

Parkinson's Disease Current Awareness Bulletin

November 2019

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Get it on time: the case for improving medication management for Parkinson's

This report highlights problems that inpatients with Parkinson's disease can face receiving their medication. These findings include: nearly two-thirds of people who have Parkinson's don't always get their medication on time in hospital; more than three-quarters of people with Parkinson's who were asked reported that their health deteriorated as a result of poor medication management in hospital; and only 21 per cent of respondents said they got their medication on time without having to remind hospital staff. The report sets out recommendations that hospitals should implement to improve medication management.

Journal Articles:

Title: Measures of balance and falls risk prediction in people with Parkinson's disease: a systematic review of psychometric properties.

Citation: Clinical Rehabilitation; Dec 2019; vol. 33 (no. 12); p. 1949-1962

Author(s): Winsor, Stanley J; Kannan, Priya; Bello, Umar Muhhamad; Whitney, Susan L

Objective: To investigate the psychometric properties of measures of balance and falls risk prediction in people with Parkinson's disease (PD).

Data sources: PubMed, Embase, CINAHL, Ovid Medline, Scopus, and Web of Science were searched from inception to August 2019. Review method: Studies testing psychometric properties of measures of balance and falls risk prediction in PD were included. The four-point COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) assessed quality.

Results: Eighty studies testing 68 outcome measures were reviewed; 43 measures assessed balance, 9 assessed falls risk prediction, and 16 assessed both. The measures with robust psychometric estimation with acceptable properties were the (1) Mini-Balance Evaluation Systems Test (Mini-BEST), (2) Berg Balance Scale, (3) Timed Up and Go test, (4) Falls Efficacy Scale International, and (5) Activities-Specific Balance Confidence scale. These measures assess balance and falls risk prediction at the body, structure and function level, falls risk and balance, and falls risk at the activity level. The motor examination of the Unified Parkinson's Disease Rating Scale (UPDRS-ME) with robust psychometric analysis is a condition-specific measure with acceptable properties. Except the UPDRS-ME and Mini-BESTest, the responsiveness of the other four measures has yet to be established.

Conclusion: Six of the 68 outcome measures have strong psychometric properties for the assessment of balance and falls risk prediction in PD. Measures assessing balance and falls risk prediction at the participatory level are limited in number with a lack of psychometric validation.

Title: Merging Yoga and Occupational Therapy for Parkinson's Disease: Program Adaptation and Development.

Citation: Physical & Occupational Therapy in Geriatrics; Dec 2019; vol. 37 (no. 4); p. 260-281

Author(s): Swink, Laura A.; Adler, Karen E.; Klinedinst, Tara C.; Fling, Brett W.; Fruhauf, Christine A.; Schmid, Arlene A.

Purpose: To adapt the Merging Yoga and Occupational Therapy program and develop the Merging Yoga and Occupational Therapy for Parkinson's disease (MY-OT for PD) program, designed to target fall risk management. Creating a new program involved the targeted development of Stage 1 manuals.

Methods: Researchers employed a pragmatic qualitative design to focus on meeting the purpose of the study. Stage 1 manuals were created following a literature review, a focus group of participants with PD, and individual interviews with experts in practice or research. Visual familiarization with data, generation of conclusions, and results verification were used to translate participant feedback into manual revisions.

Results: Themes included revisions to model, content, and delivery. Revisions were incorporated into Stage 1 manuals to create a PD-specific program to improve fall risk management.

Conclusion: A structured process is necessary to create Stage 1 manuals in a novel population prior to feasibility and pilot testing.

Title: Occupational Therapy for Parkinsonian Patients: A Retrospective Study.

Citation: Parkinson's Disease (20420080); Nov 2019 ; p. 1-7

Author(s): Franciotta, Michele; Maestri, Roberto; Ortelli, Paola; Ferrazzoli, Davide; Mastalli, Federica; Frazzitta, Giuseppe

Background: Hand functionality and finger dexterity are impaired in patients with Parkinson's disease (PD). These disturbances lead to a dependency in activities of daily living (ADL) and poor quality of life (QoL). Objective. We aimed to evaluate whether a specific occupational therapy (OT) program is effective in improving finger and hand dexterity and its impact on ADL in PD patients.

