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Parkinson's Disease
Current Awareness Bulletin

September 2023

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1. **Feasibility and efficacy of video-call speech therapy in patients with Parkinson's disease: A preliminary study.**

Authors: Chang, Hee Jin;Kim, Jiae;Joo, Jae Young and Kim, Han-Joon

Abstract: BACKGROUND: Speech therapy is highly effective for patients with Parkinson's disease (PD) who have speech difficulties; however, its accessibility is limited. Online video-call speech therapy has been explored as an alternative option for PD patients. OBJECTIVES: To evaluate the feasibility and efficacy of video-call speech therapy for PD patients. METHODS: This prospective, comparative study was conducted between July and September 2022. PD patients with speech difficulties were divided into two groups, online speech therapy via video call and in-person therapy at hospital, based on their willingness to visit the hospital frequently. The patients underwent 12 sessions of speech therapy, focusing on respiration and phonation. Acoustic assessments, auditory-perceptual assessment, and voice handicap index (K-VHI10) were evaluated at baseline, post-therapy, and follow-up. RESULTS: Eleven patients were enrolled in the study, though one patient from the online group withdrew. Ten patients completed the therapy (five in each group) without missing a session. The baseline acoustic measurements did not differ between the two groups. After therapy, both group showed an increase in voice intensity and improvement in overall loudness. The post-therapy change from baseline in the acoustic measurements was not significantly different between the two groups. The effect of therapy were maintained in the follow-up evaluation in both groups. The K-VHI10 decreased significantly from baseline to post-therapy and further at follow-up in both groups, with no significant difference between two groups. CONCLUSION: The online speech therapy via video call is feasible in PD patients with speech difficulties and as effective as in-person therapy. Copyright © 2023 Elsevier Ltd. All rights reserved.

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2. **Association of Postoperative Delirium and Parkinson Disease After Common United States Surgical Procedures.**

Authors: Dham, Bhavpreet;Richard, Irene;Schneider, Eric B. and George, Benjamin P.

Abstract: INTRODUCTION: To determine the association of Parkinson disease (PD) and postoperative delirium following common surgical procedures. METHODS: We performed a retrospective database analysis of the National Inpatient Sample. We used a matched sample of patients with and without PD who underwent any of ten common surgical procedures in the US, 2005-2014. Primary outcome measure was postoperative delirium for patients with and without PD. Secondary measures included disposition, length of stay, and hospital costs. RESULTS: There were 3,235,866 patients receiving any of the ten most common operative procedures, 2005-2014. There were 35,743 patients with and without PD matched based on age, sex, elective admission status, Charlson Comorbidity index, and presence of dementia. Median age was 77 y (interquartile range 72-82), median Charlson Comorbidity index was 1 (standard deviation 0-2), 46.6% were female, and 46.8% were admitted electively. The three most common operative procedures were hip arthroplasty (28.5%), knee arthroplasty (16.1%), and percutaneous coronary angioplasty (14.9%).

3. **Life-space mobility, balance, and self-efficacy in Parkinson disease: A cross-sectional study.**

Authors: Dutra, A. C. L.;Soares, N. M.;Artigas, N. R.;Pereira, G. M.;Krimberg, J. S.;Ovando, A. C.;Schuh, A. F. S. and de Mello Rieder, C. R.

Publication Date: 2023

Abstract: Background: Life-space mobility (LSM) is a mobility measure that assesses the physical and social environments through which people move during their daily lives. Objective(s): To characterize LSM among individuals with Parkinson disease and explore the relationship between LSM, self-efficacy, and balance. Design(s): A cross-sectional study. Setting(s): Movement disorder clinic at a teaching hospital. Participant(s): Eighty-eight participants with Parkinson disease. Intervention(s): Not applicable. Main Outcome Measure(s): The dependent variable (LSM) was assessed using the Life-Space Assessment (LSA) instrument. Balance evaluation and balance self-efficacy were assessed using the Mini Balance Evaluation Systems Test (Mini-BESTest) and the Activities-Specific Balance Confidence Scale, respectively. Other variables, such as age, disease staging (Hoehn-Yahr staging system), cognition (Montreal Cognitive Assessment), and depressive symptoms (Beck Depression Inventory-II), were also measured. Result(s): The mean LSA score was 65.2 (SD: 22.8) and mean age was 63.2 years (SD: 10.5 years). Among the 88 patients, 32 (36.4%) were classified as restricted LSM. Age (p =.03), disease severity (p =.02), cognition (p =.02), and motor subtype (p =.006) were associated with more restricted LSM among participants. A multiple linear regression model demonstrated that LSM can be predicted by balance performance ($R2 = 0.377$; p = 0.377; p Conclusion(s): Age, disease severity, cognition, motor subtype, balance self-efficacy, and balance performance are associated with LSM. Understanding and improving balance and self-efficacy in people with Parkinson disease could facilitate community mobility and promote functional independence and health maintenance. Copyright © 2022 American Academy of Physical Medicine and Rehabilitation.

4. **Supporting Parkinson's disease medication safety for nurses in the acute care setting through an educational intervention study**

Authors: Ellis, D.M., Dowdell, E.B., De Slavy, J.R., Hummel, L.L., Kropkowski, L.R., Vernon, G.M., Calara, H., Houton, E., Wackrow, K., Matar, N. and Bernhardt, P.W.

