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Editorial
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Neglected PERCIST

*Siroos Mirzaei**

Department of Nuclear Medicine, Wilhelminenspital, Austria

Editorial

The Response Evaluation Criteria in Solid Tumors (RECIST) [1] is the most known and used criteria to assess response to anticancer treatment in most solid tumors. These criteria, however, depend on morphological changes based on anatomical imaging (Computed Tomography (CT) or Magnetic Resonance Imaging (MRI)). These criteria can be applicable in anticancer therapies with cytotoxic effect and tumor shrinkage as a result, but i.e. not in targeted treatments inducing necrotic changes, without markedly changes in tumor diameter. In other words, metabolic changes and biological behavior of the tumor are not reflected by RECIST.

Positron Emission Tomography (PET) with different commercially available radiopharmaceuticals has already been established as the method of choice for metabolic imaging of most types of solid tumors, and 18-F FDG is the most used tracer in PET-imaging. It is well known that metabolic answer to anticancer treatments often occur in the early course of therapy, before any morphological changes would take place and be detectable by any anatomical imaging devices. The first metabolic criteria for treatment assessment of solid tumors were defined by European for Research and Treatment Cancer (EORTC) criteria [2], followed almost a decade later by PET response criteria (PERCIST) [3]. The EORTC criteria are based on lesion specific lesions Regions Of Interest (ROI) that are followed from the baseline scan. The tracer uptake is measured using Standardized Uptake Value (SUV) based on body surface area. However, with the PERCIST method the regional uptake of the tracer of the hottest tumor lesion is measured by peak SUV based on lean body mass (SULpeak). Astonishingly, none of the two methods has been so far established in the clinical routine. Instead, there are i.e. new Lugano classification criteria for staging and response assessment in FDG-avid malignant lymphoma based on 5 point Deauville scores [4]. A complete metabolic response even with a persistent mass is considered as a complete remission.

PET-CT enables us acquiring sequential images from PET and CT in the same session and combine both data to a single superposed combined image and has revolutionized the medical oncological imaging.

One could expect that metabolic information by PET-CT would also have already revolutionized the treatment response criteria in clinical trials and routine work-up of oncological patients. However, a literature search by PUBMED using the following terms “PERCIST” and “RECIST” results in “< 500” and “>23000” publications, respectively. This indicates that we are still in need of further multidisciplinary workshops with retrospective and/or prospective analysis of multicenter enrolled patients to establish criteria for metabolic response assessment in patients with solid tumors, a similar attempt which has already been done for malignant lymphoma with Lugano classification [4]. This would enable clinicians to make timely treatment assessment and therapy modification in various solid tumors, reducing the number of unnecessary over- or under treatments, avoiding unnecessary side effects of some aggressive chemotherapy in patients who would not profit of them. This personalized therapy modification would als help to reduce the overall costs of the patients. In summary, PERCIST has a high potential for a cost-effective management of oncological patients, however the assessment of metabolic activity and its changes after a given treatment needs to be defined and harmonized for different solid tumors, as it has been done in Lugano for lymphoma.

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Correspondence:
Siroos Mirzaei, Department of Nuclear Medicine, Wilhelminenspital, Austria, E-mail: siroos.mirzaei@wienkav.at

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