Reviewer's report

Title: Carotid intima-media thickness is associated with cognitive deficiency in hypertensive patients with elevated central systolic blood pressure

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Reviewer: Lorenzo Ghiadoni

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This study aimed to evaluate the relationship between hypertension and cognitive impairment (CI), determining the association with markers of early vascular disease and CI in 150 hypertensive patients, with CI (HA-CI) or without CI (HA) and 50 normotensive controls (NT). Carotid intima-media thickness (IMT) and central systolic BP were significantly different between the HA and HA-CI while radial Augmentation Index was not different.

Major comments:
1. It is unclear how patients were recruited (consecutive or selected?). It should be clearly stated, as well as the blood pressure cut-off used to include/exclude participants
2. It is unclear the cut-off of MMSE used to identify subject with cognitive deficits. This a major issue since a cut-off value for MMSE of 24 might exclude subjects with early cognitive impairment which represent the first clinical expression of hypertension related-cognitive damage
3. Patients with cognitive impairment are older than hypertensive patients without cognitive impairment. This represents a major confounding factor for the increase in central systolic BP and IMT.
4. Hypertension-related cognitive impairment depend on the intensity of the exposure of high blood pressure which in turn is related to the duration of hypertension. These data are lacking and they should be considered.
5. Different antihypertensive treatment might differently affect cognition. This topic has not been considered.
6. Mean and SD of MMSE score suggest that some subjects had MMSE > 30 while the maximum value to be considered is always 30 also if the score results higher than 30 after correction for education degree.
7. Different distribution in gender distribution could explain the lack of difference in augmentation index between HA-CI and HA. Data on central PP and DBP should be also given to interpret results in NT. Moreover data on PWV and cognitive function should be discussed (Scuteri A et al. J Hypertens 2007 May;25(5):1035-40).

Minor points
1. Revise acronyms: HA-CI, AH-CI, HA-AD
References are not correctly reported through the text
2. Figure 1 is redundant.

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

**Quality of written English:** Not suitable for publication unless extensively edited

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

**Declaration of competing interests:**

No conflict of interest exists