

Peer Review File

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Reviewer A

Comment 1.

I have the following questions for you, which I believe, need to be addressed before publication:

First, the statistical analysis should be written according to the recently published guidelines (Hickey GL, Dunning J, Seifert B, Sodeck G, Carr MJ, Beyersdorf F on behalf of the EJCTS and ICVTS Editorial Committees Editor's Choice: Statistical and data reporting guidelines for the European Journal of Cardio-Thoracic Surgery and the Interactive CardioVascular and Thoracic Surgery. Eur J Cardiothorac Surg 2015;48:180-93).

Even if you do not add a propensity match patient groups, I suggest adding a propensity score analysis.

Reply 1.

- According to your comment, we carefully reviewed statistical analyses with reference of your recommended guidelines.
 χ^2 tests for categorical data and Student's t tests for continuous data, Cox proportional regression to calculate the Hazard ratios (HR) and 95% confidence intervals (95% CI) are described well.

- However, applying propensity matching method seems difficult at this point. This study is national population-based retrospective cohort study including all people with inclusion and aims to show comprehensive outcomes for all

people.

So, we think that it should be more profit to compare all inclusion subjects.

And, similar good study using population-based data were also reported.

1. Slatore CG, et al. Intensive care unit outcomes among patients with lung cancer in the surveillance, epidemiology, and end results-medicare registry. *J Clin Oncol.* 2012 May 10;30(14):1686-91.

2. Puxty K, et al. A Population-Based Observational Study. *JAMA Oncol.* 2015 Nov;1(8):1078-85.

3. Soares M, et al. Intensive care in patients with lung cancer: a multinational study. *Ann Oncol.* 2014 Sep;25(9):1829-1835.

- We also add about this limitation of potential selection bias on discussion section.

(page 10, line 4-8)

- On the recently published guidelines, reviewer 1 mentioned ‘Propensity score methodology is predominantly focused on the case of two treatment arms’

Our study could not focus the case of two treatment arms, but just observational study and comparing four or five groups, foundationally and technically more challenging [4, 5].

4. Imbens GW. The role of the propensity score in estimating doseresponse functions. *Biometrika* 2000;87:706–10.

5. Rassen JA, et al. Matching by propensity score in cohort studies with three treatment groups. *Epidemiology* 2013;24:401–9.

Comment 2.

The limitations section should be improved with a better discussion.

In addition, the discussion should be improved with a better search of the literature.

Reply 2.

- As your comments, we revised and added discussion section.
(page 9, line 13 ~ page 10, line 21)

Comment 3.

About minor points, there are grammars and typos errors in the text. Please thoroughly check the article.

Reply 3.

- As your comments, we thoroughly checked the article
(changes in the text with red)

Reviewer B

In this study, through the analysis of data obtained from the Health Insurance Review and Assessment Service in Korea, the authors analyzed outcomes of lung cancer patients who admitted to ICU. The reviewer raises several major comments.

- **We really appreciated with your valuable comments.**
- **We revised the manuscript carefully and recheck.**

Comment 1.

1. Because the detailed reasons for ICU admission is unclear, it is difficult to obtain a meaningful conclusion from the analysis. Even in patients who received pulmonary resection, it is possible that some were admitted to ICU routinely after surgery, but

others may be admitted to ICU due to post-surgical complication(s).

Reply 1.

- There are several limitations to consider our results.

We used administrative reimbursement claim data for this study.

It is the innate limitations of claim data

Most studies have reported outcomes for all lung cancer patients, including surgical patients, whereas a few have focused only on advanced cancer patients who do not have surgical treatment options.

However, this study could show comprehensive insights for ICU outcomes in critically ill patients with lung cancer, using a national population-based cohort, as like other national studies with important impact.

We added and described on discussion section about possible futile data, but also strength compared with other studies. (page 9, line 23 ~ page 10, line 19)

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There is therefore a need for unbiased data on outcomes for all-stage critically ill patients with lung cancer in ICUs in order to assist physicians and patients in making more informed and considered decisions regarding ICU treatment.

Comment 2.

2. The authors described that "among patients with no treatment, those without metastases were placed in the refusal group". The reviewer thinks this is not correct. Because patients with poor performance status cannot receive treatment even if the patient wants a treatment for lung cancer.

Reply 2.

- Our results may have included futile critical care, with no clear distinction between treatment groups.

However, we noted a significant difference between outcomes of patients who did not receive any cancer-related treatment and those of patients with pathological stage IV. This suggests that whether cancer is controlled by cancer-related treatments or not may be an important factor in medical ICU outcomes.

We revised and added comments on this limitation. (page 10, line 19)

Comment 3.

3. For the long-term outcomes, it is not clear if a patient died due to lung cancer or due to the reason for ICU administration.

Reply 3.

- Actually, we could not know the exact cause of death, especially on using a national population data. It is the innate limitations of claim data.

However, even in studies evaluating treatment response or prognosis chemotherapeutic agents on cancer patients, overall mortality is usually used as the most important outcome.

We considered that ascertaining the all-cause mortality in appropriate to show the comprehensive effectiveness of ICU treatment. So, the study endpoint was defined as all-cause mortality in the ICU.

- We revised and added about this concerns on discussion sections. (page 10, line 4-21)