Methods: We retrospectively studied PD patients, hospitalized for a 4-week multidisciplinary intensive rehabilitation treatment (MIRT) between January 2015 and June 2018. All patients underwent 1 h/day OT treatment, 5 days a week. The primary outcome measure was the O'Connor finger dexterity test; secondary outcome measures were the Minnesota dexterity test, UPDRS II, and Self-Assessment Parkinson's Disease Disability Scale (SPDDS). These measures were assessed at admission (T0) and discharge (T1).

Results: Based on the Hoehn and Yahr scale (H&Y), patients were divided into two groups: 262 subjects in H&Y stage <3 (early-stage PD patients) and 220 in H&Y stage ≥3 (medium-advanced stage PD patients). As expected, at baseline, all measures were worse in higher H&Y stages. After treatment, both groups experienced significant improvements in all outcomes. Significant differences between early-stage and medium-advanced stage PD patients were observed only for the changes in UPDRS II, with a better improvement in patients in H&Y stage ≥3.

Conclusions: We showed that PD patients who underwent a rehabilitation protocol including OT experienced improvements in finger dexterity and hand functionality. Our results underline the relevance of OT in improving autonomy and QoL in PD patients.

Title: Patterns and Determinants of Prescribing for Parkinson's Disease: A Systematic Literature Review.

Citation: Parkinson's Disease (20420080); Nov 2019 ; p. 1-40

Author(s): Orayj, Khalid; Lane, Emma

Abstract: Since the discovery of levodopa (L-dopa) in 1967, the range of medications available to treat Parkinson's disease has increased significantly and guidance on the use, efficacy, and safety of these medications has evolved. To assess levels of adherence to national prescribing guidelines and awareness of changes in the efficacy and safety data published in the profiles of medications for the treatment of PD, we have reviewed studies on patterns and determinants of prescribing PD medications conducted in the last 50 years (since the discovery of L-dopa). A systematic literature review was conducted using EMBASE (1967 to March, 2018), Ovid MEDLINE(R) ALL (1967 to March 16, 2018), PsycINFO (1967 to the 2nd week of March, 2018), and PubMed to identify all studies measuring prescribing patterns of PD medication between 1967 and 2017. Study design, source of data, country, year of study, number of patients and/or prescriptions, unit of analysis, prescribing determinants, and percentage utilisation of PD medications were extracted where possible. 44 studies examining prescribing patterns and/or prescribing determinants across 17 countries were identified. Unsurprisingly, L-dopa was the most commonly prescribed medication in all studies, accounting for 46.50% to 100% of all prescriptions for PD. In several studies, the prescribing rate of ergot-derived dopamine agonists (DAs) decreased over time in concordance with guidance. In contrast, the prescribing rates of non-ergot DAs increased over the last ten years in most of the included studies. In examining prescribing factors, two major categories were exemplified, patients' factors and prescribers' factors, with patients' age being the most common factor that affected the prescription in most studies. In conclusion, L-dopa is now the most commonly prescribed medication for cases of PD but there is large variation in the prescribing rates of catechol-O-methyltransferase (COMT) inhibitors, monoamine oxidase B (MAO-B) inhibitors, amantadine, and anticholinergics between countries. New studies examining the effects of recent clinical trials and measuring the prescribing rates of newly approved medications are warranted.

Title: Person-centered home-based rehabilitation for persons with Parkinson's disease: A scoping review.

