

Poster presentation

## **Pupillometry and neuroimaging methods in patients with Parkinson's disease**

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### **Background**

The diagnosis of Parkinson's disease is based on clinical criteria. There is no specific examination for the ascertainment of the diagnosis of Parkinson's disease. Therefore, it's very important to find more objective markers for a certain diagnosis especially at initial stages of the disease. Pupillometry, a non-invasive method, which examines pupil reaction to light and analyses its movement, may be of special scientific interest as far as diagnosis of Parkinson's disease is concerned.

To investigate pupil light reflex in patients with Parkinson's disease in comparison with other neuroimaging methods.

### **Materials and methods**

We studied 25 patients who fulfilled the established clinical criteria of Parkinson's disease. We excluded patients with dementia and depression by means of the Dementia Rating Scale (DRS) and Beck Depression Inventory (BDI). All patients had no signs or clinical evidence of autonomic disturbances. In order to exclude any defect of the visual system we performed a fully ophthalmological examination (Electroretinograph, Visual Evoked Potentials with flash and pattern- reversal stimulus). They were also evaluated with MRI and DAT-SPECT, which is an objective method of evaluation of presynaptic dopaminergic function. As a control group we used healthy volunteers matched for sex and age.

The system we have used consists of an infrared video camera, an SLE lamp and an infrared spotlight, which has

the capacity to record and calculate precisely pupil diameter, acceleration, velocity and other parameters.

### **Results**

Comparing the results of the patients with Parkinson's disease to those of the controls we observed, a statistically significant reduction in maximum velocity and maximum acceleration in patients with Parkinson's disease. The significance of this observation needs to be investigated more extensively.

### **Discussion**

These are the preliminary results of this study and further investigation will provide more data about pupil changes in Parkinson's disease and its relation to the investigation of the disease and its progression.