

VEGETATIVE DISORDERS IN PARKINSON'S DISEASE

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**Keywords:** Parkinson's disease, motor symptoms, premotor or prodromal stage

**Abstract:** Parkinson's disease therapeutic strategies must be directed to both the motor (nigra) symptoms and to non-motor extranigral signs. In the last decade, it has been proven that non-motor symptoms precede long before the first motor signs of the Parkinson's disease, causing the so-called prodromal or premotor stage. The premotor stage is associated with the discomfort caused by the autonomous dysfunction, sleep disturbances, sensory dysfunction, neuropsychiatric disorders, fatigue and restless leg syndrome.

**Cuvinte cheie:** boala Parkinson, simptome motorii, fază premotorie sau prodromală

**Rezumat:** Strategiile terapeutice din boala Parkinson trebuie să fie îndreptate atât asupra simptomelor motorii (nigrale), cât și non-motorii extranigrale. În ultimii zece ani s-a dovedit ca simptomele non-motorii preced cu mult înainte primele semne motorii din boala Parkinson, determinând așa-numita fază premotorie sau prodromală. Faza premotorie este asociată cu disconfortul determinat de disfuncția autonomă, tulburările de somn, disfuncția senzorială, tulburările neuropsihiatrice, oboseală și sindromul picioarelor neliniștite.

**INTRODUCTION**

Parkinson's disease is a neurodegenerative disorder with evolution to a progressive aggravation corresponding to the dopaminergic neuronal loss from the black substance (substantia nigra). The neuronal loss at the moment of the clinical symptomatology occurrence is of 60%.(1)

Parkinson's disease is the second neurodegenerative disease in terms of frequency after the Alzheimer's disease.

The motor symptoms are associated with non-motor symptoms from the incipient stages of the disease.

**PURPOSE**

The purpose of the article is to evaluate the non-motor symptoms in the patients with Parkinson's disease.

**Table no 1. The non-motor symptoms in the Parkinson's disease (2)**

Parkinson's disease		
Other non-motor symptoms:	Psychiatric symptoms:	Vegetative symptoms:
<ul style="list-style-type: none"> <li>• sleep disorders</li> <li>• olfactory dysfunction</li> <li>• pain</li> </ul>	<ul style="list-style-type: none"> <li>• depression</li> <li>• panic attack</li> <li>• hallucination</li> <li>• dementia</li> </ul>	<ul style="list-style-type: none"> <li>• sweat symptoms</li> <li>• digestive symptoms</li> <li>• orthostatic hypotension</li> <li>• genito-urinary disorders</li> <li>• hypersalivation</li> </ul>

**q Digestive system dysfunction**

a) Constipation

- The literature data distinguishes the presence of constipation in 55% of the cases with Parkinson's disease;

- The activity of the colonic smooth musculature is controlled by the intrinsic enteric neurons together with the sympathetic extrinsic neurons inhibitors or parasympathetic exciting neurons.(3)

b) Sialorrhea

- The data from the literature mentions its presence in more than 70% of the patients with Parkinson's disease.

c) Dysphagia: Dysphagia is also frequently met, especially in the off periods.(4)

**q Urogenital dysfunction**

- Nicturia is the most precocious sign of autonomic dysfunction (5);

- It is often followed by the increase of the mictional frequency, of imperious mictions and difficulties with miction;

- Those problems are determined by the detrusor hyperreflexia or by the absence or incomplete relaxation of the muscles of the pelvic wall.

**q Sexual dysfunction**

- Is a common problem of the patients with Parkinson's disease;

- It appears as a precocious manifestation of the dysfunction of the autonomic nervous system;

Hypersexuality was reported, especially, in the patients under dopamine agonists treatment.(6)

**q The cardio-vascular autonomic dysfunction**

- Orthostatic hypertension appears most frequently in the late stages of the Parkinson's disease (7);

- The decrease of the systolic arterial pressure with more than 20mm Hg and of the diastolic arterial pressure with more than 10mm Hg occurs after 15 minutes of dorsal decubitus position when turning to orthostatism (5 minutes).