Citation: International Journal of Nursing Studies; Nov 2019; vol. 99

Author(s): Vaartio-Rajalin, Heli; Rauhala, Auvo; Fagerström, Lisbeth

Abstract: Due to vague, initial symptoms, persons with Parkinson's disease (PD) usually receive a definitive diagnosis after a prolonged period of time. At the time of diagnosis, they have already experienced limitations in activities of daily living and quality of life and are thus in need of immediate rehabilitation. To describe the existing knowledge on the rehabilitation of persons with PD suitable to a home environment and to describe the person-centeredness, interprofessionalism and clinical effectiveness of existing rehabilitation activities. 67 full-text papers from the EBSCO, CINAHL, Medline, Google and Google Scholar databases, published in English, Swedish or Finnish between January 2010 and October 2018, were charted (type of rehabilitation, sample, instrumentation, reported effects) and summarized. Rehabilitation through physical activities still appears to be the most common form of rehabilitation, varying from walking to individually tailored exercise programs. The majority of physical rehabilitation activities were conducted outside the home even though they were suitable for a home setting. Physical activities not only improved several physical outcomes but also quality of life, well-being and activities of daily living functions, especially when digital devices were used. Cognitive and psychosocial rehabilitation were much less researched but seen to be an emerging area of research. The focus of rehabilitation seems to lie on persons with PD, not their near-ones. The majority of interventions were planned without discussing in advance with the persons with PD about their preferences, needs or values. Very few interventions were individually tailored or

conducted in a home setting, and many studies included patient-recorded outcome measures, but only as secondary to clinical measures. Only a few studies focused on an interprofessional approach to PD rehabilitation, despite the approach being found effective in regard to quality of life for persons with PD. There appears to be a focus on physical outcomes and symptom management in the rehabilitation of persons with PD, even though cognitive and psychosocial well-being are often explored as secondary outcomes. Very few rehabilitation interventions were planned with persons or conducted in a home setting, and no interventions were seen that included near-ones. The majority of interventions were planned without the involvement of persons with PD. Still, many of the studies included patient-recorded outcome measures. Digital devices that assist in physical rehabilitation and an interprofessional approach to rehabilitation yield positive clinical outcomes, which in turn promotes a person-centered and holistic approach to rehabilitation.

Title: Occupational therapy outcomes in patients with Parkinson's disease.

Citation: Practice Nursing; Oct 2019; vol. 30 (no. 10); p. 477-481

Author(s): Jackson, Amelia

Abstract: People living with this degenerative condition can benefit greatly from occupation therapy, explains Amelia Jackson. This therapy needs to be embedded in the treatment approach for all patients living with this condition, and practice nurses are well placed to direct care. This article considers whether occupational therapy can improve the treatment experience and quality of life for patients living with Parkinson's disease. It also discusses whether occupational therapy has a direct correlation with improved treatment outcomes. This article will examine how this treatment should be provided and what treatment provision is available. Published literature was used to gain evidence and the findings were that integrated occupational therapy can improve both quality of life and treatment outcomes with this patient population. This article emphasises the need for occupational therapy to be embedded in the treatment approach to address non-motor symptoms which have the greatest impact on patient-reported reduced quality of life.

Title: Physical activity and prodromal features of Parkinson disease.

Citation: Neurology; Nov 2019

Author(s): Hughes, Katherine C; Gao, Xiang; Molsberry, Samantha; Valeri, Linda; Schwarzschild, Michael A; Ascherio, Alberto

Objective: To investigate the relationship between physical activity and prodromal features of Parkinson disease that often precede the clinical diagnosis.

Methods: Included are participants in 2 well-established cohorts: the Nurses' Health Study and the Health Professionals Follow-up Study. Physical activity was assessed using validated questionnaires at baseline (1986) and every 2 years until 2008. Prodromal features (e.g., constipation, hyposmia, and probable REM sleep behavior disorder [pRBD]) were assessed in 2012-2014.

Results: The multivariable-adjusted odds ratio (OR) for having ≥ 3 prodromal features vs none comparing the highest to the lowest quintile were 0.65 (95% confidence interval [CI] 0.53-0.79; p trend = 0.0006) for baseline physical activity and 0.52 (95% CI 0.35-0.76; p trend = 0.009) for cumulative average physical activity. Considering each feature independently, baseline physical activity was associated with lower odds of constipation (OR 0.78, 95% CI 0.73-0.83; p trend < 0.0001), excessive daytime sleepiness (OR 0.72, 95% CI

0.60-0.86; p trend = 0.002), depressive symptoms (OR 0.82, 95% CI 0.69-0.97; p trend = 0.13), and bodily pain (OR 0.81, 95% CI 0.68-0.96; p trend = 0.03). Similar or stronger associations were observed for cumulative average physical activity, which, in addition, was associated with pRBD (OR 0.85, 95% CI 0.77-0.95; p trend = 0.02). In contrast, neither hyposmia nor impaired color vision was associated with physical activity. Early life physical activity was associated with constipation and, in men only, with the co-occurrence of ≥ 3 features.

