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MANAGEMENT OF FILLING PHASE LOWER URINARY TRACT SYMPTOMS IN PATIENTS WITH PARKINSON'S DISEASE: A SYSTEMATIC REVIEW.

Hypothesis / aims of study

Parkinson's Disease is predominantly a motor disorder manifesting with bradykinesia, rigidity, rest tremor and gait disturbances, however non-motor symptoms (NMS) are a common accompaniment. The prevalence and severity of lower urinary tract symptoms (LUTS) increases with advancing PD and other associated autonomic dysfunction, with filling phase being more common than voiding phase symptoms.

We performed a systematic review to assess the available evidence on the efficacy and safety of treatments for filling phase LUTS in Parkinson's Disease (PD) patients.

Study design, materials and methods

The following databases were widely searched from inception to the end of June 2015 for published and unpublished research evidence: MEDLINE; ISI Web of Science (WoS), including Science Citation Index, and the Conference Proceedings Citation Index-Science; Scopus; The Cochrane Library including the Cochrane Systematic Reviews Database (CDSR), Cochrane Controlled Trials Register (CCRT) and ClinicalTrials.gov database. The U.S. Food and Drug Administration (FDA) website and the European Medicines Agency (EMA) website were also searched. Existing systematic reviews were also checked for eligible studies. Full search terms were a combination of: "Parkinson", "overactive bladder and/or (OAB)", "filling phase LUTS", "levodopa", "dopamine agonists", "monoamine oxidase type B inhibitors and/or MAO-B inhibitors", "antimuscarinics", "anticholinergics", "oxybutynin", "propiverine", "trospium", "tolterodine", "solifenacin", "darifenacin", "fesoterodine", "mirabegron", "botulinum neurotoxin type A and/or BoNT/A", "alpha blockers", "alfuzosin", "tamsulosin", "silodosin", "deep brain stimulation, tibial nerve stimulation (TNS), behavioral therapy".

Results

The multi-database search led to a total of 23 relevant studies about 1) the application of Parkinson's drugs and deep brain stimulation (DBS) in OAB affected patients and 2) the application of OAB drugs, BoNT/A, behavioral therapy, alpha blockers and TNS in PD patients.

We identified 8 studies regarding Parkinson's drugs in OAB affected patients (4 on levodopa treatment, 3 studies on dopaminergic agonists, 1 study on MAO-B inhibitor rasagiline) and 4 studies on DBS. A total of 3 studies regarding antimuscarinics have been identified (1 on oxybutynin, 1 on tolterodine and 1 on solifenacin). Finally, we identified and analyzed 4 studies on BoNT/A, 1 on behavioral therapy, 3 on TNS. The search did not reveal any specific alpha-blocker-OAB-PD tailored study.

Currently, only one randomized clinical trial (RCT) is available on solifenacin. See details in Table 1.

Interpretation of results

Filling phase LUTS may result from numerous causes (1) and these should be assessed during the evaluation of the patient (2). Levodopa and dopamine agonists are the first line treatments for managing the motor symptoms of PD. Their effects on NMS have been less studied and there seems to be an inconsistent effect of these medications on filling phase LUTS. The response to DBS is however more consistent and, in general, studies have shown improvement in urodynamic parameters. Although a well-designed randomized control study on solifenacin has been published, antimuscarinics have not been specifically studied in patients with PD. The benefits of intradetrusor injections of botulinum toxin seen in patients with other neurological disorders such as multiple sclerosis and spinal cord injury seem to extend to patients with PD, but well-designed randomized controlled studies are necessary. Tibial nerve stimulation (TNS), administered percutaneously or transcutaneously, is also an effective alternative, to be further investigated as well.

Concluding message

Treatments used for the management of filling phase LUTS are effective in PD, however levels of evidence were insufficient to propose recommendations for a treatment protocol. This review highlights the need for more well-designed adequately powered studies so that more definitive conclusions could be drawn.

	Studies	RCTs
Parkinson's Disease treatment		
Drugs		
L-Dopa	4	
Dopaminergic agonists	3	
MAO-B inhibitors	1	
DBS	4	
Filling phase LUTS treatment		
Antimuscarinics	2	1
BoNT/A	4	
Other treatments		
Behavioral therapy	1	
Alpha-blockers	/	
TNS	3	
TOTAL	22	1

Table 1. Multi-database search.

RCTs: randomized clinical trials. MAO-B: monoamine oxidase type B inhibitors.

BoNT/A: botulinum neurotoxin type A. TNS: tibial nerve stimulation.

References

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