OUR ASSESSMENT FOR THE CONTRIBUTION OF FIRST TIME DATSCAN SCINTIGRAPHY TO DIAGNOSIS AND TREATMENT OF PATIENTS WITH PARKINSONIAN SYMPTOMS

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INTRODUCTION

- During a period of 1.5 years in the newly established Nuclear Medicine Department of Chania General Hospital, 50 patients with Parkinsonian symptoms (PS), had the opportunity to undergo for the first time a basal ganglia scintigraphy with ^{123}I-Ioflupane.

PURPOSE

- Our purpose was to evaluate the combined visual interpretation with quantification in the deferential diagnosis and in the therapeutic approach of patients with Parkinsonism.

METHODOLOGY

- 50 patients, 25 females and 25 males, were screened on a GE-dual-head INFINIA-II γ-camera: 17 patients with clinically diagnosed Parkinsonism (PD or Parkinsonian syndromes), 22 with PS under investigation and 11 with clinically diagnosed essential tremor.

METHODOLOGY

- Benamer's scale was used for visual assessment (Grade 0:normal, Grade1:asymmetrical loss of putaminal tail - comma with full stop, Grade2:bilateral loss of putaminal tails - two full stops, Grade3:partial to complete loss of caudate and putaminal signal - disappearing full stops).[1]

- For quantification the DaTQUANT analysis system was used with Z-score {Zsc=(measured-mean)/SD} evaluated.[2]

RESULTS   1

- In 10/11 patients with clinically diagnosed essential tremor, initial diagnosis was confirmed and 1/11 was positive for Parkinsonism and started treatment.

- 13/22 with PS under investigation, were diagnosed with idiopathic tremor,

- 9/22 were positive for Parkinsonism and started treatment.

- 9/17 with clinically diagnosed Parkinsonism were positive and continued their treatment as before,

- 6/17 increased medication and

- 2/17 where negative and stopped any treatment.

- For 13/25 patients with positive scan and known ischemic lesions, we suggested imaging comparison of the affected areas.
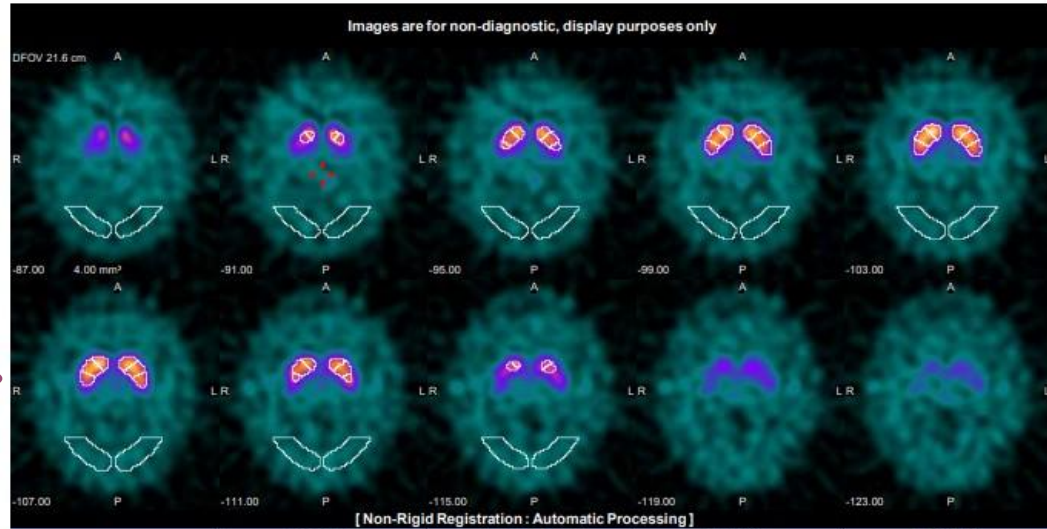
GRADE 0

Normal →

Patient Name :		Patient ID :	
Exam Description : DaTQUANT RESULTS		Exam Date : 24 Ιαν 2020	
Data : FBP REGISTERED		Age (Years) : 35	
Camera : INFINIA		Collimator Name : LEHR	
Collimator Type : Parallel		Counts (kCounts) : 2848.7	
DoB : 1 Ιαν 1985		Activity (mCi) [0] : 4.4	
Gender : Female		Radiopharmaceutical [*] : DaTscan (I123 ioflupane)	
Reconstruction Type : Filtered Backprojection		Corrections : No Correction	
Normal DB : GE FBP NC NDB — GE normals database for FBP with no correction			

