

# GASTROINTESTINAL AND GENITOURINARY COMORBIDITIES IN PARKINSON'S DISEASE PATIENTS

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**Abstract:** A clinical, cross-sectional, observational study has been performed on a group of 86 consecutive patients with idiopathic Parkinson's disease (PD). The patients and their caregivers have been asked about disease duration, associated medical conditions and current medications. The overall assessed prevalence of gastrointestinal co-morbidities is 46,51% (95% CI 35.9-57); genitourinary co-morbidities have been identified in 31.39% (95%CI 21.5-41.2) of the interviewed patients. The most prevalent gastrointestinal co-morbidities were chronic gastritis/gastro-duodenitis 16.27% (95%CI 8.47-24.07), chronic constipation 8.13 % (95%CI 2.35-13.91), gastric / duodenal ulcer 4.65% (95% CI 0.2-9.1). Among genitourinary co-morbidities, benign prostatic hyperplasia ranked first 16.27% (95%CI 8.47-24.07), followed by recurrent urinary tract infection 9.3% (95%CI 3.16-15.44) and renal lithiasis 3.48% (95%CI 0-7.35). A statistically significant superior proportion of the women with PD included in this study reported gastrointestinal co-morbidities compared to men. No statistically significant difference was noticed between men and women PD patients regarding the prevalence of genitourinary co-morbidities

## INTRODUCTION

Even PD is clinically characterised mainly by motor symptoms, it is also associated with a wide range of non-motor symptoms as well as a number of related comorbid conditions.(1) It is commonly recognised that the non-motor symptoms significantly decrease the quality of life in affected patients.(2,3)

Frequently reported non-motor symptoms in PD include mental disturbances (cognitive impairment, dementia and hallucinations), sensory deficits (smell, eyes, ear), restless legs syndrome (RLS), sleep behavior disorder (RBD) and fatigue, autonomic symptoms of the cardiovascular, gastrointestinal and genitourinary systems (arterial hypotension, constipation, drooling, urinary problems).(1,4)

Recent studies, trying to investigate the connection between PD and comorbid conditions have uncovered novel therapeutic targets and diagnostic biomarkers; scientists hope that understanding the molecular mechanisms by which some of these comorbidities may be involved in the pathogenesis and progression of PD will advance personalized medicine for these patients.(4)

## AIM

This article will focus on the presentation of the assessed prevalence of gastrointestinal and genitourinary comorbidities in a group of PD patients, as a part of a study aimed to assess the non-motor symptoms in Parkinson's disease patients from the South-eastern Romania.

## MATERIALS AND METHODS

A clinical, cross-sectional, observational study has been performed on a group of 86 consecutive patients with idiopathic Parkinson's disease from 5 Outpatients Clinics of Constanta, between 01 January 2017 and 31 May 2018.

Inclusion criteria: diagnosis of idiopathic Parkinson's

disease according to the UK Parkinson's Disease Society Brain Bank Diagnostic Criteria.(5)

Exclusion criteria: atypical neurological features, suggestive for other causes for Parkinsonism (e.g. multiple system atrophy).

The patients and their caregivers have been asked about disease duration (period, in years, between the diagnosis date and the date of assessment), associated medical conditions and current medications; sex and age were also recorded. Subsequently, the subjects have been assessed using the Scale for Outcomes in Parkinson's Disease for Autonomic Symptoms (SCOPA-AUT) (6) as a self-administered questionnaire.

Statistical analysis: calculation of mean or median values and/or percentages, together with the corresponding standard deviations, 95% confidence intervals and parametric tests for statistical relevance, using Word Excel and MedCalc applications.

## RESULTS

Main characteristics of studied population:

1. 56% males;
2. age 51 to 89 years; mean age = 70.63 years [SD = 9.74]; mean age in women =71.89 years [SD 10.2]; mean age in men = 69.64 years [SD 9.35]. Median = 71 years;
3. mean disease duration 6.33 years [SD 2.98]; 6.25 years [SD=2.87] in women and 6.35 years [SD=3.03] in men;
4. mean disease duration 6.33 years [SD 2.98]; 6.25 years [SD=2.87] in women and 6.35 years [SD=3.03] in men.

The overall assessed prevalence of gastrointestinal comorbidities is 46,51% (95% CI 35.9-57); genitourinary comorbidities have been identified in 31.39% (95% CI 21.5-41.2) of the interviewed patients.