**q The disorders of thermoregulation and sweating**

- In more than 64% of the patients with Parkinson's disease, an increase of sweating at the head, face, trunk, neck level was observed, which is a compensatory reaction at the decrease of the sympathetic activity in extremities;

- The neurochemical and anatomical basis of those disorders are unknown.(8)

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## CLINICAL ASPECTS

### METHODS

The study included a number of 200 patients from the specialty ambulatory and from the department of neurology within the Clinical County Hospital of Sibiu;

The period of patients' inclusion in the study was December 2007-June 2011;

The age of the patients was 55-75 years old;

The degree of smell and pain impairment was evaluated on visual and analogue scales (severe, medium, mild).

#### A. The inclusion criteria:

- The patients with a positive diagnosis of Parkinson's disease on the basis of the neurological exams and of the paraclinical investigations;
- The patients in different stages of evolution according to the Hoehn-Yahr classification:

- the I<sup>st</sup> stage – unilateral impairment;
- the II<sup>nd</sup> stage – unilateral impairment without postural disorders;

- the III<sup>rd</sup> stage – bilateral impairment with minor postural lack of balance (the patient has a normal life);
- the IV<sup>th</sup> stage – bilateral impairment with postural instability (the patient needs support in performing the daily activities).

- Cranial CT exam – normal.

#### B. The exclusion criteria:

- The patients suffering from type I, II of diabetes mellitus due to the possibilities of false positive results;

- The patients with Parkinson's disease, Hoehn-Yahr V<sup>th</sup> stage;

- The patients with associated cardiovascular, genitourinary and digestive disorders;

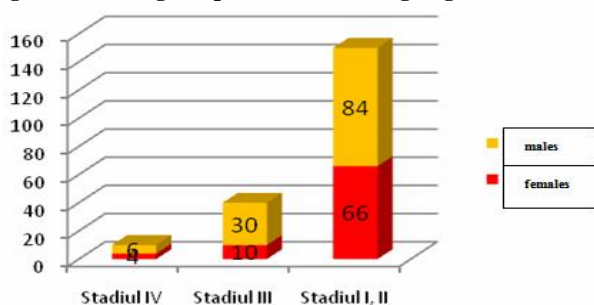
- The patients under 55 years or over 75 years old.

### RESULTS

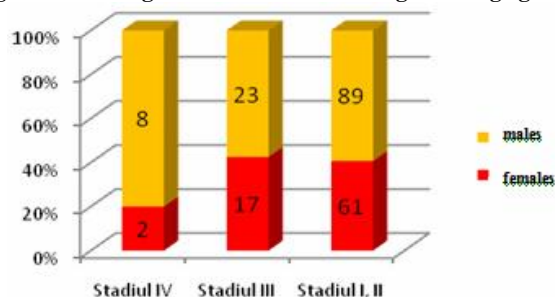
**Table no. 2. Stages repartition according to gender**

	IV <sup>th</sup> stage	III <sup>th</sup> stage	I <sup>st</sup> , II <sup>nd</sup> stage
Females	4	10	66
Males	6	30	84

**Figure no. 1. Stages repartition according to gender**



**Figure no. 2. Stages distribution according to the age group**



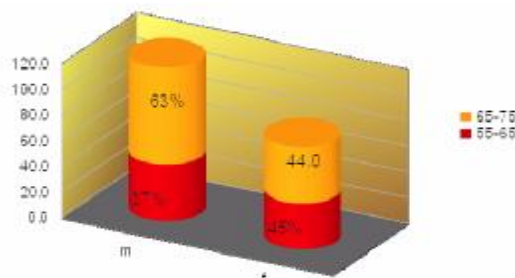
**Table no. 3. Stages distribution according to the age group**

	IV <sup>th</sup> stage	III <sup>rd</sup> stage	I <sup>st</sup> , II <sup>nd</sup> stage
Females	2	17	61
Males	8	23	89