Conclusions: The reduced prevalence of prodromal features associated with Parkinson disease in older individuals who were more physically active in midlife and beyond is consistent with the hypothesis that high levels of physical activity may reduce risk of Parkinson disease.

Title: Therapies for Restless Legs in Parkinson's Disease.

Citation: Current treatment options in neurology; Nov 2019; vol. 21 (no. 11); p. 56

Author(s): Cochen De Cock, Valérie

Purpose of Review: The aim of this article was to review the options and particularities of the treatment of restless legs syndrome (RLS) in Parkinson's disease (PD).

Recent Findings: RLS is more frequent in PD than in the general population. Even if these two disorders share some specificity (dopa-sensitivity), they also differ in many features (iron load, genetic profile, dopaminergic cell count), resulting in different adaptations of the treatment. Only one study has specifically explored and demonstrated the efficacy of a treatment (rotigotine) in RLS with PD, constraining us to treat RLS with PD by analogy as idiopathic RLS in the other cases. However, arrangements linked to the peculiar population and pathology of PD are required. The treatment of RLS in PD consists in adaptation of dopaminergic treatment and introduction of alpha-2-delta ligands and, in refractory cases, of opioids or deep brain stimulation. Iron deficiency should probably not be compensated.

Title: Leap motion controlled video game-based therapy for upper limb rehabilitation in patients with Parkinson's disease: a feasibility study.

Citation: Journal of neuroengineering and rehabilitation; Nov 2019; vol. 16 (no. 1); p. 133

Author(s): Fernández-González, Pilar; Carratalá-Tejada, María; Monge-Pereira, Esther; Collado-Vázquez, Susana; Sánchez-Herrera Baeza, Patricia; Cuesta-Gómez, Alicia; Oña-Simbaña, Edwin Daniel; Jardón-Huete, Alberto; Molina-Rueda, Francisco; Balaguer-Bernaldo de Quirós, Carlos; Miangolarra-Page, Juan Carlos; Cano-de la Cuerda, Roberto

Background: Non-immersive video games are currently being used as technological rehabilitation tools for individuals with Parkinson's disease (PD). The aim of this feasibility study was to evaluate the effectiveness of the Leap Motion Controller® (LMC) system used with serious games designed for the upper limb (UL), as well as the levels of satisfaction and compliance among patients in mild-to-moderate stages of the disease.

Methods: A non-probabilistic sampling of non-consecutive cases was performed. 23 PD patients, in stages II-IV of the Hoehn & Yahr scale, were randomized into two groups: an experimental group ($n = 12$) who received treatment based on serious games designed by the research team using the LMC system for the UL, and a control group ($n = 11$) who received a specific intervention for the UL. Grip muscle strength, coordination, speed of

movements, fine and gross UL dexterity, as well as satisfaction and compliance, were assessed in both groups pre-treatment and post-treatment.

Results: Within the experimental group, significant improvements were observed in all post-treatment assessments, except for Box and Blocks test for the less affected side. Clinical improvements were observed for all assessments in the control group. Statistical intergroup analysis showed significant improvements in coordination, speed of movements and fine motor dexterity scores on the more affected side of patients in the experimental group.

Conclusions: The LMC system and the serious games designed may be a feasible rehabilitation tool for the improvement of coordination, speed of movements and fine UL dexterity in PD patients. Further studies are needed to confirm these preliminary findings.

Title: A physical therapy decision-making tool for stratifying persons with Parkinson disease into community exercise classes.

