Reviewer’s report

Title: The Mortality Risk Factor of Community Acquired Pneumonia Patients with Chronic Obstructive Pulmonary Disease: A Retrospective Cohort Study

Version: 0 Date: 12 Sep 2017

Reviewer: Salvatore Battaglia

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PULM-D-17-00388

Dott. Ruo-Xuan Dai and coworkers designed a study aimed at evaluating the predictive values of PSI, CURB-65 and APACHE-II and the risk factors associated with in-hospital mortality and 60-day mortality in relation to CAP patients with COPD.

This reviewer has major comments for the present manuscript:

1) METHODS: SEVERITY SCORES. "The severity scores were assessed using PSI, CURB-65 and APACHE-II scores by two doctors. The highest score within 72 hours of admission was chosen and recorded". The study is retrospective. Did the Authors calculated the severity scores retrospectively or instead the scores are those originally calculated by doctors who cured the patients?

2) RESULTS: it is not clear whether COPD patients were in more severe conditions BEFORE hospital admission for CAP. Could the Authors provide some index of general performance status at admission? Did COPD patients suffer for chronic respiratory failure before admission? In this contest, the lack of lung function tests in non-COPD (see table 1) makes it impossible to state that nCOPD had normal lung function.

3) RESULTS AND TABLES 3 AND 4. The Authors only showed logistic analysis for mortality in COPD-CAP. Why they did not show data for nCOPD-CAP?

4) RESULTS; MORTALITY RISK FACTORS: "Eleven covariates were recruited in the univariate analysis ...". Given that COPD-CAP and nCOPD-CAP differed by comorbidities (see table 1: Coronary heart disease and Cerebral infarction) I would include these comorbidities in the multivariate analysis.
5) RESULTS; ROC CURVES: in the method sections the Authors indicated that: "The optimal cut-off values were determined by the Youden index". However, in the result section the optimal cutoff point is not reported for PSI, CURB-65 and APACHE-II. AUC, Se and Sp were only reported. It is not clear whether the Authors use the worst score for each index as cutoff point (i.e. CURB >3; PSI> 130, and APACHE-II >20).

6) TABLE 1 AND METHODS: need for NIMV. One of the criteria of "Need for non-invasive mechanical ventilation (NIMV) was respiratory acidosis (pH<7.35). However the pH range is 7.35-7.45. As consequence the statistical difference in NIMV for COPD-CAP was not related to respiratory acidosis. Since respiratory acidosis is expected to be the most frequent cause of need for NIMV in COPD patient, the Authors should show the cause that lead to NIMV.

7) DISCUSSION: the authors should report the main finding(s) of the study in the first paragraph of the discussion. In addition the discussion is not easy-to-follow. Main findings, novelty, comparison with literature, mechanisms and limitations should addressed in a clearer manner.

8) CONCLUSIONS: it seems that COPD-CAP has identical mortality rate in spite of worst initial conditions. This is not expected and deserve discussion.

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

No

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.

No
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 am able to assess the statistics

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