Review of: "Deep learning for image classification in dedicated breast positron emission tomography (dbPET)"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

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As an Editorial Board Member of BMC Medical Informatics and Decision Making [1], I have submitted my comments for the paper of Satoh et al. [2] to Qeios. Satoh et al. developed the Convolutional Neural Network (CNN) model for dedicated breast positron emission tomography (dbPET) images using the 309 examinations. Their CNN model performed the automatic classification of dbPET images into breast cancer (BC) or non-BC. The major contributions of their study were as follows: (i) the development of CNN model for dbPET images and (ii) the comparison of diagnostic performance for BC classification between the CNN model and the two expert radiologists

Major points

1

I speculate that dbPET images of Yamanashi PET Imaging Clinic were used for their study. Their study has been approved by the review board of Kofu Neurosurgical Hospital (not Yamanashi PET Imaging Clinic). While Yamanashi PET Imaging Clinic belongs to Kofu Neurosurgical Hospital, there is a concern about the process of the review board approval. Maybe, Kofu Neurosurgical Hospital does not have sufficient experience or knowledge of dbPET. Therefore, the approval obtained from Kofu Neurosurgical Hospital may not be adequate for the dbPET study in Yamanashi PET Imaging Clinic.

2

The 152 BC examinations were used for the development and evaluation of the CNN model in the study. Maybe, the 152 examinations were selected mainly from the BC examinations for the pre-therapeutic or post-therapeutic evaluation. Because the exclusion criteria of this study do not include the history of non-surgical treatment, the 152 BC examinations may include the dbPET examinations after non-surgical treatment. This may cause bias in this study.

3

According to Figure 1, I speculate that BC and non-BC examinations were mainly selected from those for pre-surgical evaluation and health checkups, respectively. Because distribution of patient characteristics is quite different between the examinations for pre-surgical evaluation and health checkups, the clinical evaluation of this study is not reliable. At least,

the diagnostic performance reported in the paper is not expected in the practical evaluation of dbPET examinations.

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References

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