Letter to the Editor

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Letter by Yang et al Regarding Article, “Hemoglobin Concentration and Risk of Incident Stroke in Community-Living Adults”

To the Editor:

We read the recent article by Panwar et al1 with great interest. This large cohort prospective study indicated that lower and higher hemoglobin concentrations were associated with a higher risk of incident stroke in women. No such associations were found in men. However, results from the study should be interpreted with several considerations.

First, this study only collected the enrollment measurement of hemoglobin, despite having a long follow-up period (7±2 years). However, longitudinal hemoglobin levels were not assessed. Furthermore, hemoglobin levels are most accurately measured within 24 hours of acute stroke onset. In a study by Furlan et al,2 an elevated level of hemoglobin in blood that is obtained on admission and within 24 hours of acute stroke onset was associated with stroke severity. Conversely, no such association was found in the low hemoglobin group, unlike in the study by Panwar et al. Moreover, Park et al3 studied the time course of hemoglobin levels in patients at both ends of the hemoglobin range (ie, initial, nadir, time-averaged, discharge hemoglobin, and hemoglobin drop) during hospitalization and its correlation with clinical outcomes. Their results in acute ischemic stroke patients indicated that poorer outcomes were related to lower, but not higher, hemoglobin levels, regardless of when and how hemoglobin concentrations were measured. Furthermore, other diseases, such as coagulation system disorder, autoimmune disease, gastrointestinal or genitourinary bleeding, that also have an effect on hemoglobin were not included from this study. Therefore, the conclusion of Panwar et al is less convincing.

Second, although this study used Cox regression models to investigate the relationship between hemoglobin and stroke, some risk factors, such as alcohol consumption, peripheral vascular disease, hypertension, valvular heart disease, deep venous thrombosis or pulmonary embolism, chronic obstructive pulmonary disease, that are associated with stroke were not included. In contrast, the study by Furlan et al,2 which included these risk factors, demonstrated that elevated hemoglobin on admission was associated with more severe strokes and that no such association was found in the low hemoglobin group.

Third, this study included coronary heart disease and atrial fribillation patients but did not discuss whether other antiplatelet drugs (except aspirin), statin, or anticoagulant drugs were used. These aggressive medical treatments might prevent additional strokes. Furthermore, the estimated glomerular filtration rate of patients with chronic kidney disease was moderately below or at a normal level, which does reflect the risk of stroke for patients with varying chronic kidney disease severity.

Finally, as mentioned by Panwar et al, “it is plausible that estrogen deficiency among postmenopausal women could potentiate the pathological mechanisms behind the increased risk of stroke related to anemia and higher hemoglobin concentrations.” Because most women (>90%) in this study were postmenopausal, the use of hormone replacement therapy should be reflected in the baseline.

Therefore, although an independent association between lower and higher hemoglobin concentrations and stroke may exist in adult women, further well-designed investigations are urgently needed to confirm this relationship.

Disclosures

None.

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