Brain Perfusion Matters: From Pituitary Function to Blood Pressure Control during Acute Ischemic Stroke

Tzung-Dau Wang

In this issue of the Journal, there are two original articles dealing with brain perfusion and its functional consequences. The first is the article from Yeh CF et al.1 In their article, 34 patients undergoing carotid stenting for severe internal carotid artery stenosis or occlusion were enrolled, of which 23 having decreased regional cerebral perfusion based on computed tomography perfusion scanning and the rest 11 without. After one year following carotid intervention, the authors noted that hormone profiles (mainly follicular stimulating hormone and luteinizing hormone) secreted from the pituitary gland improved in patients with decreased cerebral perfusion at baseline, whereas no changes were observed in those with no evidence of abnormal cerebral perfusion at baseline. Despite the inherent limitations including small number of patients, retrospective nature, no detailed description about the location of perfusion deficits at baseline, unknown clinical significance of hormonal changes, and no follow-up brain perfusion studies, this observation is novel and sheds lights on the seemingly unknown causes of subclinical pituitary dysfunction, which are often ascribed to aging or other ambiguous causes. Another implication of this study is that the functional evaluation of stenotic lesions, computed tomography perfusion scanning in this case, and the demonstration of functional impairment with stenotic lesions are the prerequisite for the clinical improvement following angioplasty. The same scenario has been extensively examined and proved to be valid in the clinical applications of fractional flow reserve and radionuclide myocardial perfusion imaging in guiding coronary revascularization.2,3 Two years ago, we published an article showing that, after carotid stenting, there were significant and sustained blood pressures reductions (~8/4 mmHg lower with 133/75 mmHg at baseline) lasting for at least one year.4 It is of interest that the former finding, improved brain perfusion may augment pituitary function, can even contribute to the development of blood pressure reductions following carotid stenting.

The second article dealing with brain perfusion, albeit remotely, is from Li Y, et al.5 In this article, the authors examined whether the initiation of antihypertensive therapy with either amlodipine besylate 5 mg daily or irbesartan 150 mg daily, compared to no antihypertensive therapy, from > 48 hours to 1 week after the onset of ischemic stroke could achieve better clinical and neurological outcomes in patients with systolic blood pressures < 220 and diastolic blood pressures < 120 and diastolic blood pressures < 95 mmHg on admission. Among all these 320 participants, antihypertensive therapy was initiated one week after stroke to keep blood pressures < 140/90 mmHg. In other words, the only difference concerning antihypertensive therapy was within the 3rd to 7th day post ischemic stroke. The results showed that, compared to no antihypertensive therapy, early administration of amlodipine or irbesartan was associated with similar mortality at 14 days and 6 months and significantly lower dependent-survival at 6 months and lower recurrent cardio-cerebral vascular events at 14 days and 6 months following stroke. The beneficial effects of early antihypertensive therapy might be partly related to improved brain perfusion through modulation of vessel tones and autoregulation. These results provide evidence to support earlier (< 3 days) administration of antihypertensive “monotherapy” in patients sus-
Erectile dysfunction has been demonstrated to be the harbinger of atherosclerotic vascular disease.18 Bektas O et al. showed that the presence of fragmented QRS was more frequent in patients with erectile dysfunction in this issue.19 Fragmented QRS has been shown to be related to decreased left ventricular global longitudinal and circumferential strains, as well as worse cardiovascular prognosis.20,21 Besides the articles briefly introduced, there are more practical and thoughtful ideas throughout articles published in this issue. We hope you enjoy this issue of *Acta Cardiologica Sinica*.

**REFERENCES**

5. Li Y, Zhong Z, Luo S, et al. Efficacy of antihypertensive therapy in patients with acute ischemic stroke and blood pressures < 220/120 mmHg in first 72 hours following stroke, the article by Li Y et al. makes an incremental progress in this regard.

Other interesting articles published in this issue of *Journal* include a cross-sectional study to show a positive association between homocysteine levels on admission and coronary artery disease severity by Syntax score in patients with acute coronary syndrome.9 Given the conventional definition of hyperhomocysteinemia as > 15 nmol/mL, the average homocysteine levels in this study are above 15 nmol/mL, which is consistent with the characteristics of study participants, patients with acute coronary syndrome. In addition to homocysteine, there are a wide array of factors (bilirubin, cathepsin D, air pollution particular matter, systemic inflammatory response syndrome, and N-terminal pro-brain natriuretic peptide) found to be associated with the severity of coronary artery disease, angiographic features, and clinical outcomes in different clinical scenarios from stable coronary artery disease to acute coronary syndrome published in our *Journal.*10-18 However, we do hope to see more interventional trials to demonstrate that modulation of these factors can indeed alter clinical hard endpoints. Otherwise, the clinical implications of these findings are rather limited.17

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