Publication Date: 2023

Abstract: Introduction: Patient medication safety in the acute care setting is a foundational action provided by nurses and healthcare providers for safe patient care. Hospitalization of patients with Parkinson's disease (PD) can be dangerous due to the unique and variable medication regimen required. The research question posed in this study was the following: does a PD medication educational intervention in the clinical setting enhance knowledge, comfort, and competence of practicing nurses in the care of patients with PD regarding their medication safety? Design: A quantitative study design was used for this five-month, two-

part study with a sample of practicing RNs at three different hospitals. Part one of the study assessed nurses' initial knowledge of PD and PD medication safety and included an educational intervention. Part two of the study occurred three months later and evaluated if knowledge from the educational intervention was retained. Method(s): The study was conducted in two parts and included a pre-test, educational intervention, post-test, and follow-up test three months later. The educational intervention consisted of a 15-minute video of two PD advanced practice nurses being interviewed regarding the general care of a patient with PD. The pre-test, posttest, and follow-up test were identical and consisted of six questions regarding knowledge, comfort, and self-perceived competency. Result(s): A total sample of 252 RNs participated in this study. Statistically significant improvements in knowledge, comfort, and self-perceived competency were observed in the post-test scores compared to pre-test scores. These statistically significant improvements were retained after three months, despite a 42.9% decrease in the number of responders (n=252 vs. n=144). Additionally, compared to the post-test, there were no statistically significant declines in knowledge, comfort, or competency in the follow-up test. Conclusion(s): A review of the literature and this study both support the need for increased education for practicing nurses as it relates to PD and PD medication safety. Healthcare systems, organizations, and associations that support continuing education for nurses create a stronger workforce. Education has been found to keep nurses up to date on the latest advances in care and treatment while also providing exposure to other areas of nursing beyond their clinical settings. (Table Presented).

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5. **Exploring the Efficacy of the Effortful Swallow Maneuver for Improving Swallowing in People With Parkinson Disease-A Pilot Study.**

Authors: Gandhi, P.;PeladeauPigeon, M.;Simmons, M. and Steele, C. M.

Publication Date: 2023

Journal: Archives of Rehabilitation Research and Clinical Translation (pagination)

Abstract: Objectives: To determine the immediate (compensatory) and longer term (rehabilitative) effect of the effortful swallow (ES) maneuver on physiological swallowing parameters in Parkinson disease. Design(s): Virtual intervention protocol via Microsoft Teams with pre- and post-videofluoroscopic swallowing studies. Setting(s): Outpatient hospital setting, with intervention performed virtually. Participant(s): Eight participants (median age 74 years [63-82])with Parkinson disease (years post onset 3-20) with a Hoehn and Yahr scale score between 2 and 4 (N=8). Intervention(s): ES maneuver, initiated using a maximum effort isometric tongue-to-palate press, with biofeedback provided using the Iowa Oral Performance Instrument. The protocol included 30 minute sessions twice daily, 5 days/week for 4 weeks. Main Outcome Measure(s): Penetration-Aspiration Scale scores, time-to-laryngeal-vestibule-closure, total pharyngeal residue, and pharyngeal area at maximum constriction as seen on lateral view videofluoroscopy. Result(s): No consistent, systematic trends were identified in the direction of improvement or deterioration across Penetration-Aspiration Scale scores, time-to-laryngeal-vestibule-closure, pharyngeal area at maximum constriction, or total pharyngeal residue. Conclusion(s): Heterogeneous response to the ES as both a compensatory and rehabilitative technique. Positive response on the compensatory probe was predictive of positive response after rehabilitation.Copyright © 2023 The Authors

6. Machine learning models for diagnosis and prognosis of Parkinson's disease using brain imaging: general overview, main challenges, and future directions

Authors: Garcia Santa Cruz, Beatriz;Husch, Andreas and Hertel, Frank

Abstract: Parkinson's disease (PD) is a progressive and complex neurodegenerative disorder associated with age that affects motor and cognitive functions. As there is currently no cure, early diagnosis and accurate prognosis are essential to increase the effectiveness of treatment and control its symptoms. Medical imaging, specifically magnetic resonance imaging (MRI), has emerged as a valuable tool for developing support systems to assist in diagnosis and prognosis. The current literature aims to improve understanding of the disease's structural and functional manifestations in the brain. By applying artificial intelligence to neuroimaging, such as deep learning (DL) and other machine learning (ML) techniques, previously unknown relationships and patterns can be revealed in this high-dimensional data. However, several issues must be addressed before these solutions can be safely integrated into clinical practice. This review provides a comprehensive overview of recent ML techniques analyzed for the automatic diagnosis and prognosis of PD in brain MRI. The main challenges in applying ML to medical diagnosis and its implications for PD are also addressed, including current limitations for safe translation into hospitals. These challenges are analyzed at three levels: disease-specific, task-specific, and technology-specific. Finally, potential future directions for each challenge and future perspectives are discussed. Copyright © 2023 Garcia Santa Cruz, Husch and Hertel.

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7. Diet quality and prodromal Parkinson's disease probability in isolated REM sleep behavior disorder.

Authors: Lee, C. Y.;Kim, H.;Kim, H. J.;Shin, J. H.;Chang, H. J.;Woo, K. A.;Jung, K. Y.;Kwon, O. and Jeon, B.