**Table no. 4. Repartition on gender and age groups of the studied batch**

	55-65 years old	66-75 years old
Males	44	76
Females	36	44

**Figure no. 3. The repartition on gender and age groups of the studied batch:**

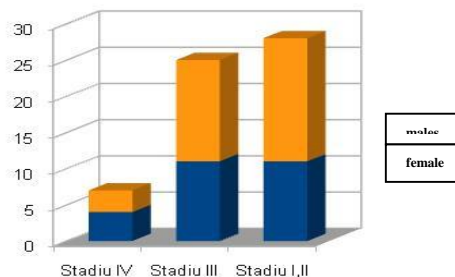


Ø Constipation:

**Table no. 5. Gender and disease stage repartition**

	Females	Males
IV <sup>th</sup> stage	4	3
III <sup>th</sup> stage	11	14
I <sup>st</sup> , II <sup>nd</sup> stage	11	17

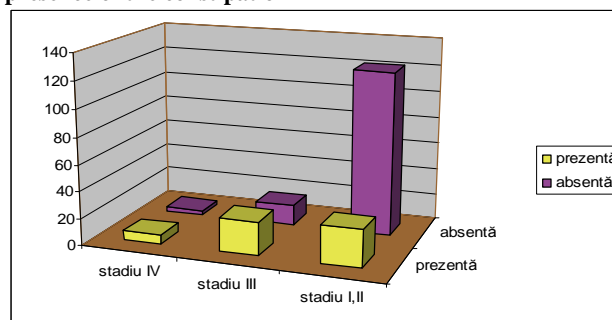
**Figure no. 4. Gender and disease stage repartition**



**Table no. 6. Disease stages repartition according to the presence of the constipation**

	Presence	Absence
IV <sup>th</sup> stage	7	3
III <sup>rd</sup> stage	25	15
I <sup>st</sup> , II <sup>nd</sup> stage	28	122

**Figure no. 5. Disease stages repartition according to the presence of the constipation**



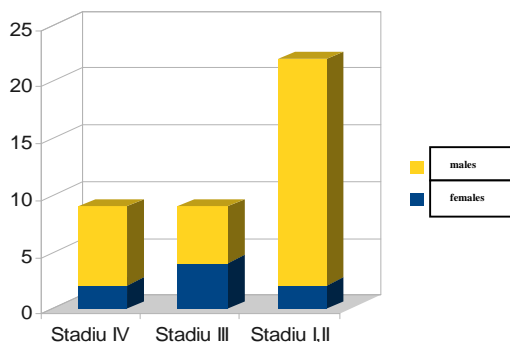
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Ø Sexual disorders:

**Table no. 7. Disease stage and gender repartition**

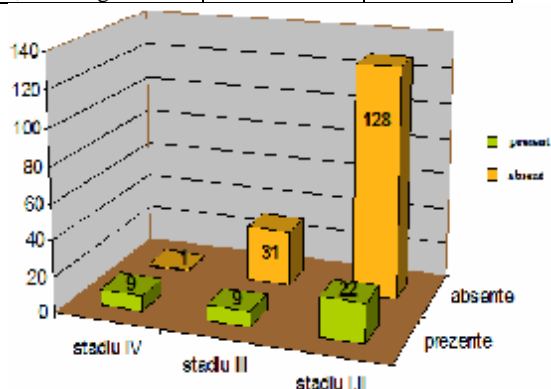
	Females	Males
IV <sup>th</sup> stage	2	7
III <sup>th</sup> stage	4	5
I <sup>st</sup> , II <sup>nd</sup> stage	2	20

**Figure no. 6. Disease stage and gender repartition**



**Table no. 8. Disease stages repartition according to the presence of the sexual disorders**

	Presence	Absence
IV <sup>th</sup> stage	9	1
III <sup>th</sup> stage	9	31
I <sup>st</sup> , II <sup>nd</sup> stage	22	128

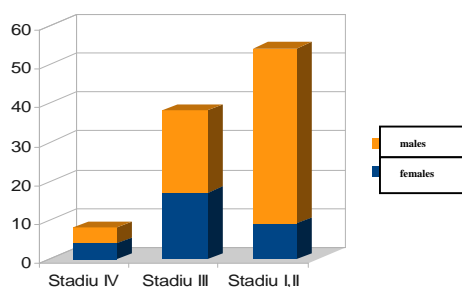


Ø Urinary disorders:

**Table no. 9. Disease stage and gender repartition**

	Females	Males
IV <sup>th</sup> stage	4	4
III <sup>th</sup> stage	17	21
I <sup>st</sup> , II <sup>nd</sup> stage	9	45

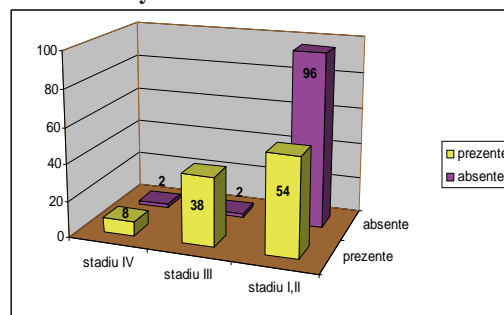
**Figure no. 8. Disease stage and gender repartition**



**Table no. 10. Disease stages repartition according to the presence of urinary disorders**

	Presence	Absence
IV <sup>th</sup> stage	8	2
III <sup>rd</sup> stage	38	2
I <sup>st</sup> , II <sup>nd</sup> stage	54	96

**Figure no. 9. Disease stages repartition according to the presence of urinary disorders**

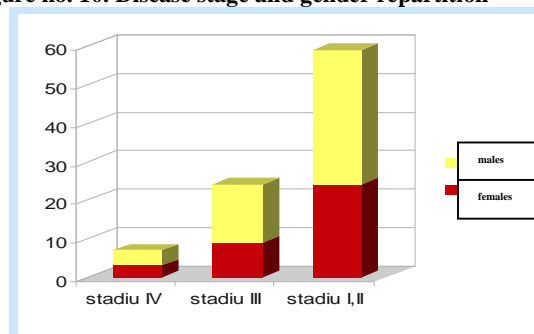


Ø Sweating disorders:

**Table no. 11. Disease stage and gender repartition**

	Females	Males
IV <sup>th</sup> stage	3	4
III <sup>th</sup> stage	9	15
I <sup>st</sup> , II <sup>nd</sup> stage	24	35

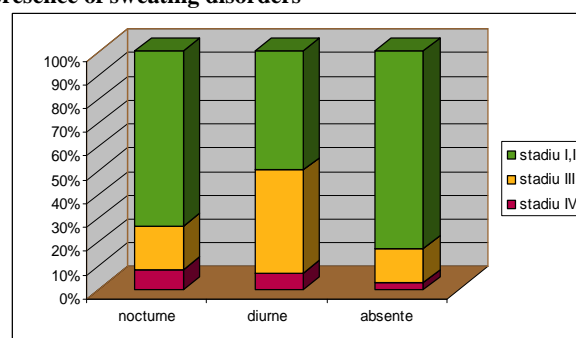
**Figure no. 10. Disease stage and gender repartition**



**Table no. 12. Disease stages repartition according to the presence of sweating disorders**

	Nocturnal	Daily	Absent
IV <sup>th</sup> stage	5	2	3
III <sup>th</sup> stage	11	13	16
I <sup>st</sup> , II <sup>nd</sup> stage	44	15	91

**Figure no. 11. Disease stages repartition according to the presence of sweating disorders**



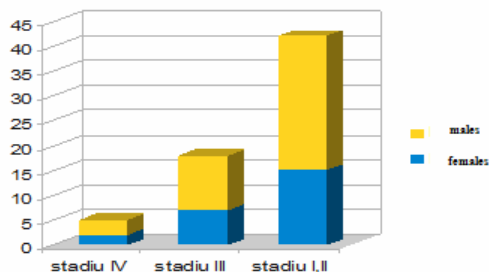
Ø Salivation disorders:

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**Table no. 13. Disease stage and gender repartition**

	Females	Males
IV <sup>th</sup> stage	2	3
III <sup>rd</sup> stage	7	11
I <sup>st</sup> , II <sup>nd</sup> stage	15	27