Citation: Neurodegenerative disease management; Nov 2019

Author(s): Borchers, Emily E; Mclsaac, Tara L; Bazan-Wigle, Jennifer K; Elkins, Aaron J; Bay, Ralph C; Farley, Becky G

Aim: Physical therapy and exercise are considered essential components in the management of Parkinson disease (PD). Using our retrospective data and years of experience in assigning persons with PD to multilevel group classes we propose a two-part physical therapy decision-making tool consisting of participant and exercise program considerations.

Methods: Retrospective medical record review and therapist consensus identified evaluation considerations determined to aide clinical decision-making. The ability of these variables (i.e., demographics, clinical characteristics, clinical measures cut-offs) to predict the class assignment decision of PD-specialized physical therapists was evaluated using discriminant function analysis.

Results: Therapist-assigned groups differed significantly on all clinical measures ($p < 0.001$) which provided the categorical data required for discriminant analysis. Using all variables, the discriminant function analysis predicted class assignment of the therapists with 79% agreement.

Conclusion: This proposed tool provides a framework that may guide the process for increasing access to multilevel group classes.

Title: Parkinson's disease: A Review from the Pathophysiology to Diagnosis, New Perspectives for Pharmacological Treatment.

Citation: Mini reviews in medicinal chemistry; Nov 2019

Author(s): Marino, B L B; Souza, L R; Sousa, K P A; Ferreira, J V; Padilha, E C; Silva, C H T P; Taft, C A; Hage-Melim, L I S

Abstract: Parkinson's disease (PD) is the second most common neurodegenerative disease in the elderly, with a higher prevalence in men, independently of race and social class; it affects approximately 1.5 to 2.0% of the elderly population over 60 years old and 4% of people over 80 years old. PD is caused by the necrosis of dopaminergic neurons in the substantia nigra, which is the brain region responsible for the synthesis of the neurotransmitter dopamine (DA), resulting in a decrease of DA in the synaptic cleft. The monoamine oxidase B (MAO-B) degrades the dopamine, promoting the glutamate

accumulation and oxidative stress with the release of free radicals, causing the excitotoxicity. The PD symptoms are the progressive physical limitation such as rigidity, bradykinesia, tremor, postural instability, and disability in the functional performance. Considering that there are no laboratory tests, biomarkers or imaging studies to confirm the disease, the diagnosis of PD is made by analyzing the motor features. There is no cure for PD, and the pharmacological treatment acts as a dopaminergic supplement with levodopa, COMT inhibitors, anticholinergics agents, dopaminergic agonists, and inhibitors of MAO-B, which basically aim to control the symptoms, but enabling a better functional mobility, increasing the life expectancy of treated PD patients. Due to the importance and increasing prevalence of PD in the world, this study reviews information of the pathophysiology, symptomatology, and the most current and relevant treatments of PD patients.

Title: Music Therapy and Music-Based Interventions for Movement Disorders.

Citation: Current neurology and neuroscience reports; Nov 2019; vol. 19 (no. 11); p. 83

Author(s): Devlin, Kerry; Alshaikh, Jumana T; Pantelyat, Alexander

Purpose of Review: There is emerging evidence that music therapy and other methods using music and rhythm may meaningfully improve a broad range of symptoms in neurological and non-neurological disorders. This review highlights the findings of recent studies utilizing music and rhythm-based interventions for gait impairment, other motor symptoms, and non-motor symptoms in Parkinson disease (PD) and other movement disorders. Limitations of current studies as well as future research directions are discussed.

Recent Findings: Multiple studies have demonstrated short-term benefits of rhythmic auditory stimulation on gait parameters including gait freezing in PD, with recent studies indicating that it may reduce falls. Demonstration of benefits for gait in both dopaminergic "on" and "off" states suggests that this intervention can be a valuable addition to the current armamentarium of PD therapies. There is also emerging evidence of motor and non-motor benefits from group dancing, singing, and instrumental music performance in PD. Preliminary evidence for music therapy and music-based interventions in movement disorders other than PD (such as Huntington disease, Tourette syndrome, and progressive supranuclear palsy) is limited but promising. Music therapy and other music and rhythm-based interventions may offer a range of symptomatic benefits to patients with PD and other movement disorders. Studies investigating the potential mechanisms of music's effects and well-controlled multicenter trials of these interventions are urgently needed.

