Reviewer’s report

Title: Shear Rate Specific Blood Viscosity and Shear Stress of Carotid Artery in Patients with Lacunar Infarction

Version: 1 Date: 5 November 2012

Reviewer: Agostino Gnasso

Reviewer’s report:

Minor Essential Revisions

This study confirms a low wall shear stress of common carotid in patients with large artery stroke. The novelty is the demonstration that, only for end diastolic shear stress computation, patient shear stress specific blood viscosity is more accurate (approx. 10 % difference with fixed high shear viscosity), whereas for peak shear stress values the difference is insignificant (2.5%). These differences are evident in the recruited population because the cohort bears low common carotid shear rates. The authors must rewrite the part of the discussion (abstract and text) concerning with the emphasis of the results and the conclusions, and they also remark that probably the most important shear stress calculation, mean shear stress, is lacking.

Minor issues not for publication

- Methods, third paragraph: “The sample volume box was placed in the mid-lumen parallel to the vessel wall -> in most of <- the studies”: the authors have to exclude patients analysed not accordingly!
- Results, first sentence: the reference to table 1 is lacking.
- Results, last paragraph: “demostrated” should be “measured”.
- Discussion, first paragraph: the first study about this topic, “Carallo C, Lucca LF, Ciamei M, Tucci S, de Franceschi MS. Wall shear stress is lower in the carotid artery responsible for a unilateral ischemic stroke. Atherosclerosis. 2006;185: 108-113” is lacking into the bibliography and must be inserted.
- Table 1: Homocysteine is not a common biochemical measure for most Readers, and should be illustrated or omitted.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests