**Response to Reviewers**

To all reviewers, thank you for your review and comments. The manuscript was revised in consideration of reviewer’s comments, and summarized as follows.

**Reviewer #1**

**As clinical hypertension is official journal of Korean society of hypertension, it would be better to decribe the relationship betweeen hypertension and pulsatile index of MCA or BA in decussion.**

**→** It has been demonstrated that the pulsatility index of the middle cerebral artery increased in patients with hypertension [27]. Additionally, the presence of hypertension has been reported to be associated with an increase in the basilar artery pulsatility index [28].

**If there are any other studies that comparing pulsatile index of MCA and BA, it would be better to describe in this article. So that BA PI was selected not only it is easy to measure, but also it can relflect PI of MCA.**

**→** We inserted “***since MCA PI and BA PI are closely correlated with each other, neurological deterioration could be predicted by measuring BA PI in situations where MCA PI cannot be measured*** [29]***.***” in discussion section.

**Reviewer #2**

**#. In Table 1, the Rt. MCA PI had significantly different level among 4 group, but the p-value of Lt. MCA PI was 0.822. Is there any reason for this?**

**→** We reviewed previous data analysis result and found that some cases were missing and analyzed again; revised the manuscript that there was a statistically significant difference between right (*p*-value<0.001) and left (*p*-value<0.001) middle cerebral arteries among 4 group.

**#. In Table 1 and 2, the variable 'smoking' means 'current smoking'? If so, it is recommended to describe it as current smoking.**

→ That means current smoking, so we modified that.

**#. Is there any possible mechanism about the association between BA PI and neurologic deterioration? The author should describe about this in the discussion section.**

**→** It has been reported that early neurological deterioration may occur due to impaired cerebral hemodynamic reserve, such as decreased cerebral blood flow and lack of collateral circulation. In acute stroke patient with impaired cerebral vascular reserve, the size of ischemic lesion becomes larger, which leads to neurological deterioration [29]. Although there are few reports that an increase in basilar artery pulsatility index is directly associated with neurological deterioration, basilar artery pulsatility index increase is closely related to middle cerebral artery pulsatility index; thus neurological deterioration may occur [30].

**#. The author showed multi-variable logistic regression analysis adjustments for significant factors with a p value of ≤0.10 in uni-variate analysis. It is recommended to describe it in Statistical analysis of Method section.**

→ We further described those.

**References**

27. Cho SJ, Sohn YH, Kim GW, et al. Blood flow velocity changes in the middle cerebral artery as an index of the chronicity of hypertension. J Neurol Sci 1997; 150(1): 77-80.

28. Jeong HT, Kim DS, Kang KW, et al. Factors Affecting Basilar Artery Pulsatility Index on Transcranial Doppler. Korean J Clin Lab Sci. 2018; 50(4): 477-83.

29. Alvarez FJ, Segura T, Castellanos M, et al. Cerebral hemodynamic reserve and early neurologic deterioration in acute ischemic stroke. J Cereb Blood Flow Metab. 2004; 24(11): 1267-71.

30. Lee K-O, Park J-H, Choi Y-C, et al. Increased pulsatility index in acute lacunar infarction with type II diabetes. J Korean Neurol Assoc. 2005; 457-62.