

## **QUESTIONNAIRE - BASED ASSESSMENT OF AUTONOMIC DYSFUNCTION IN PARKINSON'S DISEASE**

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### **ABSTRACT**

Questionnaire - based assessment of different autonomic dysfunctions was performed in 500 patients with Parkinson's disease (PD): 273 males and 227 females, aged from 42 to 81 years and with disease duration from 2 months to 17 years. Patients with co-existing diseases affecting the autonomic nervous system (ANS) were not included in the study. The distribution of cases according to the Hoehn-Yahr scale was as follows: 41 patients at stage I, 197 - at stage II, 214 - at stage III and 48 - at stage IV. Sixty-one patients were free of antiparkinsonian drug treatment.

Three hundred and fifteen patients (63%) described one or more complaints concerning the autonomic nervous system: 16 (5%) were at stage I according to Hoehn-Yahr scale, 82 (26%) at stage II, 164 (52%) at stage III and 45 (14%) at stage IV. The most common complaints involved the gastrointestinal system - 67%, urologic - 39%, thermoregulatory - 29% and cardiovascular - 27%. Seven patients with dysautonomic complaints receive no antiparkinsonian medication.

Our results showed that questionnaire - based assessment confirms the presence of dysautonomic manifestations in more than 50% of the patients with PD. These manifestations were present even in untreated patients at the early stage of the disease. Having in mind that dysautonomias engage practically all somatic systems with autonomic control, we consider that evaluation of autonomic dysfunction could contribute to the management of quality of life of PD patients.

### **INTRODUCTION**

PD is a multisystem disease presenting with motor, sensory, psychic, cognitive disturbances and dysautonomic symptoms. The engagement of the ANS is considered as a part of the primary degenerative process in PD. Symptoms of autonomic dysfunction of nearly all organs has been observed (8,9). In some cases, dysautonomic manifestations could lead to significant functional damage and worsening of the quality of life of these patients (3,4,7). The impairment of the autonomic function could be present in the advanced stages of the disease, appear before the motor

symptoms or even dominate the clinical picture in some cases (2,8,9).

Lots of noninvasive tests for evaluation of ANS functioning exist currently. Most of them are easy to perform and validated with standardized conditions, which allows to establish relatively easy the presence of autonomic dysfunction, to define and assess quantitatively the type of deficit and the location of the damage (6,13). Despite all these advantages of the instrumental methods, the use of questionnaires for autonomic function in patients with PD allows to primarily assess dysautonomic manifestations, beneficial for screening and epidemiological studies, as well as for monitoring. It has been found that percentage ratios of autonomic disturbances registered by tests and documented by questionnaires are different (9). Because of the subclinical presentation of dysautonomic manifestations in most of the patients, the perception of symptoms sometimes as a "normal" state or the combination of several complaints in one, we have performed a wide randomized study of the frequency and distribution of dysautonomic manifestations in patients with PD by means of a questionnaire.

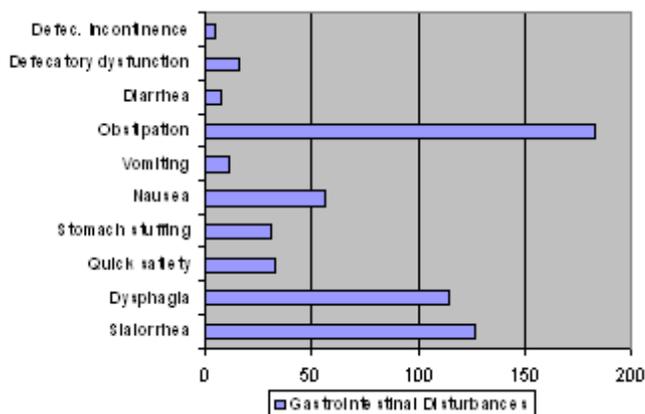
### **MATERIALS AND METHODS**

Five hundred patients with PD, 273 males and 227 females, filled a questionnaire for autonomic disturbances. They were all diagnosed in the Neurology Clinic of Varna Medical University, according to the UKPD Society Brain Bank Clinical Diagnostic Criteria. Patients were aged between 42 and 81 and with disease duration from 2 months to 17 years. According to the scale of Hoeh-Yahr all patients were distributed as follows: st. I - 41 cases, st. II - 197, st. III - 214 and st. IV - 48. No patients with concomitant diseases or receiving drugs influencing the ANS were included in the study. Patients were treated with L-dopa, non-ergoline dopamin agonist and MAO-B antagonist as monotherapy or in different combinations. Sixty-one patients were newly diagnosed and free of drug treatment. The questionnaire consists of 45 questions concerning complaints from the cardiovascular system (5 questions), gastrointestinal system (12), urological system (9), genital

