Reviewer’s report

Title: Clinical features and the degree of cerebrovascular stenosis in different types and subtypes of cerebral watershed infarction

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Reviewer: Serrati Carlo

Reviewer's report:

The authors submit a study about the pathogenesis of different types of cerebral watershed infarctions. They find that critical internal carotid stenosis is significantly more prevalent in internal watershed infarctions (IWI) compared with cortical watershed infarctions (CWI) and within CWI group in anterior compared with posterior CWI. Poor prognosis was observed more frequently in IWI versus CWI. They conclude that IWI are more likely to be associated to hemodynamic impairment.

The topic is interesting but the conclusions are not enough supported. In particular the presence of a critical internal carotid stenosis is not equivalent of hemodynamic pathogenesis, because artery to artery embolism is a plausible alternative mechanism. 67 patients with watershed infarctions were excluded from the analysis because of the presence of atrial fibrillation (32), Patent Foramen Ovale (24) or for incomplete examinations (11). The presence of subjects with watershed infarctions and possible cardiac source of embolism supports the alternative hypothesis of an embolic pathogenesis of this type of cerebral infarctions. The inclusion of these patients in the analysis might clarify the interpretation of the data.

As second main result of the paper, the authors find that subjects with IWI (in which critical internal carotid stenosis is more prevalent) deteriorate after the admission more frequently and have a worst prognosis. In multivariate analysis the presence of IWI results an independent factor influencing poor outcome, but the presence of internal carotid stenosis was not included in the analysis.

Minor remarks: in "methods" section:

* The method of evaluation of carotid stenosis degree is not described: ECST (European Carotid Surgery Trial) method or NASCET (North American Symptomatic Carotid Endarterectomy Trial) method for example

* In the abstract section the authors say that watershed infarctions were identified in diffusion weighted imaging templates but in the MRI Imaging Analysis description, they were defined "hypertintense areas" and the kind of MRI sequence is not indicated
In conclusion the topic is interesting however the paper need major revision

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
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Needs some language corrections before being published

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