Author’s response to reviews

Title: Pathogens distribution and drug resistance in patients with acute cerebral infarction complicated with diabetes and nosocomial pulmonary infection

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Reply to the reviewers’ comments:

Matthias Klein (Reviewer 1): In this study, the authors investigated the pathogen distribution and their antibiotic susceptibility patterns in 152 patients with ischemic stroke who suffered from nosocomial pneumonia. gram-negative bacteria were found to be the most frequent cause of pneumonia. The drug resistance rate was higher in the group of patients who also suffered from diabetes.

We would like to thank this reviewer for his/her comments.

1. The authors should include data to show the rate of pulmonary infection among all patients with ischemic stroke.

The number of patients with ischemic stroke was 1093 and the number of ACI patients with pulmonary infection was 152. The rate was 13.9%. The following sentence has been added into Data and Methods section (Line 55): “1093 ACI patients were admitted to the neurology ward of Beijing Tongren Hospital, among which 152 patients were detected with pulmonary infection 2 – 7 days after the diagnosis of ACI. Thus, the rate of pulmonary infection among all patients with ischemic stroke was 13.9%.”

2. How did the pathogen Distribution compare to the Distribution of pathogens in other patients with nosocomal pneumonia in the Hospital? Was the resistance pattern specific for stroke patients or did if reflect the resistance pattern of all pulomonary pathogens from all patients with nosocomial pneumonia in the Hospital?
The pathogen distribution of all nosocomial infections in the hospital from 2015 - 2017 has been summarized in a new table (named Table 1 in the new version). This is the first nosocomial pneumonia study that was conducted in this hospital. Further investigation will be planned to conclude whether the resistance pattern is specific for stroke patients or it also reflects all other patients with nosocomial pneumonia.

3. The characterization of the patients is poor. E.g., at what time point after stroke was the infection detected?

Pneumonia was detected 2 – 7 days after the diagnosis of acute cerebral infarction in our patients.” The following sentence has been added into Data and Methods section (Line 55): “1093 ACI patients were admitted … among which 152 patients were detected with pulmonary infection 2 – 7 days after the diagnosis of ACI.”

How was the stroke distributed?

The infarction patterns of ACI patients with pneumonia in this study were:

- anterior circulation infarction: n=86
- posterior circulation infarction: n=37
- anterior and posterior circulation infarction: n=29

The following sentence has been added into Data and Methods section (Line 72): “The following infarction patterns were identified in these 152 patients: anterior circulation infarction (n=86), posterior circulation infarction (n=37), and anterior/posterior mixed infarction (n=29).”

Did the patients with pneumoniae suffer from Problems swallowing?

Yes. The following sentence was added into Data and Methods section (Line 81): “Sixty patients (39.5 %) suffered from dysphagia in this study, among which 16 had disorders of consciousness (10.5 %) and 44 experienced cough (29.0 %).”

4. Of the 152 patients, two subgroups were defined: one with diabetes and one without diabetes. In the tables, the two groups are referred to as group A and group B - but it is unclear, which group is the diabetes group and which one is the non-diabetes group.
We have replaced “Group A” and “Group B” with “Diabetic group” and “Non-diabetic group”, respectively, in all tables.

Deepak Aggarwal (Reviewer 2):

We would like to thank this reviewer for his/her comments.

1. Authors need to mention the criteria for labelling drug resistance used in the study

The CLSI guidelines were used to determine the breakpoints for Kirby-Bauer disk diffusion method. “according to the CLSI guidelines” had been added in Line 92, and the reference has been cited.

2. table 1, 2, 3 can be clubbed into a single table

We have merged table 1, 2, and 3 into one single table (named Table 2 in the new version) and updated the numbers of the following tables.

3. It seems that the study has enrolled only patients of mild cerebral infarction who had a normal GCS. Almost all the patients seemed to have a normal cough reflex and could expectorate a good quality sputum.

All patients recruited in this study had moderate to severe stroke as indicated by the mean NIHSS scores from two groups (17.03 in Diabetic group and 16.8 in Non-diabetic group).

Yes, we were able to collect sputum specimens with a good quality from all patients. Before coughing, patients were instructed by clinicians or nurses to follow the procedures of sputum collection. If the sample was too small, patients would repeat this procedure the following day. For patients with consciousness disorders, sputum specimens were collected by clinicians or nurses during sputum suctioning.