Title: Can therapeutic strategies prevent and manage dyskinesia in Parkinson's disease? An update.

Citation: Expert opinion on drug safety; Oct 2019

Author(s): Leta, Valentina; Jenner, Peter; Chaudhuri, K Ray; Antonini, Angelo

Introduction: Dyskinesia is a motor complication of Parkinson's disease (PD) characterized by clinical heterogeneity and complex pathogenesis and associated with long-term levodopa therapy. Recent and controversial views on the management of PD patients have suggested that overall dyskinesia rates, and particularly troublesome dyskinesia, may be declining due to more conservative levodopa dosing regimens, widespread availability and early introduction of deep brain stimulation, and use of continuous drug delivery strategies. Nevertheless, anti-dyskinetic agents continue to be evaluated in clinical trials and recent efforts have focused on non-dopaminergic as well as dopaminergic drugs.

Areas covered: In this review, the authors discuss the clinical phenomenology and current understanding of dyskinesia in PD with a focus on up-to-date therapeutic strategies to prevent and manage these drug-related involuntary movements.

Expert opinion: The way dyskinesia in PD is currently managed should be changed and attention should be focused towards a more personalized medicine rather than a one-fits-all-approach. The correct identification of dyskinesia types and tailored treatments are crucial for a better management of these involuntary movements together with a holistic approach which considers additional influencing factors. The future for dyskinesia treatment is likely to be found in non-dopaminergic approaches, first set into motion by the introduction of amantadine.

Title: A randomized controlled efficacy study of the Medido medication dispenser in Parkinson's disease.

Citation: BMC geriatrics; Oct 2019; vol. 19 (no. 1); p. 273

Author(s): Hannink, K; Ter Brake, L; Oonk, N G M; Wertenbroek, A A; Piek, M; Vree-Egberts, L; Faber, M J; van der Palen, J; Dorresteyn, L D

Background: Complex medication schedules in Parkinson's disease (PD) result in lower therapy adherence, which contributes to suboptimal therapy and clinical deterioration. Medication reminder systems might improve therapy adherence and subsequently improve symptoms of PD. This randomized controlled study assessed the effect of the electronic medication dispenser Medido on physical disability in PD, as a proxy for changes in therapy adherence.x

Methods: Eighty-seven patients were randomized into the Medido group or control group. The primary outcome of physical disability was measured by the AMC Linear Disability Scale (ALDS). Secondary outcomes were quality of life (QoL) (PDQ-39), health status (EQ5D-5L, VAS), non-motor symptoms (NMS-Quest), and QoL of the caregiver (PDQ-carer). Measurements were performed at baseline, and after 3 and 6 months follow-up.

Results: When using the Medido, a non-significant improvement of 3.0 points (95% CI -5.6;11.6) was seen in ALDS. The exploratory subgroup Hoehn & Yahr classification (H&Y) > 2.5 improved significantly on ALDS with 14.7 points (95% CI -28.5;-0.9, p = 0.029 for group x time interaction). QoL deteriorated with 1.0 point in PDQ-39 (p = 0.01 for group x time interaction) in favor of the control group. Non-significant differences were observed for VAS (0.4 points, p = 0.057) and NMS-Quest (1.3 points, p = 0.095) in favor of the Medido group. No changes over time were observed in EQ5D-5L and PDQ-carer.

Conclusions: Based on these data, no firm conclusion can be drawn, but use of the Medido medication dispenser may result in a clinical improvement of physical disability and seems particularly appropriate for more severe patients.

Trial Registration: NTR3917 . Registered 19 March 2013.

Title: Risk of Developing Parkinson Disease in Bipolar Disorder: A Systematic Review and Meta-analysis.