Abstract: Introduction: It is reported that a diet that lowers oxidative stress reduces the prodromal Parkinson's disease (pPD) probability as well as the risk of Parkinson's disease (PD). In this study, we evaluated whether the diet quality of patients with isolated rapid eye movement (REM) sleep behavior disorder (iRBD) were associated with the pPD probability score, PD risk markers, or prodromal markers. Method(s): Polysomnography (PSG)-confirmed iRBD patients from the Neurology Department at Seoul National University Hospital were enrolled. We calculated the pPD probability using the "Web-based Medical Calculator for Prodromal Risk in Parkinsonism" Diet quality was assessed using the Recommended Food Score (RFS). Result(s): We enrolled 101 patients with iRBD. The mean RFS score of patients with iRBD was 28.23 +/- 9.29, which did not differ from the general population. Among patients with iRBD, the probability of pPD did not differ between the high and low RFS groups. In patients aged Result(s): We enrolled 101 patients with iRBD. The mean RFS score of patients with iRBD was 28.23 +/- 9.29, which did not differ from the general population. Among patients with iRBD, the probability of pPD did not differ between the high and low RFS groups. In patients aged Conclusion(s): Diet quality assessed by RFS did not differ between the general population and patients with iRBD in Korea. Further studies are needed to confirm these protective effects of legume consumption on

iRBD, which may have strong implications for the prevention and management of PD.

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8. **Association of Neuropsychiatric Symptom Profiles With Cognitive Decline in Patients With Parkinson Disease and Mild Cognitive Impairment.**

Authors: Lee, Y. G.;Park, M.;Jeong, S. H.;Baik, K.;Kang, S.;Yoon, S. H.;Na, H. K.;Sohn, Y. H. and Lee, P. H.

Publication Date: 2023

Journal: Neurology (pagination), pp. ate of Pubaton: 31 Ju 2023

Abstract: BACKGROUND AND OBJECTIVES: Neuropsychiatric symptoms (NPS) are closely associated with cognitive decline in patients with Parkinson's disease (PD). We investigated which profiles of NPS are associated with the risk of dementia in PD with mild cognitive impairment (PD-MCI). METHOD(S): We retrospectively assessed 338 patients with PD-MCI from a single tertiary hospital, who underwent neuropsychological tests and a neuropsychiatric inventory (NPI) questionnaire. We conducted a factor analysis of the dichotomized presence of 12 NPI symptoms, yielding three NPI factors: factor 1, mood symptoms; factor 2, hyperactivity-related symptoms; and factor 3, psychotic symptoms. Factor analysis of the severity of NPI symptoms also identified similar NPI factors. The neuropsychiatric correlates of NPI factors were evaluated using general linear models for cognitive tests. Subsequently, we evaluated the hazard ratio (HR) of NPI factors on conversion to dementia. RESULT(S): A higher prevalence factor 1 score was associated with lower scores in the verbal memory (beta = -0.15; 95% confidence interval [CI] = -0.24 - -0.06; p = 0.001) and executive domains (beta = -0.16; 95% CI = -0.28 - -0.04; p = 0.007), whereas higher severity factor 2 scores were associated with lower scores in the naming (beta = -0.16; 95% CI = -0.28 - -0.03; p = 0.012), visuospatial (beta = -0.24; 95% CI = -0.41 - -0.07; p = 0.005), and verbal memory domains (beta = -0.15; 95% CI = -0.24 - -0.05; p = 0.005). A higher severity factor 3 score was associated with lower scores in the visuospatial domain (beta = -0.25; 95% CI = -0.46 - -0.07; p = 0.007). Cox regression models demonstrated that the risk of dementia was increased in those with higher prevalence factor 1 (HR = 1.48, 95% CI = 1.17 - 1.88, p = 0.001) and factor 2 scores (HR = 1.27, 95% CI = 1.07 - 1.51, p = 0.007) and severity factor 3 score (HR = 1.52, 95% CI = 1.29 - 1.80, p RESULT(S): A higher prevalence factor 1 score was associated with lower scores in the verbal memory (beta = -0.15; 95% confidence interval [CI] = -0.24 - -0.06; p = 0.001) and executive domains (beta = -0.16; 95% CI = -0.28 - -0.04; p = 0.007), whereas higher severity factor 2 scores were associated with lower scores in the naming (beta = -0.16; 95% CI = -0.28 - -0.03; p = 0.012), visuospatial (beta = -0.24; 95% CI = -0.41 - -0.07; p = 0.005), and verbal memory domains (beta = -0.15; 95% CI = -0.24 - -0.05; p = 0.005). A higher severity factor 3 score was associated with lower scores in the visuospatial domain (beta = -0.25; 95% CI = -0.46 - -0.07; p = 0.007). Cox regression models demonstrated that the risk of dementia was increased in those with higher prevalence factor 1 (HR = 1.48, 95% CI = 1.17 - 1.88, p = 0.001) and factor 2 scores (HR = 1.27, 95% CI = 1.07 - 1.51, p = 0.007) and severity factor 3 score (HR = 1.52, 95% CI = 1.29 - 1.80, p Copyright © 2023 American Academy of Neurology.

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9. **Effect of Acetylcholinesterase Inhibitors on Cerebral Perfusion and Cognition: A Systematic Review.**

Authors: Moyaert, P.;Beun, S.;Achten, E. and Clement, P.

