



# NON-MOTOR SYMPTOMS OF PARKINSON'S DISEASE

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Non-Motor Symptoms of Parkinson's Disease, K Ray Chaudhuri, Oxford University Press, 2009, 0199237239, 9780199237234, 393 pages. Patients with Parkinson's disease (PD) are known to suffer from motor symptoms of the disease, but they also experience non-motor symptoms (NMS) that are often present before diagnosis or that inevitably emerge with disease progression. The motor symptoms of Parkinson's disease have been extensively researched, and effective clinical tools for their assessment and treatment have been developed and are readily available. In contrast, researchers have only recently begun to focus on the NMS of Parkinson's Disease, which are poorly recognized and inadequately treated by clinicians. The NMS of PD have a significant impact on patient quality of life and mortality and include neuropsychiatric, sleep-related, autonomic, gastrointestinal, and sensory symptoms. While some NMS can be improved with currently available treatments, others may be more refractory and will require research into novel (non-dopaminergic) drug therapies for the future. Edited by members of the UK Parkinson's Disease Non-Motor Group (PD-NMG) and with contributions from international experts, this book summarizes the current understanding of NMS symptoms in Parkinson's disease and points the way towards future research..

Cognitive Impairment and Dementia in Parkinson's Disease , Murat Emre, 2010, Medical, 272 pages. Parkinson's disease has long been perceived as a pure motor disorder, partly due to its initial description by James Parkinson, who suggested that "senses and intellect remain ....

Parkinson's disease , Gerald Stern, 1990, Medical, 688 pages. .

Handbook of Parkinson's disease , William C. Koller, Apr 21, 1992, Medical, 618 pages. .

Diagnostic and Treatment Guidelines in Parkinson's Disease , Dr. Rajesh Pahwa, Dr. Kelly E. Lyons, Feb 7, 2013, Medical, 48 pages. This Pocket Notes will review the current guidelines available for the diagnosis and treatment of Parkinson's Disease and provide the results of the guidelines in various ....

Living With Parkinson's Disease , David Belgum, Jan 31, 2008, Medical, 83 pages. Living with Parkinson's Disease explores the disease from a professional point of view and includes short pieces, written primarily by Parkinson's patients, about what it is ....

The Comprehensive management of Parkinson's disease , Matthew B. Stern, Howard I. Hurtig, 1988, Medical, 205 pages. .

Parkinson's disease , Donald Brian Calne, Susan M. Calne, 2001, Medical, 479 pages. This volume is an up-to-date, authoritative, and comprehensive examination of Parkinson's Disease and related disorders that primarily involve the basal ganglia. The ....

Parkinson's Disease , E. Ronken, G. J. M. van Scharrenburg, 2002, Medical, 159 pages. This book is the proceedings of the first Solvay Pharmaceuticals research symposium, and is dedicated to Parkinson's disease and provides an update of clinical and preclinical ....

Rating Scales in Parkinson's Disease Clinical Practice and Research, Cristina Sampaio, Christopher G. Goetz, Anette Schrag, Jun 28, 2012, Medical, 328 pages. For many years, the need to develop valid tools to evaluate signs and symptoms of Parkinson Disease (PD) has been present. However the understanding of all intricacies of ....

The shaking palsy (Parkinson's disease) a symposium, Harold William Elliott, Blaine Nashold, 1959, Medical, 160 pages. .

Parkinson's Disease Treatment Guide for Physicians , J. Eric Ahlskog, 2009, Medical, 382 pages. "In this book, Dr. Ahlskog provides a logical, comprehensive, and efficacious treatment approach to all aspects of this disorder. He tells the reader which drugs work best for ....

Diagnosis and Management of Parkinson's Disease , Cheryl H. Waters, 2008, Medical, 288 pages.

Provides the clinician with the concepts involved in effective management of Parkinson's disease. The diagnosis of PD is reviewed, as well as differential diagnosis ....

Parkinson's Disease and Other Movement Disorders , Mark Edwards, Niall Quinn, Kailash Bhatia, 2008, Medical, 312 pages. Movement disorders are a group of neurological conditions that are characterised by problems with movement - either unwanted movements, such as tremors, jerks or twitches, or ....

Parkinson's Disease. A Guide to Medical Treatment , Michael Carranza, Madeline R. Snyder, Jessica Davenport Shaw, Theresa A. Zesiewicz, May 30, 2013, Medical, . .

Parkinson's disease reducing symptoms with nutrition and drugs, Geoffrey Leader, Lucille Leader, 2006, , 165 pages. This groundbreaking book offers a powerful blending of nutritional and pharmaceutical benefits. In user-friendly style, it aims to reduce distressing symptoms, improve general ....

