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1580

Cognitive impairment in patients with Parkinson's Disease

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Objective: The objective is to study the relation between cognitive impairment with the form and stage of PD.

Background: Currently, there is a tendency of a global change in the gender and age structure of the population. The proportion of older people in the population is steadily increasing. Cognitive impairment is directly related to age. So from the age of 65 their prevalence doubles every 5 years. Parkinson's disease plays a big role in the development of dementia.

Methods: 287 patients with PD I-IV stage of Hyun and Yar took part in the study. The average age of the patients is 66.4 ± 9.0 years. All received standard specific anti-parkinsonian pharmacotherapy. All patients have been evaluated according to the Mini-Mental State Examination (MMSE), the clock-drawing test (CDT) and the Frontal Assessment Batte (FAB).

Results: On the FAB scale, the maximum average was observed in patients with stage I of PD - 15.6 ± 2.6 points and the minimum with stage IV - 13.0 ± 4.1 points. A similar tendency was also revealed when performing the CDT test, where the highest result was observed at stage I of the disease - 8.8 ± 1.7 points, and the lowest at stage IV - 5.9 ± 2.6 points.

Patients with a tremor of PD had the highest results of neuropsychological testing and the largest number (45.8%) of people without cognitive impairment ($p < 0.0001$) were recorded, with mixed ones - lower ($p < 0.0001$).

Conclusions: The study has demonstrated that the patients with a tremor of PD had less of their severity cognitive impairment compared with mixed form of PD.

Patients with stage I of PD had minimal the severity of cognitive impairment.

1581

Evaluation of gut microbiota in patients with Parkinson's disease using a gas chromatography–mass spectrometry in Russia

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Objective: To evaluat of gut microbiota in patients with Parkinson's disease using a gas chromatography–mass spectrometry

Background: An increasing number of studies have reported the crosstalk between gut microbiota and the host brain in Parkinson`s disease. However, the results of studies on the evaluation of the composition of microbiota contradict each other. That is due to the use of various methods. Using a gas chromatography–mass spectrometry (GC-MS) is uniquely suitable for obtaining the metabolic signals in bidirectional communication between gut microbiota and brain.

Methods: We compared the gut microbiota composition of 16 patients with stage 3 of Parkinson's disease (9 female) and 94 age-matched controls using GC-MS with detection of small molecule metabolites (SMMs) in serum. We used an Agilent 7890a gas chromatograph.

Results: We observed significant increases in the abundance of SMMs by 43% in patients with PD compared to those of the controls. The abundance of conditionally pathogenic gut microbes was increased in patients with PD: Staphylococcus intermedius – in 61%, Eubacterium lentum (group A) – by 5,8 times, Clostridium hystolyticum – by 2,8 times, Peptostreptococ. Anaerobius – by 3,6 times, Ruminicoccus – by 3,8 times, Nocardia and Nocardia asteroides – by 2 times, Clostridium propionicum and Enterobacteriaceae family (E. coli and other), Micro-fungi, cytosterol by 1,7 times, Micro-fungi, campesterol and Herpes by 2,8 times. Identified decreases in the abundance of SMMs of Streptococcus, Cl. difficile, Propionibacterium jensenii, Propionibacterium acnes by 2 times. At the same time the SMMs number of useful gut microbes was decreased: Eubacterium/Cl.coccoides – by 6,3 times, Bifidobacterium – by 2,5 times, Propionibacterium/Cl. subterm. – by 1,5 times, Lactobacillus – on 24%.

Conclusions: Using a gas chromatography–mass spectrometry is probably the most objective method for assessing the gut microbiota, which allows for a minimally invasive but widespread assessment of gut dysbiosis in Parkinson's disease with a view to its further correction.

1582

The social interaction in patients with Parkinson's disease from the points of activities of daily living and motor function

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Objective: To investigate how the social interaction relates to activities of daily living (ADL) and motor function in patients with Parkinson's disease (PD).

Background: In old age, declining social interaction, such as participating in few activities with others or having a small social network and so on, has been related with physical deterioration. But in PD, this relation is not investigated.

Methods: Subjects were 114 patients with PD (male: female=53:61, mean age 72.6 years old, MMSE 27.1±2.8, UPDRS total 21.5±11.6, Yahr≤4), who had been examined social interaction, activity of daily living (ADL) and motor function using Index of social interaction (ISI) and Unified Parkinson's Disease Rating Scale (UPDRS).

We assessed the correlation of ISI and UPDRS; part2 and 3.

Based on the results of previous study of the elderly and our study of PD in last year, gender difference was revealed in social interaction. So, we analyzed the results with separating the sexes.

Results: In gender comparison (male vs female), there were no significant differences in age, disease duration, MMSE, UPDRS total and part2 scores.

ISI (p=.012) and 'talking' that one of the lower items in UPDRS part2 (p=.039) were worse in male than in female. UPDRS part3 was worse in female than in male (p=.017).

About correlation between ISI and UPDRS; part2 and 3, in male, the section score and lower items had correlate with ISI were UPDRS part2 total score, part3 total score, the following lower items 'speech(in part2)' 'handwriting' 'dressing' 'hygiene' 'freezing when walking' and 'speech (in part3)' (r=-.273~-.509, p = .000~0.48).

On the other hand in female, that was only the lower item of 'hygiene' (r=-.260, p = .041).

Conclusions: The social interaction correlated well with ADL and motor function in male patients with PD. However, this correlation was weaker in female than in male. The social interaction of female patients is more robust than male, regardless of their ADL and motor function level.

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1583

Exploring the relationship between motor and non-motor fluctuations in Parkinson's disease: patient's perspective, clinician' s assessment and objective measures from a wearable device

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Objective: We aimed: 1) To evaluate the relationship between motor (MF) and non-motor (NMF) fluctuations in Parkinson's disease measured with patient's self-assessment, clinician's evaluationand objective measurement using a wearable device. 2) To explore the relationship between MF, NMF and quality of life.

Background: MF and NMF fluctuations are difficult to recognize and might have a severe impact on quality of life.

Methods: We enrolled consecutive PD patients who presented at least motor fluctuations. Levodopa equivalent daily dose (LEDD) and LEDD dopamine-agonist (D-Ag LEDD) were calculated. MF and NMF were assessed by the Wearing-Off Questionnaire (WOQ-19) and the Unified PD Rating Scale (UPDRS I-IV). The Parkinson's KinetiGraph™ (PKG®), an