Citation: JAMA neurology; Oct 2019

Author(s): Faustino, Patrícia R; Duarte, Gonçalo S; Chendo, Inês; Castro Caldas, Ana; Reimão, Sofia; Fernandes, Ricardo M; Vale, José; Tinazzi, Michele; Bhatia, Kailash; Ferreira, Joaquim J

Importance: Parkinson disease (PD) manifests by motor and nonmotor symptoms, which may be preceded by mood disorders by more than a decade. Bipolar disorder (BD) is characterized by cyclic episodes of depression and mania. It is also suggested that dopamine might be relevant in the pathophysiology of BD.

Objective: To assess the association of BD with a later diagnosis of idiopathic PD.

Data Sources: An electronic literature search was performed of Cochrane Controlled Register of Trials, MEDLINE, Embase, and PsycINFO from database inception to May 2019 using the terms Parkinson disease, bipolar disorder, and mania, with no constraints applied.

Study Selection: Studies that reported data on the likelihood of developing PD in BD vs non-BD populations were included. Two review authors independently conducted the study selection.

Data Extraction and Synthesis: Two review authors independently extracted study data. Data were pooled using a random-effects model, results were abstracted as odds ratios and 95% CIs, and heterogeneity was reported as I².

Main Outcome and Measures: Odds ratios of PD.

Results: Seven studies were eligible for inclusion and included 4 374 211 participants overall. A previous diagnosis of BD increased the likelihood of a subsequent diagnosis of idiopathic PD (odds ratio, 3.35; 95% CI, 2.00-5.60; I² = 92%). A sensitivity analysis was performed by removing the studies that had a high risk of bias and also showed an increased risk of PD in people with BD (odds ratio, 3.21; 95% CI, 1.89-5.45; I² = 94%). Preplanned subgroup analyses according to study design and diagnostic certainty failed to show a significant effect.

Conclusions and Relevance: This review suggests that patients with BD have a significantly increased risk of developing PD compared with the general population. Subgroup analyses suggested a possible overestimation in the magnitude of the associations. These findings highlight the probability that BD may be associated with a later development of PD and the importance of the differential diagnosis of parkinsonism features in people with BD.

Title: Sex differences in Parkinson's disease: A transcranial magnetic stimulation study.

Citation: Movement disorders : official journal of the Movement Disorder Society; Oct 2019

Author(s): Kolmancic, Kaja; Perellón-Alfonso, Ruben; Pirtosek, Zvezdan; Rothwell, John C; Bhatia, Kailash; Kojovic, Maja

Background: Demographic and clinical studies imply that female sex may be protective for PD, but pathophysiological evidence to support these observations is missing. In early PD, functional changes may be detected in primary motor cortex using transcranial magnetic stimulation.

Objective: We hypothesised that if pathophysiology differs between sexes in PD, this will be reflected in differences of motor cortex measurements.

Methods: Forty-one newly diagnosed PD patients (22 males, 19 females) were clinically assessed using MDS-UPDRS part III, and various measures of cortical excitability and sensorimotor cortex plasticity were measured over both hemispheres, corresponding to the less and more affected side, using transcranial magnetic stimulation. Twenty-three healthy (10 men, 13 women) participants were studied for comparison.

Results: Among patients, no significant differences between sexes were found in age, age of diagnosis, symptom duration, and total or lateralized motor score. However, male patients

had disturbed interhemispheric balance of motor thresholds, caused by decreased resting and active motor thresholds in the more affected hemisphere. Short interval intracortical inhibition was more effective in female compared to male patients in both hemispheres. Female patients had a preserved physiological focal response to sensorimotor plasticity protocol, whereas male patients showed an abnormal spread of the protocol effect.

Conclusion: The study provides one of the first neurophysiological evidences of sex differences in early PD. Female patients have a more favorable profile of transcranial magnetic stimulation measures, possibly reflecting a more successful cortical compensation or delayed maladaptive changes in the sensorimotor cortex. © 2019 International Parkinson and Movement Disorder Society.

Title: Effectiveness of occupational therapy intervention for people with Parkinson's disease: Systematic review.