Abstract: Background: Perfusion imaging has the potential to identify neurodegenerative disorders in a preclinical stage. However, to correctly interpret perfusion-derived parameters, the impact of perfusion modifiers should be evaluated. Objective(s): In this systematic review, the impact of acute and chronic intake of four acetylcholinesterase inhibitors (AChEIs) on cerebral perfusion in adults was investigated: physostigmine, donepezil, galantamine, and rivastigmine. Result(s): Chronic AChEI treatment results in an increase of cerebral perfusion in treatment-responsive patients with Alzheimer's disease, dementia with Lewy bodies, and Parkinson's disease dementia in the frontal, parietal, temporal, and occipital lobes, as well as the cingulate gyrus. These effects appear to be temporary, dose-related, and consistent across populations and different AChEI types. On the contrary, further perfusion decline was reported in patients not receiving AChEIs or not responding to the treatment. Conclusion(s): AChEIs appear to be a potential perfusion modifier in neurodegenerative patients. More research focused on quantitative perfusion in both patients with and without a cholinergic deficit is needed to draw conclusions on whether AChEI intake should be considered when analyzing perfusion data. Copyright © 2023-The authors. Published by IOS Press.

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10. **An open-label multiyear study of sargramostim-treated Parkinson's disease patients examining drug safety, tolerability, and immune biomarkers from limited case numbers.**

Authors: Olson, K. E.;Abdelmoaty, M. M.;Namminga, K. L.;Lu, Y.;Obaro, H.;Santamaria, P.;Mosley, R. L. and Gendelman, H. E.

Abstract: Background: The clinical utility and safety of sargramostim has previously been reported in cancer, acute radiation syndrome, autoimmune disease, inflammatory conditions, and Alzheimer's disease. The safety, tolerability, and mechanisms of action in Parkinson's disease (PD) during extended use has not been evaluated. Method(s): As a primary goal, safety and tolerability was assessed in five PD patients treated with sargramostim (Leukine, granulocyte-macrophage colony-stimulating factor) for 33 months. Secondary goals included numbers of CD4+ T cells and monocytes and motor functions. Hematologic, metabolic, immune, and neurological evaluations were assessed during a 5-day on, 2-day off therapeutic regimen given at 3 microg/kg. After 2 years, drug use was discontinued for 3 months. This was then followed by an additional 6 months of treatment. Result(s): Sargramostim-associated adverse events included injection-site reactions, elevated total white cell counts, and bone pain. On drug, blood analyses and metabolic panels revealed no untoward side effects linked to long-term treatment. Unified Parkinson's Disease Rating Scale scores remained stable throughout the study while regulatory T cell number and function were increased. In the initial 6 months of treatment, transcriptomic and proteomic monocyte tests demonstrated autophagy and sirtuin signaling. This finding paralleled anti-inflammatory and antioxidant activities within both the adaptive and innate immune profile arms. Conclusion(s): Taken together, the data affirmed long-term safety as well as immune and anti-inflammatory responses reflecting clinical stability in PD under the sargramostim treatment. Confirmation in larger patient populations is planned in a future phase II evaluation. Trial registration: ClinicalTrials.gov: NCT03790670, Date of Registration: 1/02/2019,

11. Potentially inappropriate medications in older adults with Parkinson disease before and after hospitalization for injury.

Authors: Pham Nguyen, T. P.;Gray, S. L.;Newcomb, C. W.;Liu, Q.;Hamedani, A. G.;Weintraub, D.;Hennessy, S. and Willis, A. W.

Publication Date: 2023

Abstract: Background: Parkinson disease (PD) patients are at increased risk of serious injury, such as fall-related fractures. Prescription medications are a modifiable factor for injury risk. Objective(s): To determine the extent to which a serious injury requiring hospitalization affects prescribing of potentially inappropriate medications (PIMs) among older adults with PD. Method(s): We conducted a quasi-experimental difference-in-difference (DID) study using 2013-2017 Medicare data. The cohort consisted of beneficiaries with PD hospitalized for injury versus for other reasons. PIMs were classified into PD and injury-relevant categories (CNS-active PIMs, PD motor symptom PIMs, PD non-motor symptom PIMs, PIMs that reduce bone mineral density). We estimated mean standardized daily doses (SDDs) of medications within each PIM category before and at 3, 6, and 12 months after hospitalization. We used generalized linear regression models to compare changes in mean SDDs for each PIM category between the injury and non-injury group at each timepoint, adjusting for biological, clinical and social determinants of health variables. Result(s): Both groups discontinued PIMs and/or reduced PIM doses after hospitalization. There were no between-group differences in mean SDD changes, after covariate adjustment, for any PIM category, except for the CNS-active PIMs category at 3 months (DID p-value = 0.00) and for the category of PIMs that reduce bone mineral density at all timepoints (DID p-values = 0.02, 0.04, 0.02 at 3, 6, and 12 months). Conclusion(s): Similar patterns of PIM among persons with PD after hospitalization for serious injury versus for other reasons may represent a missed opportunity to deprescribe high-risk medications during care transitions. Copyright © 2023

12. Association of Caregiver Depression Risk with Patient Outcomes in Parkinson Disease.

Authors: Rashid, R.;Aamodt, W. W.;Horn, S. and Dahodwala, N.

Publication Date: 2023

Abstract: Importance: Caregivers are integral to Parkinson disease (PD) care, but little information exists regarding how caregivers impact patient outcomes. Objective(s): To assess the association between caregivers reporting depression symptoms and patient quality of life (QOL), emergency department (ED) visits, and hospitalizations. Design, Setting, and Participant(s): This retrospective cohort study was conducted at 15 Parkinson's Foundation Centers of Excellence within the US. The Parkinson's Foundation Parkinson Outcomes Project registry was used to collect baseline data from January 1, 2016, to December 31, 2018, with subsequent annual study visits through July 31, 2020. Data were analyzed from August 5, 2020, to June 9, 2023. A convenience sample of 454 patients with PD and their caregivers was recruited during routine clinical visits with movement disorder specialists. Patients with a physician diagnosis of idiopathic PD who lived at home and had 1 or more follow-up study visits were included. Exposure: Caregiver depression symptoms using the Center for Epidemiologic Studies Depression Scale. Main Outcomes and

Measures: Patient health-related QOL (measured by the 39-item Parkinson Disease Questionnaire), number of annual ED visits, and number of annual hospitalizations were measured. The independent association between caregivers reporting depression symptoms and patient outcomes was assessed using linear mixed-effects and Poisson regression models. The a priori hypotheses were that a greater number of depression symptoms reported via the Center for Epidemiologic Studies Depression Scale would be associated with worse patient QOL and a greater number of ED visits and hospitalizations. Result(s): Among 454 patient-caregiver dyads (patients: mean [SD] age, 67.3 [8.4] years; 320 men [70.5%]; caregivers: mean [SD] age, 65.9 [8.7] years; 326 women [71.8%]), the mean (SD) follow-up was 2.0 (1.4) study visits. Greater depression symptoms among caregivers were associated with worse patient QOL as measured by the Parkinson Disease Questionnaire (mean [SD] score, 33.78 [17.71], on a scale of 0-100, with higher scores indicating worse QOL, among patients with caregivers who had depression symptoms vs 24.50 [14.19] among patients with caregivers who did not have depression symptoms; beta = 0.43; 95% CI, 0.28-0.58; P Result(s): Among 454 patient-caregiver dyads (patients: mean [SD] age, 67.3 [8.4] years; 320 men [70.5%]; caregivers: mean [SD] age, 65.9 [8.7] years; 326 women [71.8%]), the mean (SD) follow-up was 2.0 (1.4) study visits. Greater depression symptoms among caregivers were associated with worse patient QOL as measured by the Parkinson Disease Questionnaire (mean [SD] score, 33.78 [17.71], on a scale of 0-100, with higher scores indicating worse QOL, among patients with caregivers who had depression symptoms vs 24.50 [14.19] among patients with caregivers who did not have depression symptoms; beta = 0.43; 95% CI, 0.28-0.58; P Conclusions and Relevance: In this cohort study, patients with PD who had caregivers at higher risk of depression were more likely to have worse QOL and higher ED use than patients who had caregivers not at higher risk of depression. Additional caregiving resources and interventions to reduce caregiver depression symptoms could potentially improve patient outcomes..

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13. Evaluation of Outcomes Across Delirium Subtypes in Hospital Admissions

Authors: Rowley, M., Kobylecki, C. and Thomson, A.
Patients with Parkinson's Disease

Publication Date: 2023

Publication Details: Age and Ageing. Conference: British Geriatrics Society Spring Meeting. Online. 52(Supplement 2) (pp ii28); Oxford University Press,

Abstract: Introduction: Delirium is prevalent in patients with idiopathic Parkinson's disease (iPD) who are admitted to hospital. The hypoactive subtype of delirium is associated with poorer outcomes in hospitalised patients. The aim of this study was to evaluate different outcomes across delirium subtypes in unplanned hospital admissions in patients living with iPD. Method(s): Data was collated prospectively on all patients with idiopathic Parkinson's disease admitted to our hospital's medical wards between 1st January 2019 and 30th March 2020. Electronic case-note review and in-person assessments were used to determine a diagnosis of delirium, the delirium subtype, and key outcomes including length of stay (LOS) and mortality. Data was analysed with respect to both index admissions and those readmitted during the study period. Result(s): 123 patients with iPD (male 52.8 %, mean age 77.9 years) accounted for 189 admissions. Delirium was present in 91/189 admissions (48%). There was no difference in Hoen & Yahr or Clinical Frailty Scale levels between groups with and without delirium.The prevalence of dementia was higher in the delirium group (48.3% vs 25.5%). Hypoactive delirium was the most common subtype (49.5%); hyperactive (13.2%), mixed (11%) and neutral (neither hypo- nor hyperactive) 26.4%. 12-month mortality in the index admissions was highest in the hypoactive subtype (57.1%).

Median LOS (all admissions) was 11.5 days in patients with delirium vs 5.5 days in those without. A mixed delirium phenotype had longest LOS (mean 30.7 days) compared with other subtypes. Conclusion(s): The hypoactive subtype of delirium predominates in hospitalised patients with iPD. Length of stay was longest in those experiencing a mixture of hyperactive and hypoactive subtypes, and mortality was highest in the hypoactive group. Healthcare settings need robust systems screening for delirium in Parkinson's patients, with prevention and management processes to reduce morbidity and mortality in this complex group.

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14. **More than medications: A patient-centered assessment of Parkinson's disease care needs during hospitalization.**

Authors: Shurer, J.;Golden, S. L. S.;Mihas, P. and Browner, N.

