Reviewer’s report

Title: The role of noninvasive and invasive diagnostic imaging techniques for detection of extra-cranial venous system anomalies and developmental variants

Version: 1 Date: 22 March 2013

Reviewer: Marian Simka

Reviewer’s report:

It is a well-written, balanced and up-to-date review on an important topic of clinical neurology. The paper gathers information that has never been published before in a similar review. I would suggest some minor essential revisions:

1. Introduction. The following paper that describes anatomy of the veins draining CNS should be cited:


2. Controversy and debate. Reference [62] should not be cited after the sentence “So far there have been several....” But rather after the sentence “As with many promising yet unproven....” (this is not a study but a case series).

3. Sonography. I would suggest to delete the sentence “The echo-color DS identifies the presence .... color pattern”. Actually, reflux should primarily be assessed using Doppler spectrum analysis, since the color, which is very helpful, can be misleading (aliasing, improper angle of insonation used in color imaging, suboptimal color map and a number of other artifacts). Instead, I would suggest to change the previous sentence to: “Spectral analysis of Doppler signal and color Doppler sonography are used to confirm.....” (please note that the term: echo-color Doppler is an Italianism).

4. Magnetic resonance venography. MRV is capable of assessment of intracranial veins in addition to extracranial ones. Then, I would suggest to change two sentences: “MRV can also depict......of the head, intra-and extracranial venous system” and “The CCSVI concept.....assessment of the intra-and extracranial vasculature....”

5. Phase contrast imaging. The authors can cite the paper that describes the non-contrast fat-saturation imaging for the assessment of CCSVI:


6. Further pitfalls and considerations (page 19). The validity of the DS VH criterion 5. The authors should give a brief description of this criterion.

7. Page 24. “Although a number of open-label studies evaluated extracranial
veins……..” The authors should also cite the following paper:


8. Plethysmography. Strain-gauge plethysmography is not the only plethysmographic modality. Actually air-plethysmography is of a better diagnostic value, at least for the assessment of venous disorders in the low extremities (it estimates changes of leg volume, while strain-gauge plethysmography measures only changes of leg circumference). Thus, it should rather be: “strain-gauge or air-plethysmography”. The authors should also use the term “plethysmography” instead of “strain-gauge plethysmography” if they are not citing the results of strain-gauge plethysmography but are discussing the method.

9. Further considerations (page31). The sentence “Based on these recent……whether CCSVI exits and……..” should be changed “Based on these recent……whether CCSVI exits as a clinical entity and not as an anatomic variant, and…….”

10. Figure 8. “Significant stenosis of the distal right IJV” should be “Significant stenosis of the proximal right IJV” (in vascular anatomy the vessel that is closer to the heart is referred to as a proximal and that which is farther from the heart is a distal one; flow direction is not used to describe anatomy)

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I've received publication fees from Servier International;
I've received speaker fees from American Access Care;
I am employed in the hospital, where the treatments for CCSVI are patient-paid;