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Letter to the Editor

Reply: Letter: cervicocerebral atherosclerosis and its hepatic and coronary risk factors in patients with liver cirrhosis

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Dear Editor,

We thank Drs. Huang, Chen, and Wei for their interest in our study and for commenting on our article on subclinical cerebral atherosclerosis in patients with liver cirrhosis, published in *Clinical and Molecular Hepatology*.[1] We are happy to respond to the points they raised in their letter.

First, in the European study mentioned by Huang et al.,[2] a lower education level was associated with a greater risk of subclinical atherosclerosis in bank employees, with no difference according to the income level.[3] In the study, increased subclinical atherosclerosis was mainly mediated by higher and more frequent tobacco consumption, and generalized atherosclerosis involving the carotid, aortic, and iliofemoral arteries was analyzed as the outcome.[3] In fact, smoking status was one of the variables used for propensity score matching in our study, in which the analysis was confined to the intracranial and extracranial arteries.[1] On the basis of the results of the study by Redondo-Bravo et al.,[3] we believe that

education level may have minimal potential confounding effects on the presence of cervicocerebral atherosclerosis in our series. Although data on the socioeconomic status of patients were not available in prior studies, including ours,[1,4] we agree that adjustment for this factor or its consideration as a cerebrovascular risk factor may strengthen the reliability of the results.

Second, recent advances in imaging techniques have allowed the identification of radiological indicators in the cerebrovascular system that are suitable for predicting stroke or coronary risk.[5] In our study, we focused on the quantification of decreased luminal diameters of the intracranial and extracranial arteries, which were based on atherosclerotic stenosis measured on magnetic resonance angiography (MRA), rather than on the evaluation of imaging features associated with vulnerable carotid plaques (e.g., intraplaque hemorrhage or lipid-rich necrotic core), which are an imaging-based predictor of the occurrence of stroke.[6,7] Moreover, the detection and categorization of both intraplaque hemorrhage and lipid core are usually based on magnetic resonance imaging

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Abbreviations:

MRA, magnetic resonance angiography; MRI, magnetic resonance imaging

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(MRI), not MRA, the modality used in our study. However, given the promising utility of various imaging features of vulnerable plaques, we believe that Huang et al.[2]'s suggestion about investigating the relationship between carotid atherosclerosis and intraplaque hemorrhage or lipid core plaque in patients with cirrhosis, compared with the general population, is interesting and feasible. We plan to address this compelling issue in a future study using MRI data.

Authors' contributions

J. An and J. H. Shim contributed to the study concept and design; drafting of the manuscript; and critical revision of the manuscript for important intellectual content.

Conflicts of Interest

The authors have no conflicts to disclose.

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