

## **Neuroimaging diagnostic workup in Parkinsonian syndromes: always DAT SPECT first - against**

**S. Morbelli**

*Nuclear Medicine, San Martino University Hospital, University of Genoa, Italy*

Dopamine Transporter (DAT) SPECT with [<sup>123</sup>I]FP-CIT is by far the most widely used radiotracer to image nigrostriatal pathway in Europe. The assessment of integrity of the nigrostriatal dopaminergic pathway with DAT SPECT has been approved by the FDA and the EMA both for the differential diagnosis between parkinsonian syndromes (PK) on one side and essential tremor or non-neurodegenerative PK on the other side as well as between DLB and AD. However the in the era of diagnosis in preclinical stages and with the increasing attention devoted to atypical parkinsonism, new individualized flow charts need to be implemented for the use of molecular imaging in PK in specific settings. In this framework two tracers able to explore other (extra-dopaminergic) pathways might be used, even before DAT SPECT, to support the clinical diagnosis in patients with PK. In recent years it was demonstrated that the diagnostic accuracy of <sup>18</sup>F-FDG-PET for discriminating PD/DLB from atypical PK is considerably higher with respect to <sup>123</sup>I-IBZM-SPECT, a post-synaptic D2-receptor imaging modality, previously proposed in this setting (notably each PK shows a peculiar pattern of hypometabolism). Several new perspectives has also been provided on the use of cardiac <sup>123</sup>I-MIBG imaging in the evaluation of prodromal DLB and premotor PD. Finally, a recent prospective longitudinal study compared the diagnostic accuracy of DAT SPECT and MIBG scintigraphy, concluding that MIBG method appears to be reliable and accurate for excluding non DLB dementias, avoiding over-diagnosis, especially when parkinsonism is the only core feature exhibited by the patient.