

ABSTRACT

Complex functions of the basal ganglia are affected by numerous sensory and sensitive stimuli. In our studies, we investigated parameters of sense of smell and vision in neurodegenerative diseases of the basal ganglia - Parkinson's disease (PD) and Huntington's disease (HD). In the first study, we use Odourized Markers Test (OMT) to determine its applicability in PD patients, and to determine whether it distinguishes olfactory disorders between neurodegenerative and other disorders. Results show that OMT is applicable for PD patients and comparable to Sniffin' Sticks as it demonstrates gains of lower scores in PD patients compared to healthy subjects, but they do not differentiate other etiology of olfactory disorders. In the next study, we tested the pleasantness of odor stimulants in PD patients using New test of odor pleasantness (NTOP). We investigated suitability and validity of its use. We found that PD patients had lower odor rating score compared to healthy group correlated with Sniffin' Sticks and OMT. In the following study, we examined whether PD patients with visual hallucinations (PDH+) have structural retinal changes measured by optical coherence tomography (OCT) and functional retinal changes examined by 2,5% contrast sensitivity test compared to PD patients without hallucinations (PDH-). We found no statistically significant differences in peripapillary retinal nerve fiber layer (RNFL) thickness, macular thickness and volume, nor in 2.5% contrast sensitivity test between PDH+ and PDH-. In the final part of the work we presented the study in which retinal structural parameters measured by OCT and retinal functional parameters measured by Pelli-Robson Contrast Sensitivity Test and Farnsworth D-15 Color Test were investigated in HD patients. We found no statistically significant differences in mean RNFL thickness, RNFL temporal segment thickness, and macular volume between HD patients and healthy controls. We found no pathology in contrast sensitivity in HD patients and the results of color discrimination were ambiguous.

Key words: Parkinson's disease, Huntington's disease, contrast sensitivity, color discrimination, optical coherence tomography, Odourized markers test, New test of odor pleasantness