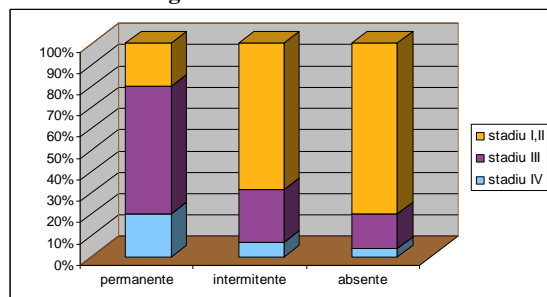
**Figure no. 12. Disease stage and gender repartition**



**Table no. 14. Disease stage repartition according to the presence of salivation disorders**

	Permanent	Intermittent	Absent
IV <sup>th</sup> stage	1	4	5
III <sup>th</sup> stage	3	15	22
I <sup>st</sup> , II <sup>nd</sup> stage	1	41	108

**Figure no. 13. Disease stage repartition according to the presence of sweating disorders**

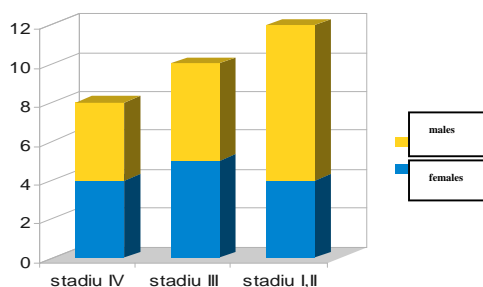


Ø Dysphagia:

**Table no. 15. Disease stage and gender repartition**

	Females	Males
IV <sup>th</sup> stage	4	4
III <sup>rd</sup> stage	5	5
I <sup>st</sup> , II <sup>nd</sup> stage	4	8

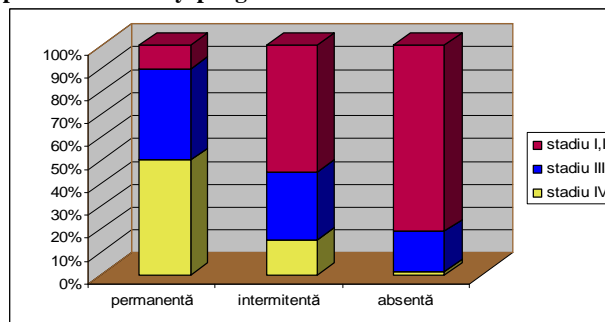
**Figure no. 14. Disease stage and gender repartition**



**Table no. 16. Disease stages repartition according to the presence of the dysphagia**

	Permanent	Intermittent	Absent
IV <sup>th</sup> stage	5	3	2
III <sup>th</sup> stage	4	6	30
I <sup>st</sup> , II <sup>nd</sup> stage	1	11	138

**Figure no. 15. Disease stages repartition according to the presence of the dysphagia**

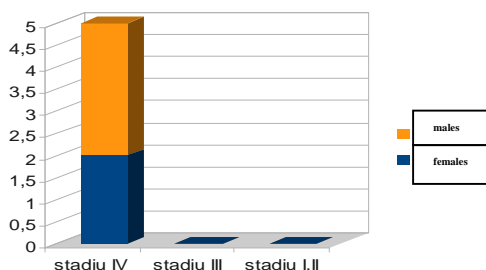


Ø Cardiovascular disorders:

**Table no. 17. Disease stage and gender repartition**

	Females	Males
IV <sup>th</sup> stage	2	3
III <sup>th</sup> stage	0	0
I <sup>st</sup> , II <sup>nd</sup> stage	0	0

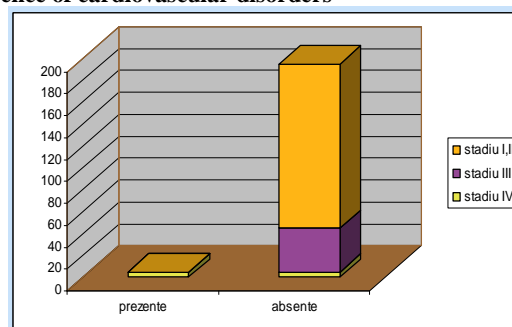
**Figure no. 16. Disease stage and gender repartition**