Publication Date: 2023

Journal: medRxiv (pagination), pp. ate of Pubaton: 23 Ju 2023

Abstract: Background Parkinson's disease (PD) increases the risk of hospitalization and complications while in the hospital. Patient-centered care emphasizes active participation of patients in decision-making and has been found to improve satisfaction with care. Engaging in discussion and capturing hospitalization experience of a person with PD (PwP) and their family care partner (CP) is a critical step towards the development of quality improvement initiatives tailored to the unique hospitalization needs of PD population. Objectives This qualitative study aimed to identify the challenges and opportunities for PD patient-centered care in hospital setting. Methods Focus groups were held with PwPs and CPs to capture first-hand perspectives and generate consensus themes on PD care during hospitalization. A semi-structured guide for focus group discussions included questions about inpatient experiences and interactions with the health system and clinical team. Data was analyzed using inductive thematic analysis. Results A total of twelve PwPs and thirteen CPs participated in seven focus groups. Participants were 52% female and 28% nonwhite; 84% discussed unplanned hospitalizations. This paper focuses on two specific categories that emerged from the data analysis. The first category explores the impact of PD diagnosis on the hospital experience, specifically during planned and unplanned hospitalizations. The second category delves into the unique needs of PwPs and CPs during hospitalization, which included the importance of proper PD medication management, the need for improved hospital ambulation protocols, and the creation of disability informed hospital environment specific for PD. Conclusion PD diagnosis impacts the care experience, regardless of the reason for hospitalization. While provision of PD medications was a challenge during hospitalization, participants also desired flexibility of ambulation protocols and an environment that accommodated their disability. Findings highlight the importance of integrating the perspectives of PwPs and CPs when targeting patient-centered interventions to improve hospital experiences and outcomes.Copyright The copyright holder for this preprint is the author/funder, who has granted medRxiv a license to display the preprint in perpetuity. It is made available under a CC-BY-NC 4.0 International license.

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15. **Clinical features and outcomes of hospitalised patients with COVID-19 and Parkinsonian disorders: A multicentre UK-based study.**

Authors: Sorrell, L.;Leta, V.;Barnett, A.;Stevens, K.;King, A.;Inches, J.;Kobylecki, C.;Walker, R.;Ray Chaudhuri, K.;Martin, H.;Rideout, J.;Robert Sneyd, J.;Campbell, S. and Carroll, C.

Publication Date: 2023

Abstract: Background Parkinson's disease has been identified as a risk factor for severe Coronavirus disease 2019 (COVID-19) outcomes. However, whether the significant high risk of death from COVID-19 in people with Parkinson's disease is specific to the disease itself or driven by other concomitant and known risk factors such as comorbidities, age, and frailty remains unclear. Objective To investigate clinical profiles and outcomes of people with Parkinson's disease and atypical parkinsonian syndromes who tested positive for COVID-19 in the hospital setting in a multicentre UK-based study. Methods A retrospective cohort study of Parkinson's disease patients with a positive SARS-CoV-2 test admitted to hospital between February 2020 and July 2021. An online survey was used to collect data from clinical care records, recording patient, Parkinson's disease and COVID-19 characteristics. Associations with time-to-mortality and severe outcomes were analysed using either the Cox proportional hazards model or logistic regression models, as appropriate. Results Data from 552 admissions were collected: 365 (66%) male; median (inter-quartile range) age 80 (74-85) years. The 34-day all-cause mortality rate was 38.4%; male sex, increased age and frailty, Parkinson's dementia syndrome, requirement for respiratory support and no vaccination were associated with increased mortality risk. Community-acquired COVID-19 and co-morbid chronic neurological disorder were associated with increased odds of requiring respiratory support. Hospital-acquired COVID-19 and delirium were associated with requiring an increase in care level post-discharge. Conclusions This first, multicentre, UK-based study on people with Parkinson's disease or atypical parkinsonian syndromes, hospitalised with COVID-19, adds and expands previous findings on clinical profiles and outcomes in this population.

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16. An Exploration of Wearable Device Features Used in UK Hospital Parkinson Disease Care: Scoping Review

Authors: Tam, William;Alajlani, Mohannad and Abd-Alrazaq, Alaa

Abstract: BACKGROUND: The prevalence of Parkinson disease (PD) is becoming an increasing concern owing to the aging population in the United Kingdom. Wearable devices have the potential to improve the clinical care of patients with PD while reducing health care costs. Consequently, exploring the features of these wearable devices is important to identify the limitations and further areas of investigation of how wearable devices are currently used in clinical care in the United Kingdom. OBJECTIVE: In this scoping review, we aimed to explore the features of wearable devices used for PD in hospitals in the United Kingdom. METHODS: A scoping review of the current research was undertaken and reported according to the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) guidelines. The literature search was undertaken on June 6, 2022, and publications were obtained from MEDLINE or PubMed, Embase, and the Cochrane Library. Eligible publications were initially screened by their titles and abstracts. Publications that passed the initial screening underwent a full review. The study characteristics were extracted from the final publications, and the evidence was synthesized using a narrative approach. Any queries were reviewed by the first and second authors. RESULTS: Of the 4543 publications identified, 39 (0.86%) publications underwent a full