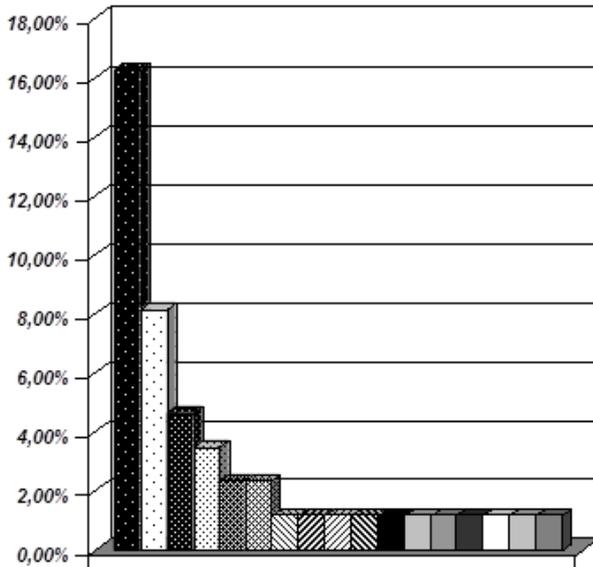
Among gastrointestinal co-morbidities, the most prevalent were chronic gastritis/gastro-duodenitis 16.27% (95% CI 8.47-24.07), chronic constipation 8.13 % (95% CI 2.35-

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## CLINICAL ASPECTS

13.91), gastric / duodenal ulcer 4.65% (95% CI 0.2-9.1), gastroesophageal reflux disease (GERD) and chronic cholecystitis 3.48% (95% CI 0-7.35) each, cholecystectomy 2.32% and biliary dyskinesia 2.32% (95% CI 0-5.5) each; all the others have been reported by only 1.16% (95% CI 0-3.42) of the interviewed subjects (figure no. 1).

**Figure no. 1. Prevalence of gastrointestinal co-morbidities in the studied group**



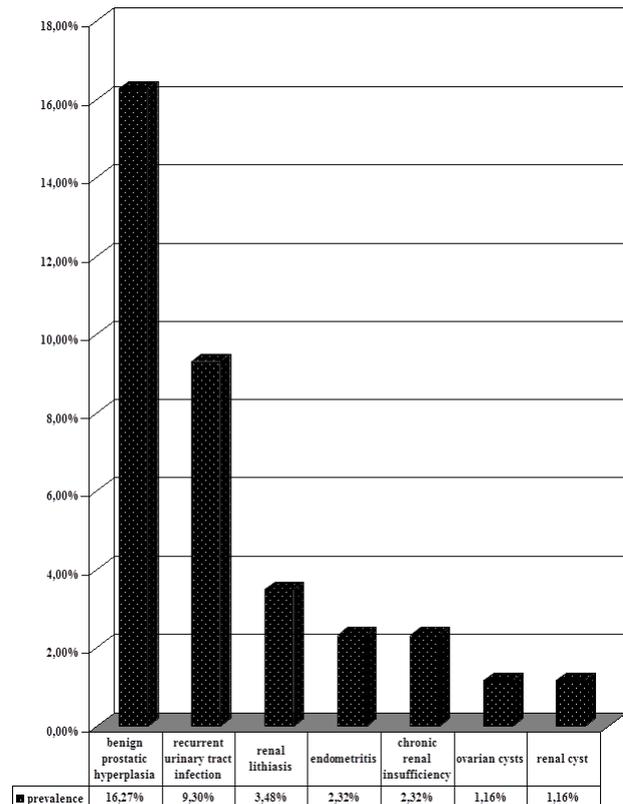
■ chronic gastritis/gastro-duodenitis	16,27%
□ chronic constipation	8,13%
■ gastric / duodenal ulcer	4,65%
□ chronic cholecystitis	3,48%
■ cholecystectomy	2,32%
■ biliary dyskinesia	2,32%
■ hepatic steatosis	1,16%
■ chronic colitis	1,16%
■ esophageal stenosis	1,16%
■ esophagitis	1,16%

As it can be observed in figure no. 2, among genitourinary co-morbidities, benign prostatic hyperplasia (BPH) ranked first 16.27% (95% CI 8.47-24.07), followed by recurrent urinary tract infection 9.3% (95% CI 3.16-15.44), renal lithiasis 3.48% (95% CI 0-7.35), endometritis and chronic renal insufficiency 2.32% (95% CI 0-5.5) each, renal and ovarian cysts 1.16% (95% CI 0-3.42) each of them. According to sex, a statistically significant superior proportion of the women with PD included in this study reported GI co-morbidities compared to men: 86.95% (95%CI 73.18-100) versus 52.94% (95%CI 36.16-69.72); p=008.

