Author’s response to reviews

Title: Comparative evaluation of image registration methods with different interest regions in lung cancer radiotherapy

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Author’s response to reviews:

Responses to the reviewer’s comments

Dear editor,

Really thanks for everything you have done for us. We have revised the article based on the suggestion of the reviewers, and the responses are as follows:

Reviewer reports:

Kaan Orhan (Reviewer 2): The relevant changes were made by the authors and then can be accepted for publication.
Reply: Really thanks for your comments. We’ll try our best to revise the article.

Reviewer 3 (Reviewer 3): PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?
No - there are minor issues
Reply: We added objectives “Lung cancer is a leading cause of morbidity and mortality worldwide. Radiotherapy for lung cancer is beneficial in both the radical and palliative settings, and technologic
advances in recent years now afford an opportunity for this treatment to be more targeted than ever before. Although the delivery of more accurate forms of radiotherapy has minimized the risks of side-effects, how to utilize this treatment to optimize outcomes remains questionable. This study aimed to evaluate the accuracy of cone beam computed tomography (CBCT) image registration used in image-guided radiotherapy, providing reasonable guidance for clinic application of CBCT in lung cancer.” in the section of Abstract, shown in red marks in manuscript.

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?
Not sure - key details are missing from the manuscript
Reply: In this study, the registration areas included whole lung, tumor, vertebral body, affected lung, and artificial area. Furthermore, all 53 patients were divided into two groups including smaller tumor group and large tumor group according to the median tumor volume, and the results were compared.

EXECUTION - Are the experiments and analyses performed with technical rigor to allow confidence in the results?
Yes - experiments and analyses were performed appropriately
Reply: Thanks for your comments.

STATISTICS - Is the use of statistics in the manuscript appropriate?
No - there are issues with the statistics in the study
Reply: In this study, the statistical analysis was performed on different registration methods using the one-way analysis of variance (ANOVA) followed by Post hoc analysis using two independent sample t-test using statistical product and service solutions (SPSS) software (SPSS V.24.0, IBM, IL, USA). Data were expressed as mean ± standard deviation (SD). P<0.05 was considered as a statistically significant difference.

INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?
N/A - no results to interpret
Reply: Thanks.

OVERALL MANUSCRIPT POTENTIAL - Is the current version of this work technically sound? If not, can revisions be made to make the work technically sound?
Maybe - with major revisions
Reply: We have revised the manuscript based on the suggestions of the reviewers.

PEER REVIEWER COMMENTS:

GENERAL COMMENTS:
I have reviewed the manuscript titled "Comparative evaluation of image registration methods with different interest regions in lung cancer radiotherapy". First of all; congratulations for the hard work. However; there are some inconvenient parts of the study after reviewing with two authors.

REQUESTED REVISIONS:
First; what are the patients tumor characteristics (adenocarcinoma, small or squamous), what is the radiotherapy, is it palliative or curative, are there any patients that drop-out from the study, are there any toxicities related to this registration method, how they picked up their cases, these are random cases or all cases
of the center. Also the authors did not give any information about patients tumor characteristics? we don't know.
So without clear patient characteristics and clear answer to what and why; we could not drive any important conclusion from this study.
Also the aim of this study is not clear. Make sure to communicate a clear objective and provide data to support this objective.
Reply: We revised the article and more information about patient characteristics and objective in the article, shown in red marks in manuscript. We showed “From October 2017 to May 2018, all 53 cases diagnosed with lung cancer patients were collected in Third Hospital of Herbei Medical University, Shijiazhuang, China. All patients took supine position with head cushion B pillow and both hands embracing the head, and were fixed with thermoplastic body membrane. Chest CT scanning ranged from the cricothyroid membrane to the lower edge of the diaphragm was done using Siemens Somotom-sensation Plus-16 spiral CT scanner, and the scanned images were transmitted to the Computerized Medical Systems (CMS) treatment planning system. Among 53 patients, 34 cases belonged to central type and 19 cases belonged to peripheral type.
Inclusion criteria: Histological or cytological diagnosis of lung cancer; having no self-reported history of any malignant tumor; willing and able to give written informed consent; and no active or chronic infection with human immunodeficiency virus (HIV), hepatitis B, or hepatitis C.
Exclusion criteria: received any chemotherapy or radiotherapy prior to surgery; pregnant or breast feeding patients; a history or presence of other malignancy; and clinically significant autoimmune disease.” in section of method.
Furthermore, the aim of this study was shown as “Lung cancer is a leading cause of morbidity and mortality worldwide. Radiotherapy for lung cancer is beneficial in both the radical and palliative settings, and technologic advances in recent years now afford an opportunity for this treatment to be more targeted than ever before. Although the delivery of more accurate forms of radiotherapy has minimized the risks of side-effects, how to utilize this treatment to optimize outcomes remains questionable. This study aimed to evaluate the accuracy of cone beam computed tomography (CBCT) image registration used in image-guided radiotherapy, providing reasonable guidance for clinic application of CBCT in lung cancer.” in section of Abstract.