

## Opinions about the use of brain natriuretic peptide among acute ischemic stroke patients

Sir,

We read with interest the article by Zeynep Cakir and colleagues on brain natriuretic peptide (BNP) in stroke or hypertension patients,<sup>[1]</sup> and wish to share a few opinions about the use of BNP among acute ischemic stroke (AIS) patients in the Emergency Department (ED).

At present, the use of plasma biomarkers during the point of care testing (POCT) is getting increasing popular in the ED. A lot of published studies show that BNP levels are significantly elevated and might be of clinical importance as a supplementary tool for the assessment of cardiovascular function in patients with AIS.<sup>[2-4]</sup> In Dr. Zeynep Cakir and colleagues' study, stroke patients with other diseases such as congestive heart failure, severe valvular heart disease, atrial fibrillation (AF), and so on were excluded.<sup>[1]</sup> Hence, the including patients in group I and II could not be representative of the classical stroke types and may be a serious bias in their study.

In our opinion, we had better include the participants with mild and moderate cardiovascular function in the study design. According to the American Heart Association (AHA) and American Stroke Association stroke guidelines, the patients with AIS were divided into five subtypes according to the trial of ORG 10172 in acute stroke treatment criteria (TOAST).<sup>[5]</sup> However, Dr. Zeynep Cakir and colleagues did not classify the AIS patients into any subtypes. And they may ignore a lot of stroke patients with the cardioembolic (CE) subtype, which is one of the important stroke subtypes due to high risks and poor long-term outcome including death.

According to evidence-based recommendations, we should pay attention to the AIS patients with high BNP level. And several studies have reported that the value of the use of BNP in AIS patients as follows: (1) BNP has been shown to be an independent predictor of the mortality and myocardial infarction in stroke patients.<sup>[3]</sup> (2) BNP is strongly associated with cardioembolic stroke and functional outcome at 6 months after ischemic stroke.<sup>[6]</sup> (3) Elevated plasma BNP levels can be a potential marker of the presence of left atrial sources of emboli in ischemic stroke patients.<sup>[2,4]</sup> (4) The measurement of plasma BNP on admission could also predict the development of AF after admission.<sup>[2]</sup>

We also made further study about the use of BNP among AIS in the ED. In our study; age, previous cardiac disease, AF, length of hospital stays, Scandinavian Stroke Scale (SSS) score on admission  $\leq 25$  and the modified Rankin Scale (mRS)  $\geq 3$  or death at discharge were all significantly higher in the CE patients compared to other stroke etiologic subtypes according to TOAST criteria ( $P < 0.01$ ). And by using Biostie Triage<sup>®</sup> BNP POCT platform, emergency physicians should

strongly consider CE subtype with the plasma BNP level of over 66.50 pg/ml.<sup>[7]</sup> However, the cut-off values of BNP are different in several studies and need further validation.<sup>[2-4,7]</sup>

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