

Reviewer's point to point response

Reviewer 1: (Reviewer's code: 01199597)

Authors submitted manuscript entitled with “Aggressive blood pressure treatment of hypertensive intracerebral hemorrhage may lead to global cerebral hypoperfusion: Case report and imaging perspective.”. Authors described multiple areas of infarction in the internal border zone areas of bilateral cerebral and cerebellar hemispheres. In my opinion, I have some questions for multiple infarction after aggressive blood pressure control. I think that multiple infarctions in Fig 2 MR image resemble cardiogenic embolic infarction. Authors did not present the patient's heart condition. Authors should describe heart condition (e.g. atrial fibrillation, echocardiography finding, 24 hours holter monitoring results). In my experience, aggressive blood pressure control in traumatic brain injury and aneurysmal subarachnoid hemorrhage resulted to global hypoxic damage. In addition, cerebellum have resistance to hypoxic damage or hypotensive insult. In my opinion, this case's MR image suggest cardiogenic embolic infarction rather than hypotensive border zone infarction.

Response:

Modern imaging studies including SPECT and Diffusion-Weighted Magnetic Resonance Imaging suggest that an internal watershed infarction is primarily caused by hypoperfusion, while microembolism is the primary cause of a cortical watershed infarction. In our case report, multiple infarcts distribution on diffusion-weighted Magnetic Resonance Imaging suggests hypoperfusion mechanism. Our patient had a CTA of head on arrival followed by MRI brain and MRA head revealed no vessel occlusion. In addition, further work up including continuous cardiac monitoring in telemetry unit in ICU for several days, electrocardiogram, echocardiogram did not reveal any cardioembolic etiology. Please find the relevant explanation in the case presentation section. All changes are highlighted in yellow color.

Reviewer 2: Reviewer's code: 00502853

Interesting and illustrative case report. One specific comment: The authors state that “strong evidence-based guidelines for the management of blood pressure in patients with spontaneous intracerebral hemorrhage are lacking”. Guidelines are clear for patients with SBP 150-220 mmHg (class I, Level of Evidence I, as stated by the authors). The patient presented falls beyond the upper limit of this recommendation. I believe that this paragraph should be rewritten. References must appear in a uniform format following journal instructions References 14 and 21 are the same one. Please, correct.

Response:

We have modified the sentence, “Strong evidence-based guidelines for the management of blood pressure are lacking “. Also in the Background and purpose section, we have edited the statement from “Blood pressure control in acute hypertensive intracerebral hemorrhage is a controversial topic since strong evidence-based guidelines are lacking” to “ Hypoperfusion injury related to blood pressure decrease in acute hypertensive intracerebral hemorrhage continues to be a controversial topic”. Also, the references were corrected. All changes are highlighted in yellow color. Thank You.

Reviewer 3: Reviewer’s code: 03545890

Dear Authors, It is a very interesting article. To my opinion should be accepted for publication.

Response: Thank You for your kind comments

Reviewer 4: Reviewer’s code: 02348457

The authors present a case of acute hypertensive intracerebral hemorrhage in which aggressive blood pressure management to levels within the normal range led to global cerebral ischemia within multiple border zones. However, Figure 2 shows acute ischemia in multiple internal border zone areas of bilateral cerebral and cerebellar hemispheres, which cannot be assumed a global cerebral ischemia, but microvessel infarction. CT images before and after treatment should be provided. The authors should provide more solid evidence that aggressive blood pressure management can result in a global cerebral ischemia.

Response:

We realized that the term global hypoperfusion is causing confusion. We imply that hypotension related to aggressive blood pressure treatment in setting of hypertensive intracerebral hemorrhage may lead to watershed/borderzone vascular territories infarction. Typical microvascular infarction without hypotension has been described as lacunar infarction. We did not use the term microvascular infarction to avoid further misunderstanding from readers. Watershed territory distribution can be confused with microembolism which we have addressed in the manuscript. We were unable to retrieve the CT images. For better understanding of global hypoperfusion/water shed infarcts concept, we have included four more references with explanation to the discussion section. All the changes are highlighted in Yellow color.