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Plasma Biomarker and Stroke

Ran Meng^{a,b}, Xunming Ji^b

^aDepartment of Neurology, Beijing Shijitan Hospital affiliated Capital Medical University, The Ninth Clinical Medical College of Peking University, and ^bCerebral Vascular Diseases Research Institute, Xuanwu Hospital, Capital Medical University, Key Lab of Neurodegenerative Diseases of Ministry of Education, Beijing, China

We read with great interest the article ‘Blood Biomarkers for the Diagnosis of Acute Cerebrovascular Diseases: A Prospective Cohort Study’ by Whiteley et al. [1]. Some evidences indicate that diagnosis of stroke or TIA in the emergency department is difficult, though imaging is useful in diagnosis and important for early treatment. Plasma biomarkers might improve upon clinical assessment at admission. However the author evaluated a panel of 15 circulating inflammatory, thrombotic, cardiac, and cerebral tissue damage biomarkers. And the results show that only the markers of t-PA and NT-proBNP were associated positively and significantly with a diagnosis of TIA or stroke. No biomarker individually improved the sensitivity or specificity of the Face Arm Speech Test (FAST). A model containing the FAST, age, systolic blood pressure, NT-proBNP and t-PA had a better sensitivity and a better specificity than the FAST test alone. In conclusion, no single blood marker improved the diagnostic performance of a validated clinical stroke scale. Panels of biomarkers may marginally improve diagnosis, but their practicability is uncertain and requires further study.

We agree with the authors that a panel but not a single biomarker can improve the diagnostic performance of ischemic stroke and TIA, but I do not agree with the authors that only the markers of t-PA and NT-proBNP were associated positively and significantly with a diagnosis of TIA or stroke, because the research results about this issue obtained by us and other doctors

show that there are also some useful biomarkers besides t-PA and NT-proBNP that can predict the diagnosis of TIA or stroke when associated with clinical appearances in the super-acute stage before imaging, such as abnormal elevated fibrinogen, von Willebrand factor (vWF) and low level of AT-III [2–4]. Sometimes D-dimer and hsCRP can also indicate the possibility of stroke especially central nervous venous system ischemic stroke such as cerebral venous sinus thrombosis. So it is too early to conclude that only the markers of t-PA and NT-proBNP were associated positively and significantly with a diagnosis of TIA or stroke before expanding the panel of the biomarkers screened. And when analyzing the effects of biomarkers on stroke diagnosis, the subtypes of stroke should be separated; for example, some biomarkers may be sensitive to predict the stroke caused by atherosclerosis, but others may be sensitive to the stroke caused by cardiac emboli.

References

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X. Ji
Cerebral Vascular Diseases Research Institute
Xuanwu Hospital affiliated Capital Medical University
Beijing 100053 (China)
Tel. +86 10 8319 8931, E-Mail jixm70@hotmail.com