

## Ischemic stroke subtype and BNP level

Ileana CORLAN, MD

Cardiology Department, Emergency University Hospital, Bucharest, Romania

The determination of acute stroke subtype, notably important for the treatment, recurrence prevention, prognosis and outcome, requires sometimes a large set of costly investigations, including MRI, MRI angiography or transesophageal echocardiography. There have been some trials to use biological markers to differentiate between stroke subtype, but for D-dimers and high-sensitive CRP, the accuracy was low.

Although BNP is increased in all stroke types, the level may be useful in distinguishing between ischemic stroke subtypes.

A Japanese group of researchers analyzed 200 consecutive patients, mean age 71.4±12.8 years admitted with ischemic stroke in the first 24 hours of onset in which plasma BNP level was measured at admission and the patients were divided into four groups (TOAST criteria): large vessel disease (LVD), cardio embolism (CE), small vessel disease (SVD) and other stroke, based on a large set of investigations (CT/MRI, duplex carotid artery ultrasonography,

ECG, TEE, transcranial Doppler, MRA and conventional echocardiography).

The mean BNP level was significantly higher in the CE patients (409,6 pg/ml for a normal value of 18,4 pg/ml in their hospital) compared to LVD (94.0 pg/ml), SVD (37.4 pg/ml) and other stroke (156.9 pg/ml). A cutoff value of 140 pg/ml could differentiate CE stroke with an 80.5% sensitivity and 80.5% specificity.

Cutoff values for other subtypes of ischemic stroke were less specific and less sensitive: a value of 91.2 pg/ml identified LVD with a 50% sensitivity and 48.9% specificity and a cutoff value of 39.5 pg/ml identified SVD with a 25.8% sensitivity and 23.7% specificity.

Although many explanations for the high level of BNP in CE stroke are possible (presence of heart failure, atrial fibrillation, neuroendocrine changes due to stroke that increase ventricular load) a cutoff value to distinguish cardio embolic stroke when BNP levels are increased in all stroke types could be very important for clinical practice and the BNP level could be part of an algorithm for diagnosing stroke subtypes. □

---

### *Comment on the paper:*

**Shibasaki K, Kimura K, Iguchi Y, Okada Y, Inoue T** – Plasma brain natriuretic peptide can be a biological marker to distinguish cardio embolic stroke from other stroke types in acute ischemic stroke. *Intern Med* 2009; 48(5):259-264. Epub 2009 Mar 2