Reviewer's report

Title: Ultrasound entropy may be a new non-invasive measure of pre-clinical vascular damage in young hypertensive patients

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Reviewer: Rosa Maria Bruno

Reviewer's report:

The article explored flow velocity entropy as a novel parameter to detect microvascular damage in central retinal and ophthalmic artery of hypertensive patients. The authors detected increased levels of entropy in hypertensive than in normotensive individuals. The article is novel and well written, but some important information should be added.

Major Compulsory Revisions

1) Probe used, PRF, position and dimension of sample volume, angle, steering should be reported in the Methods. These parameters are crucial especially for the carotid artery (common? internal? intra- or extracranial?). RI and PI are angle-independent, but it is not clear whether this is true also for entropy.

2) Blood samples are not described in the methods section

3) It is not clear whether the authors analyzed raw analogic export or clips/images to obtain flow velocity.

4) Is each value of entropy calculated from 15-20 waveforms? If yes, RI and PI should be also calculated as a mean of the same waveforms to be comparable.

5) Is there any correlation between entropy, RI and PI?

6) Since this is a novel application related to an ultrasound technique and operator-dependency is likely, reproducibility data should be provided.

7) It is not clear whether figure 1,2,3 are original, while figure 4 is adapted from another article. We suggest to use data provided by the current study for figures

Level of interest: An article of importance in its field

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'