

Dear author:

Thank you for submitting this well written retrospective study on the use of patient's physical dimensions for SSDE.

I have a number of comments;

There are some limitations of the study.

1. First of all sample size of the study is small. Also, no pediatric patients or patients with spinal deformities included the study. If possible, pediatric patients and patients with chest wall/spinal deformity could be added to the study. This sample size is not enough to generalize all these comments and poor for publication.

Thanks for your comment. We addressed these issues in Discussion as the limitations of the study:

“There are limitations in our study. Our sample size was small. Only adult subjects were evaluated and pediatric patients were not included. Therefore, results of our study may not apply to smaller pediatric patients. This study was performed in one CT center and may not reflect the practice of acquisition of transverse CT images in other centers. We did not assess the effect of complex patient morphology (severe or complex chest wall or spinal deformities) on the feasibility of measuring patient diameters, when non-lateral and non-anterior-posterior diameters might be a more accurate representation of patient's maximum and minimum diameters.”

2. It is mentioned in the study that, AP-Lateral diameters have magnification artifact. Do you have real abdomen diameter, chest diameter measurement values of these patients?

Because of the retrospective nature of the study unfortunately we did not have access to the real diameters of the patients. However, that would be a great idea to compare the real diameters of patients with the measured ones in a prospective study setting.

3. Tables should be clearly explained.

Thanks for the suggestion. Changes have been made to all the tables.

Dear Authors,

This is a very well written manuscript. Most importantly your results have a potentially critical impact on clinical practice.

I do not have any major revision to suggest, just a few points to be clarified as detailed below.

ABSTRACT

- Please introduce the extended definition for CTDI (Computed Tomography Dose Index); Thanks for the suggestion. Changes have been made
- M&M: specify lateral and frontal localizer radiograph. Thanks for the suggestion. Changes have been made and the following was added: “simple x-ray image acquired for planning the CT exam before starting the scan”

INTRODUCTION

- Well written. Just a typing mistake on the 5th row to the end (effected instead of affected). Thanks for the comment. Changes have been made.

M&M:

- Image measurements: did you first perform measurements on localizer radiographs and then cross-linked those to CT transverse images on your PACS system?
Yes, we cross-linked the localizer and images on the PACS to make sure that the measurements were done at the exact same level.
- Did you test your data for normality before applying the Student’s paired sample t-test?
Since the sample size was 25 in each weight group we used the t-test for “unequal variances” to take into account the effect of small sample size.

RESULTS

- Dose and SSDE: it would be interesting to see differences between scanners (you included 9 different CT scanners)? Was there any? You may not have sufficient numbers to run this sort of analyses but it would be interesting to clarify this point in the future including more patients for each scanner. Undoubtedly it would be a great idea to conduct such a study. As you mentioned small number of patients makes it impractical to measure the effect of scanner on measurements.
- I noticed on Fig.1 that your localizer includes chest too. When you refer to mid-scan length and mid slice location are you referring to the abdomen only? Please clarify this point. Thanks for your excellent comment. All the abdominal scans included in our study had overlaps with chest area. In this study we considered mid-scan diameter as the middle of scan range, that is if the start and end position were 2 and 422 we considered location 210 $\{(422-2)/2=210\}$ as the mid location of scan.

DISCUSSION

- 41 out of 50 patients included in your study were off-centered for the gantry isocenter. This is quite a high percentage. Was there any specific reason for this? I would stress the fact that correct positioning of patients is the first step to optimise Dose exposure.

Thanks for your comment. Although the number of off-centred patients in our study is high it is in line with other studies such as the one done by Kim et al (PMID: 22468191). Systematic audits should be performed to discover the reason of high rate off-centring.

- Again please clarify what is meant for mid-slice location.

TABLES

- Table 2: add unit of measurements: Thanks for the comment. Changes have been made.

FIGURES captions

- Fig.1: “Anterior-Posterior diameters (Dap) and Lateral (Dl) diameters were measured on lateral ***localizer...”; please insert (*) “and frontal”.

Thank you