

Response to the Letter to Editor

Yuji Tsutsui

BSc, Division of Radiology, Department of Medical Technology, Kyushu University Hospital, Fukuoka, Japan

ARTICLE INFO

Article type:

Letter to the Editor

Article history:

Received: 05 Apr 2018

Accepted: 06 Apr 2018

We read with great interest the letter to the editor and the article by Nakahara et al. (Nakahara T, Daisaki H, Yamamoto Y, Iimori T, Miyagawa K, Okamoto T, et al. Use of a digital phantom developed by QIBA for harmonizing SUVs obtained from the state-of-the-art SPECT/CT systems: a multicenter study. *EJNMMI Research*. 2017;7:53.) (1). It is embarrassing that we did not recognize their paper in an academic journal of *EJNMMI Research*. I was ashamed of our ignorance with their works, although their focus in SPECT was different with ours with PET.

The digital phantom has been widely used in nuclear medicine technology field for a long time (1-3). We also used it in our previous study (4). Quantitative Imaging Biomarkers Alliance (QIBA), an organization to improve the quantitative accuracy of imaging biomarkers, generated a digital phantom as a standard for a PET oncology (5). This phantom is introduced on the website, and is open and freely available to be used for examinations. On the other hand, root mean squared error (RMSE) is a frequently used measure

of the differences between values observed. RMSE is a simple mathematical measure and has been used for long time in nuclear medicine and molecular imaging technique with an identical formula (6-8). Based on these backgrounds, it is no wonder that many researchers may conceive to investigate the quantitative accuracy of images with a combination of RMSE and QIBA phantom.

Although we did not recognize the article by Nakahara et al, we may be better to cite their article in our manuscript.

Thank you for your understanding.

Conflicts of interest

None declared.

References

1. Pierce LA 2nd, Elston BF, Clunie DA, Nelson D, Kinahan PE. A digital reference object to analyze calculation accuracy of PET standardized uptake value. *Radiology*. 2015;277(2):538-45.
2. Kinahan P, Pierce L, Elston B, Clunie D, Nelson D. An FDG-PET/CT digital reference object for testing ROI

* *Corresponding author:* Yuji Tsutsui, Division of Radiology, Department of Medical Technology, Kyushu University Hospital, Fukuoka, Japan. Tel: +81926425821; Email: yuji1006@med.kyushu-u.ac.jp

© 2018 *mums.ac.ir* All rights reserved.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

- and SUV calculations. *J Nucl Med.* 2012;53(Supple 1):607.
3. Harrison RL, Elston BF, Byrd DW, Alessio AM, Jacobs J, Rockne RC, et al. A digital reference object for the 3D Hoffman brain phantom for characterization of PET neuroimaging quality. Nuclear Science Symposium and Medical Imaging Conference, Seoul, South Korea; 27 Oct.-2 Nov. 2013.
 4. Akamatsu M, Yamashita Y, Akamatsu G, Tsutsui Y, Ohya N, Nakamura Y, et al. Influences of reconstruction and attenuation correction in brain SPECT images obtained by the hybrid SPECT/CT device: evaluation with a 3-dimensional brain phantom. *Asia Oceania J Nucl Med Biol.* 2014;2(1):24-9.
 5. Digital reference object. Quantitative Imaging Biomarkers Alliance (QIBA). Available at: URL: <http://depts.washington.edu/petctdro/>; 2018.
 6. Dikaios N, Izquierdo-Garcia D, Graves MJ, Mani V, Fayad ZA, Fryer TD. MRI-based motion correction of thoracic PET initial comparison of acquisition protocols and correction strategies suitable for simultaneous PET MRI systems. *Eur Radiol.* 2012;22(2):439-46
 7. Lasnon C, Desmots C, Quak E, Gervais R, Do P, Dubos-Arvis C, et al. Harmonizing SUVs in multicentre trials when using different generation PET systems: prospective validation in non-small cell lung cancer patients. *Eur J Nucl Med Mol Imaging.* 2013;40(7):985-96.
 8. Kelly MD, Declerck JM. SUVref: reducing reconstruction-dependent variation in PET SUV. *EJNMMI Res.* 2011;1(1):16.