For the primary diagnosis of brain tumours, morphological imaging by means of magnetic resonance imaging (MRI) is the current method of choice. The complementary use of functional imaging by positron emitting tomography (PET) and single photon emitting computerized tomography (SPECT) with labelled amino acids can provide significant information on some clinically relevant questions, which are beyond the capacity of MRI. These diagnostic issues affect in particular the improvement of biopsy targeting and tumour delineation for surgery and radiotherapy planning. In addition, amino acid labelled PET and SPECT tracers are helpful for the differentiation between tumour recurrence and non-specific post-therapeutic tissue changes, in predicting prognosis of low grade gliomas, and for metabolic monitoring of treatment response. The application of dynamic PET examination protocols for the assessment of amino acid kinetics has been shown to enable an improved non-invasive tumour grading. The purpose of this guideline is to provide practical assistance for indication, examination procedure and image analysis of brain PET/SPECT with labelled amino acids in order to allow for a high quality standard of the method.
given on the several indications, patient preparation and examination protocols as well as on data reconstruction, visual and quantitative image analysis and interpretation. In addition, possible pitfalls are described, and the relevant original publications are listed for further information.

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