Explaining Parkinson's , Doreen Jarrett, 2011, Parkinson's disease, 136 pages. Parkinson's Disease, or the onset of Parkinson's, is a very stressful time for those unfortunate enough to suffer it. Often guidance on the subject is conflicting and unclear ....

Several studies, including work from the Parkinson's disease (PD) non-motor group and others, have established that the non-motor symptoms of PD are common, occur across all stages of PD, are under-reported, and are a key determinant of quality of life. Research suggests that the non-motor symptoms of the disease are frequently unrecognised by clinicians and remain untreated. Even when identified, there is a common perception that many of these symptoms are untreatable. The role of dopaminergic drugs in treating the various non-motor problems of PD, although clinically recognised, has received little attention. In this Review, we investigate the dopaminergic basis of the range of non-motor symptoms that occur in PD such as depression, apathy, sleep disorders (including rapid-eye movement sleep behaviour disorder), and erectile dysfunction. We discuss the evidence that these symptoms are treatable, at least in part, with various dopaminergic strategies and, where relevant, we also refer to the use of deep-brain stimulation of appropriate targets in the brain. This Review provides a comprehensive overview of the management of this challenging aspect of PD.

Articles Pramipexole in patients with early Parkinson's disease (PROUD): a randomised delayed-start trial Anthony HV Schapira, Michael P McDermott, Paolo Barone, Cynthia L Comella, Stefan Albrecht, Helen H Hsu, Daniel H Massey, Yoshikuni Mizuno, Werner Poewe, Olivier Rascol, Kenneth Marek. The Lancet Neurology 1 August 2013; Volume 12, Issue 8: Page 747

Articles Efficacy of pramipexole and transdermal rotigotine in advanced Parkinson's disease: a double-blind, double-dummy, randomised controlled trial Werner H Poewe, Olivier Rascol, Niall Quinn, Eduardo Tolosa, Wolfgang H Oertel, Emilia Martignoni, Markus Rupp, Babak Boroojerdi, on behalf of the SP 515 Investigators. The Lancet Neurology 1 June 2007; Volume 6, Issue 6: Page 513

Articles Pramipexole for the treatment of depressive symptoms in patients with Parkinson's disease: a randomised, double-blind, placebo-controlled trial Paolo Barone, Werner Poewe, Stefan Albrecht, Catherine Debieuvre, Dan Massey, Olivier Rascol, Eduardo Tolosa, Daniel Weintraub. The Lancet Neurology 1 June 2010; Volume 9, Issue 6: Page 573

A range of sleep and other night-time problems can occur in Parkinson's. Up to 90% of people with Parkinson's will experience some form of sleep problem, which range from difficulty falling asleep (insomnia) to nightmares, talking during sleep, wandering at night, passing urine or difficulty in turning in bed.

Zalamanda: I recently came across a video article [on the Guardian website: Dopamine: the

two-faced molecule behind addiction and Parkinson's disease - video] that suggested a relationship between dopamine and the level of wanting a reward - ie that reduced levels of dopamine resulted in lower motivation.

But over the last few years I seem to have developed a habitual lateness, a sort of inertia that prevents me from worrying about getting ready to leave, right up to the last minute. I had put this down to the frustrations and mild boredom of being a stay-at-home mum despite wanting to be at work (or at least not tied to school hours!), but now, I'm not so sure.

I am aware of the sensation that you mention which feels like pins and needles (paraesthesia) or 'formication' and pain in general. I have recently developed a pain classification which will become available later this year and will be the first of its kind that specifically measures this. I have highlighted the importance of pain in Parkinson's in my publications.

Are your "invisible symptoms" your most problematic? Immense advances have been made in the treatment of motor symptoms of Parkinson's. Yet our understanding of the nonmotor symptoms first described by James Parkinson in the 19th century has lagged behind, with advances in the past ten years just beginning to expand our knowledge.

At the same time, these symptoms are often the most challenging for people living with Parkinson's, their care partners and their doctors. If treated effectively, nonmotor symptoms - particularly lesser known symptoms such as fatigue, vision problems, sweating and crying -- can be the most important determinant in improving quality of life in Parkinson's.

K. Ray Chaudhuri, D.Sc., M.D., is Professor in Neurology and Movement Disorders and a Consultant Neurologist at Kings College and Institute of Psychiatry, London, an Academic Health Sciences Centre. He also serves as Principal Investigator at the MRC Center for Neurodegeneration Research at Kings College, London and Medical Director of the National Parkinson Foundation International Centre of Excellence at Kings College, London.

Professor Chaudhuri's major research interests are continuous drug delivery treatment of PD and restless legs syndrome, Parkinsonism in minority ethnic groups and sleep problems in PD. He is the author of 215 papers including reviews and book chapters and is the co-editor of four books on Parkinson's disease and Restless Legs Syndrome and over 200 published peer reviewed abstracts. He is the Chief Editor of the first comprehensive textbook on nonmotor aspects of Parkinson's, for which he received a BMA book commendation prize.