[*] Manually Modified [0] Not used for uptake calculation

Images are for non-diagnostic, display purposes only

DFOV 21.6 cm

-87.00   4.00 mm³   -91.00   -95.00   -99.00   -103.00

-107.00   -111.00   -115.00   -119.00   -123.00

[Non-Rigid Registration : Automatic Processing]

	Measured	Mean (±1 SD)	Deviation	Z-Score
Striatum Right SBR	+2.86	+2.70 (±0.36)	+6%	+0.46
Striatum Left SBR	+2.78	+2.72 (±0.37)	+2%	+0.16
Anterior Putamen Right SBR	+2.87	+2.67 (±0.37)	+7%	+0.54
Anterior Putamen Left SBR	+2.79	+2.65 (±0.38)	+6%	+0.38
Posterior Putamen Right SBR	+2.49	+2.33 (±0.34)	+7%	+0.46
Posterior Putamen Left SBR	+2.48	+2.34 (±0.36)	+6%	+0.40
Caudatus Right SBR	+3.13	+3.02 (±0.43)	+4%	+0.28
Caudatus Left SBR	+2.97	+3.08 (±0.44)	-4%	-0.25

GRADE 3

Full Stops →
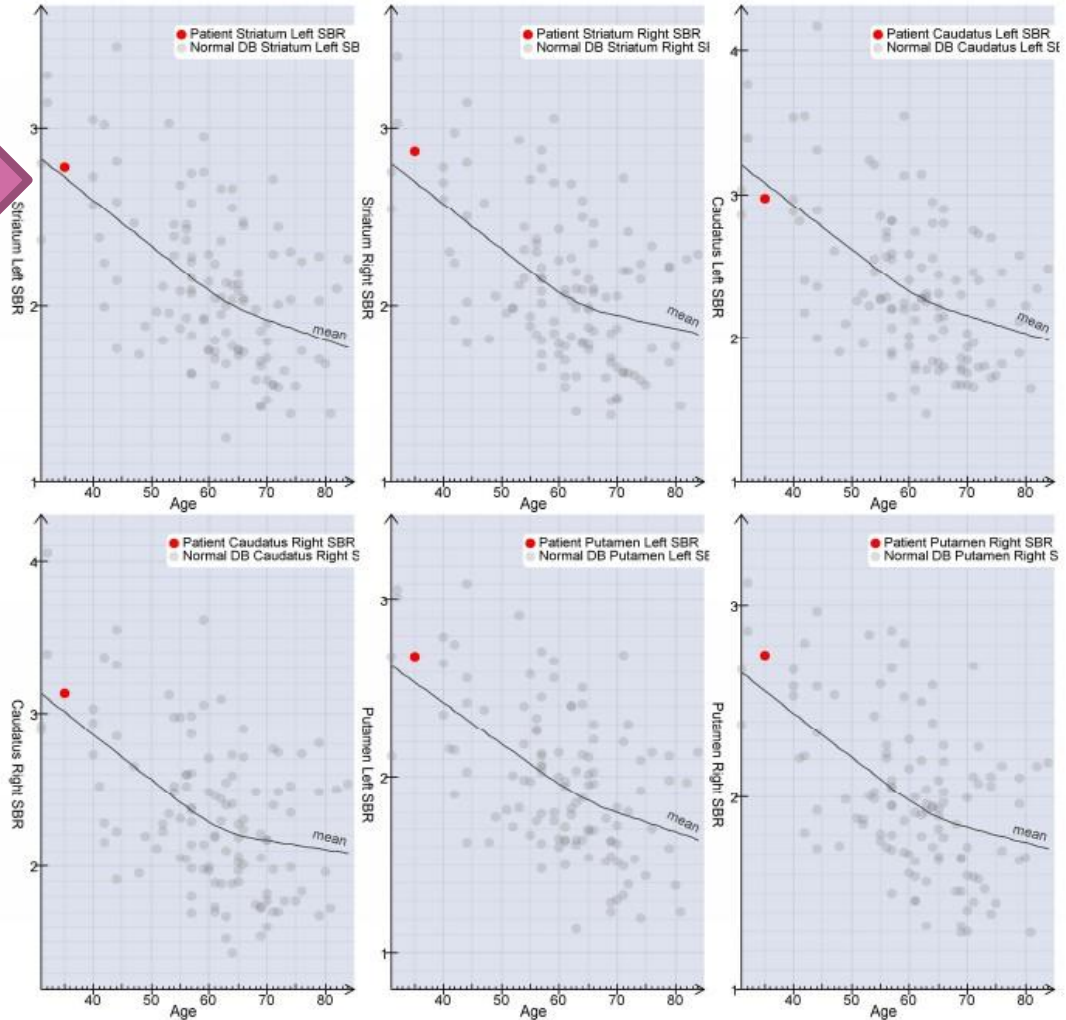
ΓΕΝΙΚΟ ΝΟΣΟΚΟΜΕΙΟ ΧΑΝΙΩΝ
ΤΜΗΜΑ ΠΥΡΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ

Patient Name :	Patient ID :
Exam Description : Tomo_Transaxials	Exam Date : 12 Φεβ 2021
Data : IRNC REGISTERED	Age (Years) : 70
Camera : INFINIA	Collimator Name : LEHR
Collimator Type : Parallel	Counts (kCounts) : 3030.1
DoB : 19 Ιαν 1951	Activity (mCi) *⁰ : 4.4
Gender : Female	Radiopharmaceutical * : DaTscan (I123 ioflupane)
Reconstruction Type : OSEM	Corrections : No Correction
Normal DB : GE OSEM NC NDB GE normals database for OSEM with no correction	

* Manually Modified   ⁰ Not used for uptake calculation

[Non-Rigid Registration : Manual ROI Adjustment]
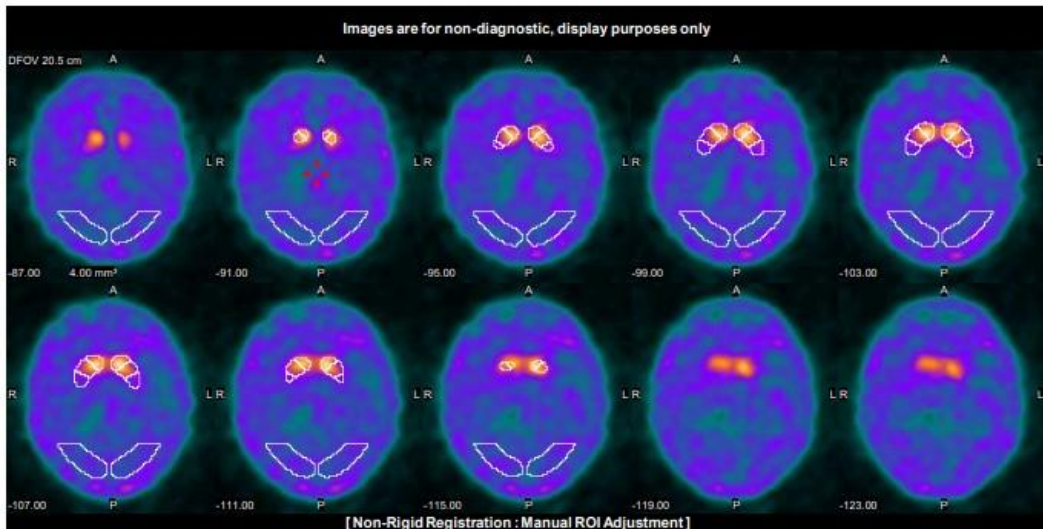
	Measured	Mean (±1 SD)	Deviation	Z-Score
Striatum Right SBR	+0.72	+1.84 (±0.33)	-61%	-3.35
Striatum Left SBR	+0.81	+1.82 (±0.35)	-55%	-2.85
Anterior Putamen Right SBR	+0.71	+1.87 (±0.35)	-62%	-3.34
Anterior Putamen Left SBR	+0.85	+1.83 (±0.36)	-54%	-2.69