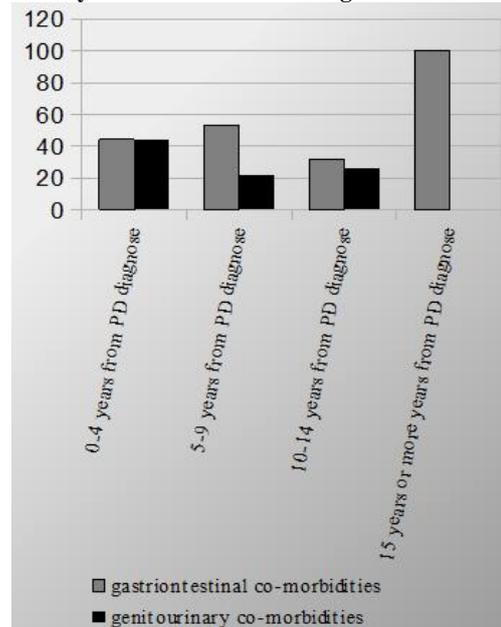
No statistically significant difference was noticed between men and women PD patients regarding the prevalence of genitourinary co-morbidities: 52.94% (95%CI 36.16-69.72) in men versus 39.13% (95%CI 19.18-59.08) in women; p=0.309.

No statistically significant correlation has been observed between the prevalence of gastrointestinal and genitourinary co-morbidities and disease duration in the assessed PD patients (figure no. 3).

**Figure no. 2. Prevalence of genitourinary co-morbidities in the studied group**



**Figure no 3. Prevalence of gastrointestinal and genitourinary co-morbidities according to disease duration**



## DISCUSSIONS

The overall observed prevalence of gastrointestinal co-morbidities is quite impressive, almost half (46,51%) of the investigated subjects reporting at least one.

Other international studies found also that the most common comorbid affected systems (various severity levels) in the assessed PD patients were gastrointestinal (up to 55%).(1,7)

## CLINICAL ASPECTS

Data from a large Scottish primary care database, showed high prevalence rates for people with PD for hypertension (41.1%), constipation (27.5%), coronary heart disease (25.1%) and painful conditions (21.7%), but the biggest differences after standardisation for age, sex and socioeconomic deprivation were for constipation (OR 3.92, 95% CI 3.57–4.31) compared with match patients without PD.(1)

The remarkable prevalence of painful disorders, gastrointestinal and genitourinary disorders could all be explained by the known non-motor complications of PD.(1,8,9,10)

Interestingly, in our study, chronic constipation has been reported by only 8.13 % of the interviewed PD patients as a known / previously diagnosed associated medical condition, but analysing the answers to the questions regarding the frequency of bowel movements from the SCOPA-AUT scale, it can be noticed that, in fact, as much as 66.3% (95% CI 56.3-76.3) of the subjects experienced constipation (defined as a bowel movement twice a week or less) with variable frequency (from “sometimes” to “often”).

A similar situation has been found in a study which tested the accuracy of an interview-based assessment of comorbidity, in patients with PD: patients recollection was comparable in accuracy to chart review for moderate or severe comorbid conditions (and not for mild ones) and, intriguingly, patients who were cognitively intact were more likely to omit comorbid difficulties; in conclusion, the authors recommended that interviewers use more specific questions about diseases or other tests in order to increase patient accuracy.(7)

This also confirms the previously reported poor recognition and treatment of non-motor symptoms in PD patients.(11,12)

The relatively high prevalence of benign prostatic hyperplasia (16.27%, 95% CI 8.47-24.07) found by our study could be related to the age of PD patients (mean age in men = 69.6 years, 95% CI 67.6-71.5)

Recurrent urinary tract infections which affected 9.3% (95% CI 3.16-15.44) of the interviewed subjects could be also explained by age and by the previously reported prevalence of significant post-void residual volume - up to 16% of patients with idiopathic PD.(10,13)

Recent epidemiological studies suggest that some of these comorbidities may increase the risk of PD and even precede the onset of motor symptoms and that future research should focus on PD patients with comorbid conditions as they may better represent the typical PD patient.(4,10)

## CONCLUSIONS

The overall observed prevalence of gastrointestinal co-morbidities is quite impressive, almost half (46,51%) of the investigated subjects reporting at least one. The most prevalent gastrointestinal co-morbidities were chronic gastritis/gastro-duodenitis, chronic constipation and gastric/duodenal ulcer .

Genitourinary co-morbidities have been identified in 31.39% of the interviewed patients: benign prostatic hyperplasia ranked first, followed by recurrent urinary tract infection and renal lithiasis.

A statistically significant superior proportion of the women with PD included in this study reported gastrointestinal co-morbidities compared to men.

No statistically significant difference was noticed between men and women PD patients regarding the prevalence of genitourinary co-morbidities.

No statistically significant correlation has been observed between the prevalence of gastrointestinal and

genitourinary co-morbidities and disease duration in the assessed PD patients.

The continuation of the study, including more PD patients, would increase the statistical significance of the results.

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