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BACKGROUND AND AIM:

¹²³I-FP-CIT SPECT imaging has provided to be an important tool in the diagnosis of parkinson syndroms (PS) through the study of the dopamine transporters (DATs). The correct analysis of the ¹²³I-FP-CIT SPECT is relevant for an adequate interpretation and to properly contribute in the PS diagnosis.

The aim of this study was:
To compare qualitative and semiquantitative analysis of ¹²³I-FP-CIT SPECT images in a sample of patients with movement disorders and probable PS.

METHODS:

Subjects

30 patients (10F, 51-88 yrs) with clinical movement disorders symptoms were included in the study.

Inclusion Criteria	Exclusion criteria
<ul style="list-style-type: none"> •Age >30 yrs •Two of the following criteria: <ul style="list-style-type: none"> –Resting tremor –Bradykinesia –Rigidity –Postural instability (one of which is resting tremor or bradykinesia)	<ul style="list-style-type: none"> •Severe organic illness •Drug or alcohol abuse •Other concurrent psychiatric pathologies •Treatments with potential interaction with striatal uptake of ¹²³I-FP-CIT

Study design

- Each subject underwent at least one ¹²³I-FP-CIT SPECT.
- SPECT results were evaluated with clinical follow up (Hoehn@ Yahr score) and/or clinical response to anti-Parkinson treatments after 6-12 months

SPECT procedure

SPECT acquisitions started 4 hours after i.v. injection of ¹²³I-FP-CIT (185 MBq).

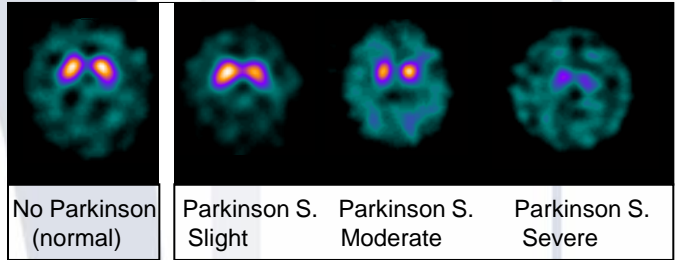
Acquisition parameters	Image analysis
<ul style="list-style-type: none"> •Gamma-camera: E.CAM Dual Variable (dual head),Siemens •Collimator:High resolution Fan-Beam •Circular Orbit: 360° •Matrix size:128x128 	<ul style="list-style-type: none"> •Filtered-backprojection (Butterworth exp.: 5.0, cutoff freq. 0.25 •No attenuation Correction

Statistical analysis:

ANOVA test, followed by a Bonferroni s post-hoc test.
Sensitivity and specificity were also calculated.

SPECT analysis:

Qualitative Analysis (visual): Patterns



Semiquantitative Analysis

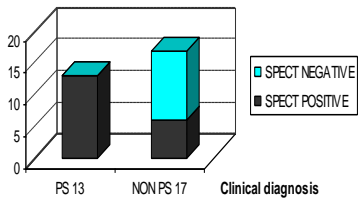
Regions of interest (ROI) were drawn in striatum (putamen and caudate) and occipital (reference region).

It was calculated: $specific\text{-}uptake = \frac{striatal\ region - occipital}{occipital}$

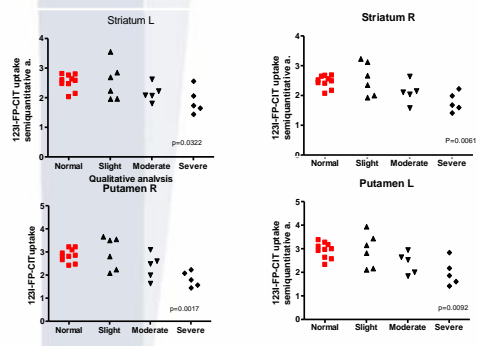
RESULTS

1. ¹²³I-FP-CIT SPECT qualitative analysis

SPECT studies assesment		
	leve	8 (27%)
Positive (PS)	moderate	6(20%)
	severe	5 (17%)
Negative (non PS)		11(36%)
Total patients		30
Sensitivity(%)	100	
Specificity(%)	64	



2. ¹²³I-FP-CIT SPECT semiquantitative and qualitative (Bonferroni s multiple comparison test)



CONCLUSIONS

1. Striatal DAT loss in PS have been demonstrated using both qualitative and semiquantitative ¹²³I FP CIT SPECT images analysis.
2. Qualitative and semiquantitative analysis showed a higher striatal loss of ¹²³I FPCIT uptake, in severe PS. However, based on our preliminary data semiquantitative analysis is not able to discriminate between slight PS and normal .