Posterior Putamen Right SBR	+0.27	+1.48 (±0.32)	-82%	-3.76
Posterior Putamen Left SBR	+0.36	+1.48 (±0.35)	-75%	-3.16
Caudatus Right SBR	+1.05	+2.05 (±0.40)	-48%	-2.50
Caudatus Left SBR	+1.06	+2.04 (±0.42)	-48%	-2.32
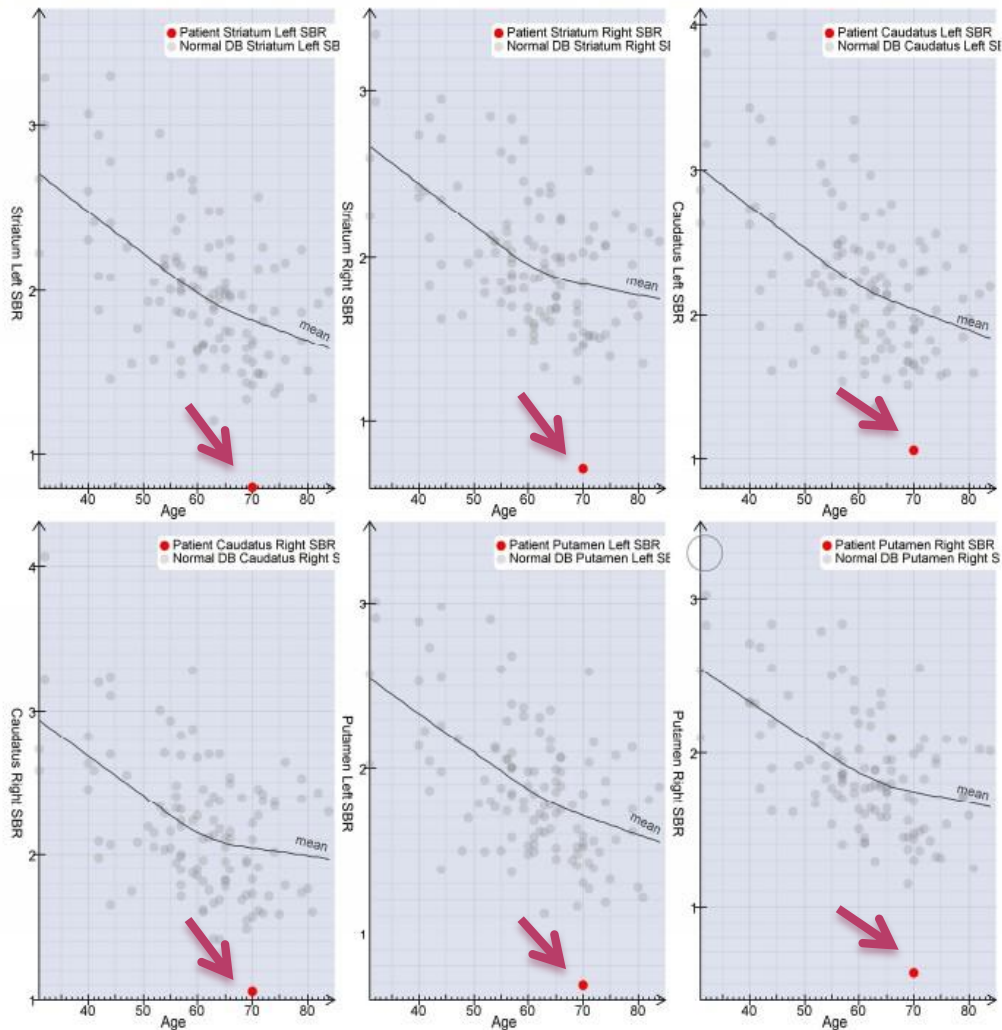
DISCUSSION

- With the introduction of the Benamer's criteria, there was a unified rating scale for visual assessment of DaT imaging. There are various ways of semi-quantitative or quantitative assessment.[3]

- At our Department we use the Benamer's scale for visual assessment and DaTQUANT software for quantification.

CONCLUSIONS

- The combination of visual and quantitative assessment is essential for the correct diagnosis leading to appropriate treatment.

KEY WORDS

- *Parkinson's disease, DaTQUANT, ^{123}I-Ioflupane*

REFERENCES

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