Author’s response to reviews

Title: Analysis of factors influencing hospital-acquired infection in postoperative patients with intracranial aneurysm

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Reviewer reports:

Reviewer 1: This manuscript is a clinical retrospective study to define the risk factors of Hospital-acquired infection after intracranial aneurysms surgery. The topic is worthy to study.

However I suggested an extensively English editing before resubmission, because there were many grammars issues.

Response: Thanks for reminding. This has been polished by a qualified native English-speaking editor, and the changes are indicated in the revised manuscript using text in red.

For example,

"Cases were divided into an infection group and control group."
Response: Thanks for reminding. This has been polished by a qualified native English-speaking editor. Please see the revised manuscript as follows: (Abstract section, line 22-24, page 2)

Cases studied were divided into an infection group and a control group.

"Logistic regression showed that a Glasgow Coma Scale score upon hospital admission ≤8 points, hyperglycaemia (2.759, 1.159-6.564), hypothermia treatment (6.557, 2.244-19.159), and central venous catheterisation (CVC) (8.853, 2.860-27.398) were independent risk factors for HAI in patients with intracranial aneurysms who underwent surgery."

Response: Thanks for reminding. This has been polished by a qualified native English-speaking editor. Please see the revised manuscript as follows: (Abstract section, line 33-39, page 2)

Logistic regression showed that an admission Glasgow Coma Scale (GCS) score of less than 8 points (odds ratio = 4.261, 95% confidence interval 1.102–16.476), hyperglycaemia (2.759, 1.159–6.564), hypothermia treatment (6.557, 2.244–19.159), and central venous catheterisation (CVC) (8.853, 2.860–27.398) were independent risk factors for HAI in patients with intracranial aneurysms who underwent surgery.

Moreover, please define clearly what is the criterion for "control group".

Response: Thanks for reminding. We have added the description of the control group in the “Subjects” section. Please see the revised manuscript as follows: (Method section, line 46, page 4)

Participants were divided into an infection group (n = 64) and a control group (n = 478). The control group had patients without hospital-acquired infections.

Reviewer 2: Please include all comments for the authors in this box rather than uploading your report as an attachment. Please only upload as attachments annotated versions of manuscripts, graphs, supporting materials or other aspects of your report which cannot be included in a text format.

Please overwrite this text when adding your comments to the authors.

The manuscript titled” Analysis of factors influencing hospital-acquired infection in postoperative patients with intracranial aneurysm" retrospectively analyzed the risk factor for HAI in intracranial aneurysms patients. Upon the results, hyperglycaemic or hypothermia, and indwelling CVC were involved. The manuscript is well-written and the statistic analysis is appropriately performed. However, some issues should be revised before the acceptance.
1. In table 2, X2 test was performed, intra-group composition ratio calculation is recommended to be presented as: infection group, Male 31 (48%), Female (52%); control group, Male (41%), Female (59%).

Response: Good point. This has been changed in table 2 as suggested by the reviewer. Thank you.

2. Page 6, line 42, t-test, "t" should be in italic type.

Response: This spelling error has been corrected, as suggested. Thank you for this comment. Please see the revised manuscript as follows: (Method section, line 50, page 5)

When the data was normally distributed and the between-group variance was equal, differences between groups were assessed using t-tests.

3. In discussion, the strategy of hypothermia therapy should be addressed in details. As differed in timing, target temperature and continuous treatment time are all related to the outcomes. The conclusion that hypothermia is a risk factor is unconvincing. On the other hand, patients who received hypothermia are the most critical ones in the group. The higher infection rate and much worse outcome are reasonable. It could not be used as the basis for drawing conclusions.

Response: Thank you for this insightful comment. We have added the strategy, target temperature and continuous treatment time of hypothermia therapy in discussion, as suggested. Besides, we have updated the literature. (Discussion section, from line 37-57, page 9 to line 1-18, page 10. References section, line 11-17, page 15)

Of the patients undergoing aneurysm surgery and admitted to our department in 2016, 37 patients were treated with hypothermia. Their targeted temperature range was 33-35°C and the continuous treatment time range was 1-10 days. 26 out of 37 (70.3%) had hospital infections. This incidence rate was significantly higher than that among non-hypothermia patients. In the infection group, 24 (64.9%) of infection cases were respiratory infections and six (16.2%) were bloodstream infections. Shiozaki et al [27] found that the incidence of respiratory infection in patients treated with hypothermia was 49%, lower than that found in this study. Hypothermia treatment is a common therapeutic schedule for patients undergoing neurosurgery, especially those with severe cranio-cerebral injury, as it can reduce brain metabolism and thus limit brain damage. This is particularly important for patients with severe cerebral vasospasm and severe intracranial pressure, as it can reduce the gap between effective cerebral perfusion and the cerebral metabolic needs of brain blood flow [28]. On the other hand, hypothermia may lead to decreased systemic immune function. Patients treated with hypothermia treatment were accompanied by mechanical ventilation and sedative analgesic medication. The use of mechanical ventilation may lead to deep airway bacterial colonization in patients, and sedative analgesic medication may cause cough reflexes to be inhibited [29]. These may aggravate and/or lead to infection and other complications [30].

Thank you again for your positive comments and valuable suggestions to improve our manuscript to a better scientific level. We look forward to hearing from you.