**Table no. 18. Repartition on disease stages according to the presence of cardiovascular disorders**

	Present	Absent
IV <sup>th</sup> stage	5	5
III <sup>th</sup> stage	0	40
I <sup>st</sup> , II <sup>nd</sup> stage	0	150

**Figure no. 17. Disease stages repartition according to the presence of cardiovascular disorders**



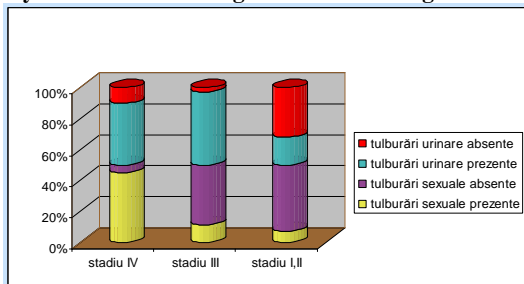
## CLINICAL ASPECTS

**Table no. 19. Repartition of the presence of sexual and urinary disorders according to the disease stage**

	Sexual disorders		Urinary disorders	
	Present	Absent	Present	Absent
IV <sup>th</sup> stage	9	1	8	2
III <sup>th</sup> stage	9	31	38	2
I <sup>st</sup> , II <sup>nd</sup> stage	22	128	54	96

6. Hussain IF, Brady CM, Swinn MJ, et al. Treatments of erectile dysfunction with sildenafil citrate in parkinsonism duet o Parkinson's Disease with observation on orthostatic hypotension. *J Neurol Neurosurg Psychiatry*. 2002;72:681.
7. Schulmann LM, Tabock RL, Bean J, Weiner WJ. Comorbidity of the non-motor symptoms of Parkinson's Disease. *Mov Disord*. 2001;16:507-510.
8. Wolters E. Variability in the clinical expression of Parkinson's Disease. *J Neurol Neurosurg Psychiatry*. 2008;65:197-203.

**Figure no. 18. Repartition of the presence of the sexual and urinary disorders according to the disease stage**



### CONCLUSIONS

- The majority of the patients who presented smell disorders also had associated constipation;
- The patients with sexual disorders from different evolution stages also had urinary disorders;
- The sweat disorders were present in an important proportion among those with salivation disorders;
- Orthostatic hypotension was identified in a small number of patients only in the IV<sup>th</sup> stage of disease;
- The constipation was present in 30% of the patients, the literature data presented a percentage of 28-61%;
- Dysphagia, sweating and salivation disorders were present in small percentages regarding the data from literature;
- None of the studied patients presents all the sensitive - sensory and autonomic disorders;
- Due to the fact that there are smell disorders, pain, constipation, gastro-intestinal disorders, sweat disorders even from the I<sup>st</sup> stage of the disease, we may assert that the non-motor symptoms have existed before establishing the diagnosis of Parkinson's disease;
- All the non-motor studied signs have a significant impact on the quality of life of the patients with Parkinson's disease.

### REFERENCES

1. Abbot RD, Petrowitch H, White LR, et al. Frequency of bowel movement and the future risk of Parkinson's Disease. *Neurology*. 2001;57:456-462.
2. Jankovic J, Tolosa E. *Parkinson's Disease & Movement Disorders*. V- edition. Chapter 5:70-74.
3. Goetz CG, Lutge W, Tanner CM. Autonomic dysfunction in Parkinson's disease. *Neurology*. 1986;36:73-75.
4. Witjas T, Kaphan E, Azulay JP, Blin O, Ceccaldi M, Pouget J, et al. Nonmotor fluctuations in Parkinson's disease: frequent and disabling. *Neurology*. 2002;13(59):408-413.
5. Wolters EC. Non-motor extranigral signs and symptoms in Parkinson's disease. *Parkinsonism Relat Disord*. 2009;15Suppl 3:S6-12.