Reviewer’s report

Title: Effects of β1-adrenergic receptor blockade on the cerebral microcirculation in the normal state and during global brain ischemia/reperfusion injury in rabbits

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Reviewer: Xiaodi Chen

Reviewer's report:

Comments

In the present study, the authors showed the effect of direct administration of β1 blocker (landiolol) to brain. The brain microvessels were more dilated by landiolol in the ischemic/reperfusion injury group than control group. They concluded that constrictive cerebral microvessels are more susceptible to the vasodilatory effect induced by landiolol. This finding is interesting, but several points need to be addressed to improve this article.

page5, line26

The authors conducted the direct administration of β1 blocker to brain. Why did you choose this method instead of administering it from vein systemically? To avoid blood-brain barrier (BBB)? What clinical situation did you assume?

page10,line19

Why did the concentration of 10-6 mol/L produce a peak vasodilatory effect? Isn't landiolol concentration dependent medicine?

page10, line 47

You showed the pial arterioles dilation only in macro image. I think you should do immunostaining for microvessles and show the histological changes in landiolol group (normal brain), landiolol group (I/R brain), and sham group.

How severe is this ischemic/reperfusion injury in your model?

page11,line 29

You said systemic hemodynamic parameters were not affected by the topical administration of landiolol. Landiolol can pass the BBB and should affect systemically. Why didn't they affect systemic parameters?

page11.line45
Can you show the changes of norepinephrine concentration in blood?

Can you show the increased vascular permeability of ischemic arteriosus in the present model?

You said the I/R injury rose susceptibility of landiolol to cerebral microvessles, however, I/R injury may cause change to the β1 receptor. landiolol is a β1 blocker and you should evaluate the β1 receptor changes in landiolol group (normal brain), landiolol group(I/R brain), and sham group.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Unable to assess

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

Acceptable

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