

Comparison of PET performance in clinical examination among PET facilities

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Abstract

There are several guidelines for PET performance evaluation. Most of them require a lot of time and strict conditioning, so it is hard to conduct experiment for the evaluation precisely following these guidelines. Here we selected six items (resolution at a point, resolution on a line, sensitivity, uniformity, scatter fraction, partial volume effect) from the guidelines with some adjustments on which we evaluate and compare PET performances of seven facilities for the purpose of clarifying why and how PET quantitative values are different among facilities. We also conduct the second test in the cancer PET/CT data acquisition guideline for the comparison. All the experiments were held under the ordinal clinical conditions of each facility. The results show that the data vary even with the same type of PET machine when the image reconstruction method is different. This suggests that the terms of data reconstruction have to be considered as well as the difference of PET performance when we refer PET data of other facilities for clinical purpose.