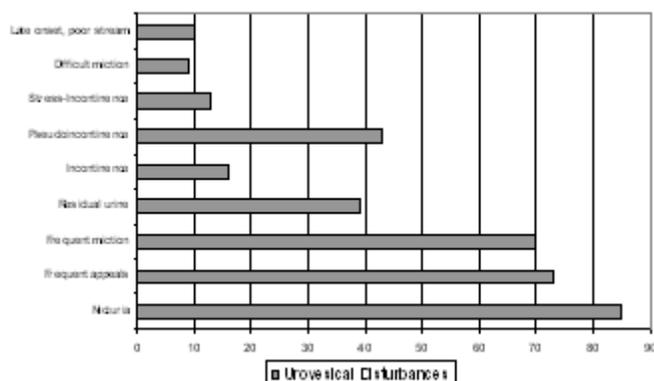
system (7 for male and 5 for female), for the thermoregulatory, sudomotor and secretory impairments (7), for the pupillary impairment (4) and 1 question for complaints preceding the appearance of motor symptoms. Four point based scale was used to assess the answers for frequency and severity of the complaints: 0- lack of complaint, 1- mild impairment, 2- moderate impairment and 3-severe impairment.

## RESULTS

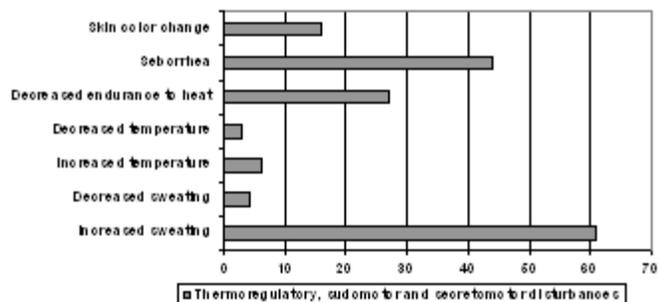
The rate of completion was 63% for males and 51% for females, answering the questions for sexual dysfunction, and 100% for the questions concerning the cardiovascular, gastrointestinal, urovesical, thermoregulatory and pupillary impairments. A positive answer to at least one complaint was found in 39% of the patients at Hoehn-Yahr st. I, in 42% of cases at st. II, in 77% at st. III and in 94% at st. IV. The most common complaints involved the gastrointestinal system - 211 patients (67%): sialorrhea - 127 (60%), dysphagia -114 (54%), fast satiety after nourishment - 33 (16%), stuffing of stomach after nourishment – 31 (15%), nausea - 56 (27%), vomiting - 11 (5%), constipation - 183 (87%), diarrhea - 7 (3%), impairment of defecation - 16 (8%), and incontinence - 5 (2%) (Fig.1).



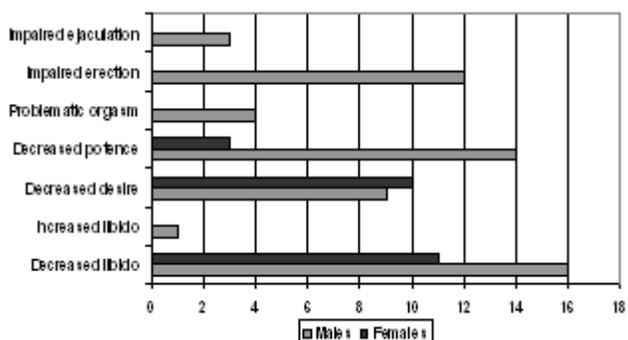
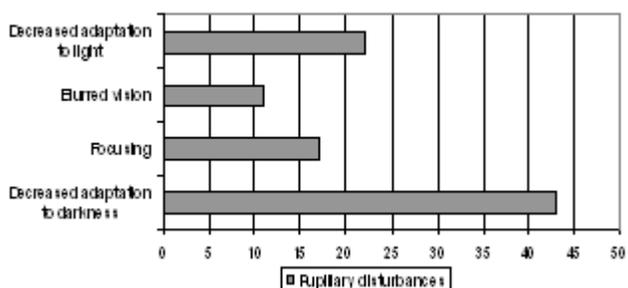
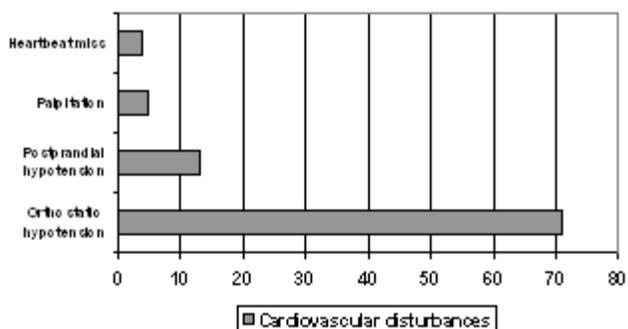
Urovesical disturbances were found in 123 (39%) patients (Fig.2).



