

Off-label 123I-FP-CIT SPECT use: a single-center, real-world study

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Introduction: Parkinsonian syndromes (PSs) are a group of disorders due to either neurodegenerative or non-neurodegenerative causes. Diagnosis is clinical, but 123I-FP-CIT SPECT, the only approved technique to assess the functional integrity of presynaptic nigrostriatal terminals, can assist in detecting neurodegenerative PSs [1]. Current formal indications include: I) differentiation between essential tremor (ET) and Parkinson’s Disease (PD); II) differentiation between Dementia with Lewy Bodies and Alzheimer’s disease.

Objective: To explore how often 123I-FP-CIT SPECT is prescribed off-label in clinical practice.

Methods: We collected the reason of requesting a 123I-FP-CIT SPECT, as formally indicated in the proforma request form to our Nuclear Medicine Department, during a 2-year period.

Results: Out of 70 scans, 37 (52.9%) were “on-label”, differential diagnosis with tremor syndromes being the most common. Thirty-three scans (47.10%) were “off-label”. About one-third of these were requested to differentiate degenerative from secondary parkinsonisms, especially drug-induced parkinsonism (DIP) (table 1), whereas 14.3% of the scans were solicited to detect presynaptic dopaminergic denervation in prodromal PD. The remaining were asked to confirm a clinical diagnosis of PD. Significant differences were noted when comparing requests from experts and non-experts in movement disorders.

Conclusions: We have here shown that the reasons for requesting a 123I-FP-CIT SPECT go far beyond the approved indications. We are aware our figures cannot be deemed representative of the overall use of 123I-FP-CIT SPECT in clinical practice because of potential biases due to the focus on movement disorders in our center, which might explain some “off-label” indications (i.e., differentiation between degenerative and secondary PSs and detection of prodromal PD) as suggested by the European Association of Nuclear Medicine [2]. Nevertheless, our results also show that there is the risk of inappropriateness in using this imaging technique (i.e., confirmation of PD), which calls for educative programs targeting general neurologists.

References:

- [1] Balestrino R, Barone P, Filippi M, Erro R Unexpected (123I)FP-CIT SPECT findings: SWIDD, SWEDD and all DAT. *J Neurol*. 2022 Feb;269(2):758-770. doi: 10.1007/s00415-021-10809-x. Epub 2021 Sep 18. Erratum in: *J Neurol*. 2021 Dec 9;: PMID: 34537866.
- [2] Morbelli S, Esposito G, Arbizu J et al (2020) EANM practice guideline/SNMMI procedure standard for dopaminergic imaging in Parkinsonian syndromes 1.0. *Eur J Nucl Med Mol Imaging* 47:1885–1912. <https://doi.org/10.1007/s00259-020-04817-8>.