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DIFFERENTIAL DIAGNOSIS BETWEEN PARKINSON'S DISEASE AND PARKINSONIAN SYNDROMES WITH [^{99m}Tc]TRODAT-SPECTB. Kanyó¹, M. Árgyelán¹, Gy. Dibó², P. Forgács³, L. Vécsei³, L. Pávics¹¹University of Szeged, Departments of Nuclear Medicine and ²Neurology, Hungary, ³Municipal Outpatients Clinic of Neurology, Szeged

^{99m}Tc-TRODAT-1 selectively binds to the dopamine transporter. The purpose of this study was to evaluate the dopamine transporter status in some type of movement disorders.

Material and methods: We evaluated 8 healthy volunteers (age range 22-58 yr; 5 men, 3 women), 28 patients with Parkinson's disease (PD) (age range 42-80 yr; 13 men, 15 women; UPDRS: 17.6 ± 1.8; Ill.: 10.1 ± 5.8), 10 patients with Parkinsonian syndromes (PS) (age range 51-79 yr; 8 men, 2 women; UPDRS: 38.4 ± 5.4, Ill.: 22.9 ± 10.9) using ^{99m}Tc-TRODAT-SPECT. The results were evaluated visually and semiquantitatively. The ^{99m}Tc-TRODAT uptake of the striatum was referenced to the occipital cortex.

Results: Visually, the striatal radiopharmaceutical activity was lower both in PD or PS group, than in controls. In PD patients the DAT activity in the nucleus caudatus was relatively spared compared to the PS group. With semiquantitative assessments the striatum/occipital lobe ratio was: healthy volunteers 2.12 ± 0.27; Parkinson's disease 1.52 ± 0.27 (p < 0.01); Parkinsonian syndrome: 1.57 ± 0.26 (p < 0.01). Using discriminant analysis the striatal dopamin transporter availability was significantly lower (p = 0.027) in subjects with PD or PS compared to the control subjects.

Conclusions: ^{99m}Tc-TRODAT-SPECT can visualise the presynaptic dopaminergic degeneration. This method can be useful itself in differential diagnosis of patient with Parkinsonian disorders.

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ASSESSMENT OF DISEASE ACTIVITY IN GRAVES' ORBITOPATHY WITH NUCLEAR MEDICAL METHODS: COMPARISON OF ^{99m}Tc-DTPA, ^{99m}Tc-DEPREOTIDE SPECT AND MRI SCOREGaluska László¹, Leővey András², Szűcs-Farkas Zsolt³, Garai Ildikó⁴, Szabó Jenő², Varga József¹, Nagy Endre²¹Departments of ¹Nuclear Medicine, ²Medicine and ³Radiology, University of Debrecen Medical and Health Science Center, Debrecen,

Hungary A new rapid and cost-effective method, using ^{99m}Tc-labelled DTPA and 4-headed SPECT, was developed which is able to diagnose inflammatory activity in patients with endocrine orbitopathy (EOP).

Methods: The MRI T2 relaxation time was used as reference. Comparative orbital SPECT with the more specific ^{99m}Tc-Neospect (depreotide) was also performed in the same patients.

Results: Visual evaluation of orbital SPECT frames of patients suffering from active EOP could be easily distinguished from inactive EOP patients'. Despite the supposedly different characteristics of the two tested radiopharmaceuticals, there was essentially no difference between their accumulation in the orbit and the information obtained. The MRI activity scores correlated well with ^{99m}Tc-DTPA activity uptake (AU). The mean AU value in patients with inactive EOP was 6.26 ± 1.6 10⁴ID/cm³, while in active EOP 10.78 ± 0.61 10⁴ID/cm³, significantly higher. The ^{99m}Tc-DTPA accumulation in the orbital region in active disease was similar to that of depreotide. There was a good correlation (r = 0.91, P < 0.0001) between the two methods. **Conclusions:** ^{99m}Tc-DTPA orbital SPECT is a potentially useful method, which - after initial clinical and MRI staging - gives useful quantitative estimation of disease activity in endocrine orbitopathy. It may provide important visual and quantitative information during the follow up of patients.

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CEREBRAL FDG UPTAKE PATTERN IN DOWN SYNDROMEZs. Lengyel¹, E. Balogh², M. Emri¹, E. Szikszai², J. Kollár², J. Sikula³, O. Ésik⁴, L. Trón¹, É. Oláh²¹PET Centre, ²Department of Paediatrics and ³Department of Radiology, Medical and Health Science Centre, Debrecen University, Debrecen, ⁴Department of Radiotherapy, Semmelweis University, Budapest

Purpose: Besides the morphological features of the brain in DS, the functional abnormalities are reflected in the glucose metabolism. PET offers possibility to investigate the overall and the regional cerebral activity using the glucose analogue [¹⁸F]-fluorodeoxy-glucose (FDG). Our present aim was to study the glucose utilization pattern of the brain in DS patients as compared with that in normal controls.

Material and methods: FDG-PET brain scans were performed in 11 Down syndrome (DS) patients (6 females, 5 males). Their median age was 15.5 years (5-49 years), with 7 subjects younger than 16 years. The control group consisted of 9 subjects of similar age with preceding PET investigation because of diseases not involving the CNS. Standardized uptake values (SUV) were determined on a pixel-by-pixel basis. The statistical parametric mapping (SPM) method was applied to compare the cerebral FDG-accumulation patterns of the DS and control populations.

Results: The results indicated similar overall FDG uptake in the two groups, however, the standard deviation of the SUV values was much higher in the DS group. Six regions (clusters) were found by SPM for which the glucose uptake normalized to the overall mean was higher in the DS patients than in the control group. The anatomical localization of these clusters was based on MRI investigations and a brain-atlas technique.

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FDG PET INVESTIGATIONS IN PRESYMPTOMATIC PATIENTS WITH HUNTINGTON'S DISEASESz. Jr. Szakáll¹, M. Emri¹, L. Balkay¹, P. Mikecz¹, T. Sipos¹, F. Mechler², L. Galuska³, E. Berényi⁴, L. Trón¹¹PET Center, ²Dept. of Neurology, ³Center of Nuclear Medicine University of Debrecen, ⁴Huniko Medical Services and Commercial Ltd., Nyíregyháza

Purpose: Huntington's disease (HD) is an autosomal, dominantly inherited, neurodegenerative disorder of the basal ganglia. Genetically screened gene mutation carriers were examined regarding the affection of the basal ganglia, and the possible metabolic changes of the cortex.

Material and methods: Dynamic FDG-PET brain investigations were carried out in 11 patients and in 6 healthy volunteers. A 3-compartmental model was also used for the kinetic analysis. All the individual PET images were standardized in space using MRI images. Defining different VOIs on the standardized, averaged MRI images, the regional rate of glucose consumption was determined and ratio-normalized (nIGMR) by the global metabolic rate. The results were compared to those of the control group using statistical methods (SPM).

Results: The patients were divided into 3 groups by the visual assessment. Severe hypometabolism was detected in the caudate nuclei and the striatal region in 2 patients with symptoms. 7 patients had different degree of reduced metabolism of the basal ganglia. Parietal lobe disturbances were observed in 2 patients. The nIGMR values showed similar differences in the regions analysed. Comparing the groups of patients by using SPM analysis, significant differences were found between the patient groups in the severity of the striatal hypometabolism. Compared to the control group, significant metabolic activity differences were observed in the right insular cortex in the patients with symptoms, and in the right middle and medial frontal gyrus in patients with intermediately reduced glucose uptake.