review, and 20 (0.44%) publications were included in the scoping review. Most studies (11/20, 55%) were conducted at the Newcastle upon Tyne Hospitals NHS Foundation Trust, with sample sizes ranging from 10 to 418. Most study participants were male individuals with a mean age ranging from 57.7 to 78.0 years. The AX3 was the most popular device brand used, and it was commercially manufactured by Axivity. Common wearable device types included body-worn sensors, inertial measurement units, and smartwatches that used accelerometers and gyroscopes to measure the clinical features of PD. Most wearable device primary measures involved the measured gait, bradykinesia, and dyskinesia. The most common wearable device placements were the lumbar region, head, and wrist. Furthermore, 65% (13/20) of the studies used artificial intelligence or machine learning to support PD data analysis. CONCLUSIONS: This study demonstrated that wearable devices could help provide a more detailed analysis of PD symptoms during the assessment phase and personalize treatment. Using machine learning, wearable devices could differentiate PD from other neurodegenerative diseases. The identified evidence gaps include the lack of analysis of wearable device cybersecurity and data management. The lack of cost-effectiveness analysis and large-scale participation in studies resulted in uncertainty regarding the feasibility of the widespread use of wearable devices. The uncertainty around the identified research gaps was further exacerbated by the lack of medical regulation of wearable devices for PD, particularly in the United Kingdom where regulations were changing due to the political landscape. Copyright ©William Tam, Mohannad Alajlani, Alaa Abd-alrazaq. Originally published in the Journal of Medical Internet Research (https://www.jmir.org), 18.08.2023.

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17. **Retinal Optical Coherence Tomography Features Associated With Incident and Prevalent Parkinson Disease.**

Authors: Wagner, S. K.;RomeroBascones, D.;CortinaBorja, M.;Williamson, D. J.;Struyven, R. R.;Zhou, Y.;Patel, S.;Weil, R. S.;Antoniades, C. A.;Topol, E. J.;Korot, E.;Foster, P. J.;Balaskas, K.;Ayala, U.;Barrenechea, M.;Gabilondo, I.;Schapira, A. H.;Khawaja, A. P.;Patel, P. J.;Rahi, J. S., et al

Abstract: BACKGROUND AND OBJECTIVES: Cadaveric studies have shown disease-related neurodegeneration and other morphological abnormalities in the retina of individuals with Parkinson disease (PD), however it remains unclear whether this can be reliably detected with in vivo imaging. We investigated inner retinal anatomy, measured using optical coherence tomography (OCT), in prevalent PD and subsequently assessed the association of these markers with the development of PD using a prospective research cohort. METHOD(S): This cross-sectional analysis used data from two studies. For the detection of retinal markers in prevalent PD, we used data from AlzEye, a retrospective cohort of 154,830 patients aged 40 years and over attending secondary care ophthalmic hospitals in London, UK between 2008 and 2018. For the evaluation of retinal markers in incident PD, we used data from UK Biobank, a prospective population-based cohort where 67,311 volunteers aged 40-69 years were recruited between 2006 and 2010 and underwent retinal imaging. Macular retinal nerve fibre layer (mRNFL), ganglion cell-inner plexiform layer (GCIPL), and inner nuclear layer (INL) thicknesses were extracted from fovea--centred OCT. Linear mixed effects models were fitted to examine the association between prevalent PD and retinal thicknesses. Hazard ratios for the association between time to PD diagnosis and retinal thicknesses were estimated using frailty models. RESULT(S): Within the AlzEye cohort, there were 700 individuals with prevalent PD and 105,770 controls (mean age 65.5 +/- 13.5 years, 51.7% female). Individuals with prevalent PD had thinner GCIPL (-2.12 mum,

95% confidence interval: -3.17, -1.07, p = 8.2 x 10-5) and INL (-0.99 mum, 95% confidence interval: -1.52, -0.47, p = 2.1 x 10-4). The UK Biobank included 50,405 participants (mean age 56.1 +/- 8.2 years, 54.7% female), of whom 53 developed PD at a mean of 2653 +/- 851 days. Thinner GCIPL (hazard ratio: 0.62 per standard deviation increase, 95% confidence interval: 0.46, 0.84, p=0.002) and thinner INL (hazard ratio: 0.70, 95% confidence interval: 0.51, 0.96, p=0.026) were also associated with incident PD. DISCUSSION: Individuals with PD have reduced thickness of the INL and GCIPL of the retina. Involvement of these layers several years before clinical presentation highlight a potential role for retinal imaging for at-risk stratification of PD.Copyright © 2023 American Academy of Neurology.

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18. **The mechanism of impaired delayed recall verbal memory function in Parkinson's disease with orthostatic hypotension: a multiple imaging study.**

Authors: Xue, Xiaofan;Huang, Anqi;Zeng, Jingrong;Song, Haixia;Xing, Yingqi;Chan, Piu;Xu, Erhe and Zhou, Lichun