Professor Chaudhuri has contributed extensively to educational radio and television interviews including those on BBC and CNN, as well as to newspaper articles and videos. He has also lectured extensively on PD and restless legs syndrome at international meetings in the USA, Japan, continental Europe, South America, South Africa, India and Australia.

He sits on the Nervous Systems Committee of the United Kingdom's Department of Health, National Institute of Health Research. Professor Chaudhuri holds several roles with the Movement Disorders Society (MDS), including Co-Chairman of its appointments/liaison committee; Chairman of its Parkinson's nonmotor study group; and member of its scientific program committee.

Professor Chaudhuri serves on the American Academy of Neurology's task force of practice parameter group for PD and RLS and more recently Nonmotor Symptoms of Parkinson's. He is the European Editor of Basal Ganglia and is in the editorial board of Parkinsonism and Related Disorders and Journal of Parkinson's Disease. He is also the lead for London South CLRN neurosciences sub-specialty group.

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The nonmotor symptoms (NMSs) of Parkinson's disease (PD) have received a lot of attention in the last few years. Despite this fact, they have still been underrecognized and undertreated [1, 2]. NMS may include cognitive problems, apathy, depression, anxiety, hallucinations, and psychosis as well as sleep disorders, fatigue, autonomic dysfunction, sensory problems, and pain [1]. Since these symptoms substantially contribute to patients' quality of life and are a frequent cause of hospitalization and institutionalization, the NMSs and their management have been recognized by the UK National Institute for Clinical Excellence as an important unmet need in PD [3]. Besides dopamine and Lewy-type pathology involving both striatal and extrastriatal brain regions, deficits in other neurotransmitter systems and/or other types of brain pathologies seem to play a key role in the pathogenesis of NMS in PD [4-6].

It has been clearly shown that dopaminergic treatment improves motor symptoms and the quality of life in patients with PD. However, it only partly improves some features of the NMS, and it is not free from nonmotor side effects such as hallucinations and other psychotic symptoms, irritability, sleep attacks, and impulse control disorders. Furthermore, one study found that the patients who survived at 20 years from PD diagnosis suffered mainly from the nondopaminergic symptoms including falls, choking, dysarthria, but also dementia, visual hallucinations, daytime somnolence, symptomatic postural hypotension, and urinary incontinence [7]. Therefore, the management of these non-dopaminergic symptoms is a priority for research in the near future.

In addition to pharmacotherapy, high-frequency deep brain stimulation of the subthalamic nucleus (STN DBS) is a powerful surgical treatment in well-selected candidates with advanced PD. STN DBS leads to improvements in dopaminergic drug-sensitive symptoms and reductions in subsequent drug dose and dyskinesias [8]. Although quality of life improves substantially, the procedure cannot be recommended for the treatment of NMS, and it may even cause specific cognitive side effects and may increase the risk for suicide. Skilled speech and physical therapy with cueing to improve gait, cognitive therapy to improve transfers, exercises to improve balance, and training to build up muscle power and increase joint mobility are efficacious. Regular physical and mental exercise is therefore recommended for all PD patients [9].

As outlined above, multidisciplinary approach including both pharmacological and nonpharmacological treatment of PD is essential; however, the current delivery of allied healthcare services is inadequate, and many people who require such care are not being referred to the relevant specialist. Parkinson's Standards of Care Consensus Statement will soon be released by the European Parkinson's Disease Association and should be implemented in Europe in the near future.

Besides symptomatic treatment, search for the disease-modifying, neuroprotective, and restorative

treatment of PD is ongoing. Despite many so far unresolved issues, gene- and stem-cell-based therapies as well as immunotherapy targeting alpha-synuclein might become treatment options in the future. Development of these therapies is dependent on an accurate and comprehensive understanding of the pathogenesis and pathophysiology of PD and on the ability of very early diagnosis of premotor stages of PD. Therefore, a search for specific biomarkers (clinical, neuroimaging, biochemical, genetic) for early (premotor) diagnosis and for the disease progression is essential and large multicenter trials are underway.

P. Barone, A. Antonini, C. Colosimo et al., "The PRIAMO study: a multicenter assessment of nonmotor symptoms and their impact on quality of life in Parkinson's disease," *Movement Disorders*, vol. 24, no. 11, pp. 1641–1649, 2009. View at Publisher · View at Google Scholar · View at PubMed · View at Scopus

M. A. Hely, W. G. J. Reid, M. A. Adena, G. M. Halliday, and J. G. L. Morris, "The Sydney Multicenter Study of Parkinson's disease: the inevitability of dementia at 20 years," *Movement Disorders*, vol. 23, no. 6, pp. 837–844, 2008. View at Publisher · View at Google Scholar · View at PubMed · View at Scopus

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