from lung disease in patients presenting with dyspnea.* J Am Coll Cardiol 2002 Jan 16; 39(2):202-9.

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