Thermoregulatory, sudomotor and secretomotor dysfunction were registered in 91 patients (29%). (Fig.3).



Eighty-five patients (27%) had complaints from the cardiovascular system (Fig.4), 60 patients (19%) announced pupillary disturbances (Fig.5) and 114 patients - sexual dysfunctions (Fig.6).



Seven patients with dysautonomic complaints received no antiparkinsonian medication, all being in Hoehn-Yahr stage I.

## DISCUSSION

The present questionnaire is accessible and patients are able to answer the questions thus asked. It can be used to initially assess PD patients' autonomic functions.

Our results, having showed that questionnaire - based assessment confirms dysautonomic manifestations in more than 50% of the patients with PD, conform to literature data (2,8,9).

Regarding the gastrointestinal system, the most frequent complaints are constipation, sialorrhea and dysphagia. Constipation can be an early sign and worsen with the increase of the term and the severity of the disease, while sialorrhea and dysphagia are more pronounced in the later stages by Hoehn- Yahr.

Urovesical disturbances are observed in the later stages of the disease and irritative symptoms predominate over obstructive ones (5,10). Nicturia and polakiuria are the most frequent, as nicturia is mainly an initial symptom. Stress-incontinence is observed exclusively in women, while obstructiv manifestations are characteristic of men. Urinary incontinence is observed in patients with greater severity and term of the disease, while pseudoincontinence is more frequent because of slow and difficult reaching to toilet rooms.

Seborrhea and increased sweating are frequent complaints, which can appear in the very beginning of the disease.

The most frequent cardiovascular disturbance is orthostatic hypotension. Its detection is important because of the risk of fatal falls of the patients. These complaints are usually mild in our patients and appear in the late stages of the disease.

Pupillary disturbances do not represent an important problem for our patients, in spite of their relatively high

prevalence.

Not all patients answered the questions about sexual disorders. Relatively few of them, mainly males, reported disturbances. Not only autonomic manifestations, but also depression, cognitive impairments, disability and age contribute to the appearance of sexual disorders.

Most of the patients announce that dysautonomic complaints appear after motor symptoms, except for constipation, which was reported to precede them by 23% of the patients (72 patients - 43 females and 29 males) (1).

These manifestations were present even in untreated patients at the early stage of the disease, which supports the thesis for the relatively influence of antiparkinsonian medication for the appearance or the aggravation of dysautonomic manifestations.

Because of the longer life expectancy of the population, a higher prevalence of age-related chronic diseases like PD can be expected. The role of motor disability (measured by the stage of the disease), depression, drugs and non-drug therapy for the quality of life of PD patients is proved (11,12). Autonomic disturbances in these patients also contribute to the worsening of QoL. Gastrointestinal dysfunctions play the most important role, followed by urovesical, and cardiovascular to a lesser extent (9).

Having in mind that dysautonomias engage practically all somatic systems with autonomic control, we consider that the evaluation of autonomic dysfunction could contribute to the management of quality of life of PD patients.

## CONCLUSION

We consider our questionnaire- based assessment of the dysautonomic manifestations in PD as a suitable method for patient screening and monitoring. It provides also an opportunity to discuss the necessity of further laboratory evaluation of the autonomic functions in the context of specific medication therapy and palliative care for the improvement of QoL of PD patients.

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