Diagnostic Reliability of I-123 Ioflupane SPECT Imaging (DaTscan) in Movement Disorders
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BACKGROUND

- Brain SPECT with I-123 ioflupane is approved by the US FDA in January 2011 (DaTscan, GE Healthcare, Princeton, NJ) and is used to detect presynaptic dopaminergic deficit in Parkinson’s disease (PD) and other Parkinsonian disorders.
- Visual assessment of dopamine transporter (DAT) imaging is a fast image interpretation technique and can be performed by a practicing neurologist.
- Benamer’s grading criteria for visual assessment [1] have been the most widely used classification in research settings, but it has gained popularity in routine clinical practice.
- To date, most clinicians do not use any grading classification and report the results as purely descriptive interpretation of the findings.
- Lack of a unified rating scale for visual assessment of DAT imaging limits its utility in multicenter studies and in tracking disease progression.

METHODS

- All patients and healthy controls were examined by a movement disorders neurologist and given a clinical diagnosis prior to I-123 ioflupane study.
- 9 raters (5 neurologists and 4 non-neurologists), blinded to the clinical diagnosis, reviewed 21 I-123 ioflupane studies.
- The clinical diagnosis, reviewed 21 I-123 ioflupane studies.
- To assess accuracy of the Benamer’s criteria for visual assessment of I-123 ioflupane studies.

RESULTS (continued...)

DISCUSSION (continued...)

We propose an alternative grading system for visual assessment of DAT imaging studies:
- Analyze caudate (C) and putamen (P) separately on each side and assign the following scores: 0 = normal uptake; 1 = decreased uptake; 2 = absent or nearly absent uptake.
- Calculate a C+P score for each side and then calculate a total score for both sides (right C+P plus left C+P) (see Figure 2 for an example).
- Assign Grade 0 to 4 depending on a total score calculated for both striata (Table A):
  - For Grades 1-3, identify scans as Type A (asymmetric dopaminergic deficit) if the C+P scores are different on both sides, or Type B (symmetric dopaminergic deficit) if the C+P scores are same on both sides.

New grading classification will need to be tested to assess its utility.

The new classification can enhance utility of visual assessment of DAT imaging in routine clinical practice, multicenter studies and in tracking progression of dopaminergic deficiency.

REFERENCES


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DISCUSSION (continued...)

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