Publication Date: 2023

Abstract: Introduction: Orthostatic hypotension (OH) frequently accompanies autonomic dysfunction and is an important risk factor for cognitive impairment in Parkinson's disease (PD). However, the association between different cognitive functions and OH in PD patients is not yet fully understood. Methods: This study aimed to evaluate the scores of different cognitive domains and multiple parameters using different imaging techniques on PD patients with or without OH. A total number of 31 PD patients with OH (n = 20) and without OH (n = 11) were recruited from the Department of Neurology, Beijing Xuanwu Hospital for this study. All patients underwent beat-to-beat non-invasive blood pressure recordings and an active standing test to evaluate neurogenic OH and a global neuropsychological test to assess cognitive function. All patients underwent dynamic cerebral autoregulation (dCA) measurement, brain magnetic resonance imaging (MRI), and brain 18fluorine-fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG PET/CT). Results: The results showed that OH patients had poor delayed recall verbal memory when compared with the PD patients without OH (1.75 +/- 1.59 vs. 3.10 +/- 1.73, p = 0.042). The dCA test indicated a significant difference in the right very low-frequency (VLF) gain between two groups (1.27 +/- 0.17 vs. 1.10 +/- 0.26, p = 0.045) and the brain 18F-FDG PET/CT indicated a significant difference in the SUV (right medial temporal lobe) to SUV (occipital lobe) ratio (0.60 +/- 0.08 vs. 0.67 +/- 0.11, p = 0.049). Meanwhile, these two imaging parameters were negatively correlated (p p p = 0.023). Discussion: PD with OH patients had poor delayed recall memory, which might have been caused by the decreased metabolic dysfunction of specific medial temporal lobe due to the impaired dCA ability. Copyright © 2023 Xue, Huang, Zeng, Song, Xing, Chan, Xu and Zhou.

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19. **Establishing a framework for quality of inpatient care for Parkinson's disease: A study on inpatient medication administration.**

Authors: Yu, J. R. T.;Sonneborn, C.;Hogue, O.;Ghosh, D.;Brooks, A.;Liao, J.;Fernandez, H. H.;Shaffer, S.;Sperling, S. A. and Walter, B. L.

Publication Date: 2023

Abstract: Background: The complexity of antiparkinsonian medications makes patients vulnerable to medication deviations. This study examines the frequency and outcomes of deviations between outpatient and inpatient medication administrations in patients with Parkinson's disease (PD). Method(s): We included hospital admissions of patients with PD during a 12-month period at the Cleveland Clinic Main and Fairview campuses. Outpatient regimens were compared with hospital medication administration records to establish rates of deviations in terms of levodopa equivalent daily dose (LEDD) difference, timing deviations/omissions of time-critical medications, substitution of levodopa compounds, and administration of antidopaminergic medications. Logistic regression analyses were used to investigate associations with length of stay (LOS), readmission rates, and mortality. Result(s): The study included 492 patients with 725 admissions. Of those on time-critical medications, 43% had a LEDD deviation and 19% had levodopa formulation substitutions. Of the admission days with known outpatient timing regimens, 47% had an average deviation of more than 30 min and 22% had at least one missed levodopa dose. LOS was longer with each additional day of over-dose (4%), under-dose (14%), missed dose (21%), timing deviation (15%) and substitution (19%), (all p Result(s): The study included 492 patients with 725 admissions. Of those on time-critical medications, 43% had a LEDD deviation and 19% had levodopa formulation substitutions. Of the admission days with known outpatient timing regimens, 47% had an average deviation of more than 30 min and 22% had at least one missed levodopa dose. LOS was longer with each additional day of over-dose (4%), under-dose (14%), missed dose (21%), timing deviation (15%) and substitution (19%), (all p Result(s): The study included 492 patients with 725 admissions. Of those on time-critical medications, 43% had a LEDD deviation and 19% had levodopa formulation substitutions. Of the admission days with known outpatient timing regimens, 47% had an average deviation of more than 30 min and 22% had at least one missed levodopa dose. LOS was longer with each additional day of over-dose (4%), under-dose (14%), missed dose (21%), timing deviation (15%) and substitution (19%), (all p Conclusion(s): Deviations between outpatient and hospital regimens, and administration of antidopaminergic medications, were associated with poor outcomes. Copyright © 2023

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20. Identifying Risk Factors for Aspiration in Patients Hospitalized with Community-Acquired Pneumonia.

Authors: Zhao, T.;Zhang, Y.;Wang, K.;Yu, H.;Lin, L.;Qin, X.;Wu, T.;Chen, D.;Wu, Y. and Hu, Y.

Abstract: Background. Aspiration pneumonia (AP) is difficult to diagnose and has poor outcomes. This case-control study aimed to explore the risk factors and delineate the antibiotic usage for AP. Methods. Inpatients diagnosed with community-acquired pneumonia (CAP) from 2013 to 2017, enrolled in the urban employee basic medical insurance program in Beijing, were included and classified into the AP (N = 2,885) and non-AP (N = 53,825) groups. Risk factors were identified by logistic regression. Results. Older age (compared to 18-64 years, OR for 65-79 years: 4.3, 95% CI: 3.8-4.9; OR for >80 years: 6.3, 95% CI: 5.6-7.2), male (OR: 1.4, 95% CI: 1.3-1.5), cerebrovascular disease (OR: 3.1, 95% CI: 2.8-3.5), dementia (OR: 2.0, 95% CI: 1.8-2.1), vomiting (OR: 1.4, 95% CI: 1.2-1.7), Parkinson's disease (OR: 2.1, 95% CI: 1.8-2.4), and epilepsy (OR: 3.2, 95% CI: 2.8-3.7) were associated with an increased risk of AP. 92.8% of the AP patients received antibiotic therapy. Among them, patients treated with broad-spectrum antibiotics, antibiotics for injection, and combined antibiotics accounted for 93.3%, 97.9%, and 81.7%, respectively. Conclusions. Older age, male, and several comorbidities were independent risk factors for AP, and combined

antibiotics treatments are common, which merits attention in accurate detection of AP in a high-risk population. Copyright © 2023 Tianming Zhao et al.

Sources Used:

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