Citation: Australian occupational therapy journal; Oct 2019

Author(s): Welsby, Ellana; Berrigan, Sonja; Laver, Kate

Introduction: Occupational therapists commonly provide intervention that promotes quality of life in people with Parkinson's disease. Existing research supports the effects of multidisciplinary and motor intervention for people with Parkinson's disease. However, few studies have identified the effectiveness of occupational therapy intervention alone. The aim of this review was to examine the efficacy of interventions provided by occupational therapists for people with Parkinson's disease.

Methods: A comprehensive database search of the literature was performed using Medline, EMBASE, PsycInfo and CINAHL between 2003 and January 2018. There were no restrictions on study design and studies with or without a control group were selected for review. Studies were included if intervention consisted of at least 50% of occupational therapy intervention for Parkinson's disease. Two independent reviewers extracted and synthesised data from relevant articles.

Results: In all, 10 studies representing data from 1,343 people with Parkinson's disease and 180 caregivers were included in this review. Occupational therapy interventions focussing on meaningful activities were shown to improve perceived occupational performance. Upper limb therapy programmes were shown to improve upper limb function in the short term though longer-term effects are unclear.

Conclusion: Current research supports interventions which are intermittent, short term and intensive and involve tailored therapy plans working towards an individual's goals. Occupational therapists should implement goal-oriented intervention programmes in conjunction with following the guidance of existing best practice guidelines.

Title: Fractures in Parkinson's Disease: injury patterns, hospitalization, and therapeutic aspects.

Citation: European journal of trauma and emergency surgery : official publication of the European Trauma Society; Oct 2019

Author(s): Mühlenfeld, Nils; Söhling, Nicolas; Marzi, Ingo; Pieper, Martin; Paule, Esther; Reif, Philipp S; Strzelczyk, Adam; Verboket, René D; Willems, Laurent M

Aim: The primary aim of this study was to analyze the frequency and characteristic patterns of fall-related fractures as well as consecutive hospitalization and management relating to such fractures. In addition, important pathognomonic and therapeutic aspects are discussed.

Methods: This retrospective mono-center study was conducted at the University Hospital Frankfurt am Main, Germany. Between 2007 and 2017, a total of 145 PD patients with fall-related fractures were identified via a retrospective systematic query in the hospital information system using the ICD-10 German modification codes G20.0-G20.9. Patients with unclear or falsely coded PD were strictly excluded.

Results: The mean age of the cohort was 77.7 years (± 7.5 , median 77.) and 57.9% of the cohort were females ($n = 84$). A total number of 151 fractures were reported, with 140 patients (96.6%) suffering from one, four patients from two (2.8%), and one patient from three fractures (0.6%) at a time. For 43.9% ($n = 65$) of the cohort, fractures concerned lower extremities (LE) followed by trunk (38.1%, $n = 58$) and upper extremities (UE, 17.9%, $n = 27$). Most common fracture types in LE were femoral neck fractures (52.3%, $n = 34$). Mean length of hospital stay (LOS) was 13.6 days (95% CI 12.4-14.7). In 43.4% ($n = 63$) of cases, an interim admission to an intensive-care unit (ICU) was necessary. Mean ICU LOS was 2.3 days (95% CI 1.5-3.0), and mean LOS for normal care unit was 10.5 days (95% CI 10.3-12.4). Surgical treatment was necessary in 75.9% of the cases ($n = 110$). Patients undergoing surgical treatment showed significantly longer LOS compared to conservatively treated patients ($p < 0.001$). Moreover, fractures of the LE ($p = 0.018$) and UE ($p = 0.010$) were associated with a significant longer LOS.

Conclusion: Fall-related fractures are a common and relevant complication in PD patients leading to increased immobility, frequent hospitalization, and immediate surgical care. Fractures of the lower extremities and trunk were the most common in the cohort for this study. A PD patient presenting to the emergency room or at the general practitioner with a fracture should always be checked for osteoporosis and a fall-related injury should be seen as a red flag for reviewing a patient's individual therapeutic regime.

Sources Used:

The following databases are searched on a regular basis in the development of this bulletin: Amed, British Nursing Index, Cinahl, Medline

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