



THE TRANSMITTER

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Article Reviews

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Clinical outcomes of asleep vs awake deep brain stimulation for Parkinson disease

Deep brain stimulation (DBS) for Parkinson's disease has traditionally been performed with patients awake in the operating room to allow for intraoperative testing and microelectrode recordings to ensure electrode placement at the appropriate target. Recent advances in intraoperative imaging have allowed for investigation into asleep procedures with imaging to confirm appropriate electrode placement, though there is little information comparing clinical outcomes of asleep and awake procedures. This retrospective study reports clinical outcomes of patients who underwent DBS electrode placement by a single neurosurgeon at a single center either awake with microelectrode recordings or asleep with intraoperative CT. There were no significant differences in motor or cognitive outcomes, however there was a difference in speech fluency as measured by Controlled Oral Word Association Test well as some aspects of quality of life as measured by the 39-item Parkinson's Disease Questionnaire. While there were some differences in targeting site between the two groups with a higher proportion of patients undergoing awake procedures targeting STN than the asleep group, subgroup analysis of speech fluency by target site maintained significant effect in awake vs asleep procedures. While this study was limited by retrospective design with lack of randomization and blinding, it highlights potential differences in outcomes of asleep DBS electrode placement which warrant further study.

Neurology. 2017 89(19); 1944-1950

Longitudinal decline of driving safety in Parkinson disease

Patients with Parkinson's disease have impaired functioning in several areas which can negatively impact driving safety including motor function, visuospatial function, and alertness. A previous study by the same group of authors (Uc et al.) showed PD patients had more errors on standardized road testing in an instrumented vehicle than aged controls. In this follow-up study, the same group of PD patients and controls were followed longitudinally and tested again two years later in a standardized road driving test. Testing two years later showed PD patients had significantly more errors compared to baseline testing, as well as significantly more than aged controls. Of note, there were significantly less PD patients that returned for repeat testing compared to controls, as more PD patients had stopped driving in that time period. Those PD patients who did not return had significantly higher error rates on baseline driving testing than returnees with PD. But importantly, those PD patients who returned for testing had similar baseline error rates compared to aged controls who returned, thus the differences seen two years later represented a decline in driving abilities in PD patients over that period of time. The increase in error rate was correlated with worsening visual acuity, global cognition, executive function, visual processing speed, attention, and UPDRS activities of daily living score. However, the authors did not evaluate for measures of anxiety or impulse control disorders, which may also impact driving function. This study provides data to support that driving safety in PD may decline in a relatively short period of time, though further studies are needed regarding how to best address driving safety in the clinical setting.

Neurology. 2017 Nov 89(19); 1951-1958

Psychostimulant effect of dopaminergic treatment and addictions in Parkinson's disease

Parkinson's disease patients with non-motor fluctuations may have fluctuations in psychiatric symptoms characterized by changes in mood states related to dopaminergic therapy with the off state having features of dysphoria and the on state having features of euphoria. This study investigates the potential relationship between psychiatric non-motor fluctuations and addictive behaviors with a prospective study of PD patients hospitalized for deep brain stimulation consisting of 51 patients with psychiatric non-motor fluctuations and 51 patients without psychiatric fluctuations. There were no significant differences in UPDRS motor scores between these two groups, though there were significantly more dopamine addiction and behavioral addictions in patients with neuropsychiatric fluctuations. Interestingly, addictive behaviors were associated with the presence of on-drug euphoria but not off-drug dysphoria. In addition, patients with neuropsychiatric fluctuations had significantly poorer quality of life in some aspects of the 39-item Parkinson's Disease Questionnaire including mobility, emotional well-being, and stigma. This study provides evidence for a link between neuropsychiatric non-motor fluctuations, specifically on-drug euphoria, and addictive behaviors. This study provides evidence for the enhanced activation of reward pathways, possibly by sensitization or stimulation of mesocorticolimbic system, as a link between addictions and dopaminergic therapy.

Mov Disord. 2017 Nov 32 (11); 1566-1573

Committee Activities

Clinical Care Committee

- **Rotation of Committee Chair:** Leadership for the clinical care committee rotates amongst the PADRECCs. The Southwest PADRECC leads the committee for October/November. The committee meets via conference call the first Tuesday of the month at 12pm (EST)
- **Standardize and Optimize Clinical Care:** The committee continues to discuss latest research on PD, new treatment strategies and a variety of clinical issues to improve patient care and outcomes. It also serves to provide clinical support to the consortium network by focusing on measures to standardize clinical care across the PADRECC network. Recent agenda items have included discussions on:
 1. Discussion of the new medications deutetrabenazine and valbenazine for Huntington's chorea and tardive dyskinesia.
 2. The management of orthostatic hypotension including the role of the newly FDA-approved agent droxidopa (Northera).
 3. Continued discussion focused on clinical experience sharing among the group regarding DUOPA™ (carbidopa and levodopa) enteral suspension delivered directly into the small intestine for the treatment of motor fluctuations for people with advanced Parkinson's disease
 4. The prevalence of vitamin D deficiency in Parkinson's disease and the need to monitor and adequately replete levels for bone and cognitive health.
 5. Practical aspects regarding the use of DAT scans; applications and pitfalls, including the issue of drug interference
 6. Continued discussion on the use of Pimavaserin (Nuplazid) in the treatment of psychosis associated with PD, compared to quetiapine and clozaril.

7. Continued discussion of Rytary and conversion and titration dosing strategies. Consensus that often more than a three times/day dosing is needed.
8. Discussion of the possible role for levodopa-induced hyperhomocystinemia in Parkinson's disease and the strategies to monitor and manage this problem
9. Discussion of the role of exercise in the treatment of PD and the practical aspects of "prescribing" exercise to patients.

Education Committee

- **PADRECC/EES Movement Disorder Series:** The first audioconference for FY 17 was held on November 9, 2017 "**Initial Therapeutic Paradigms in Parkinson's Disease**" by Dr. Jessica Lehoist, DO, Director, Richmond/Southeast PADRECC. The audioconferences are archived on the National website www.parkinsons.va.gov under the Movement Disorder Series tab. Please see the **Dates to Remember** section below for a listing of upcoming FY 17 audioconferences and mark your calendars.
- **PD at Home:** Monthly PD telephone education/support group conference available nationwide on the 2nd Tuesday of each month: 10am PT, 11am MT, 12p CT, 1pm ET. Developed and led by West LA PADRECC. Monthly flyers will be emailed to all Consortium Members, please advertise to your PD patients.
- **National Website Maintenance:** The committee performs monthly maintenance checks of the National Website to ensure information is current and up-to-date.
- **PADRECC Transmitter:** This committee continues to assemble and distribute this e-newsletter every other month.

Dates to Remember

January 11, 2018

EES/PADRECC Movement Disorders Series

Topic: The Role of Kinesiotherapy in the Treatment of PD and Movement Disorders

<http://www.parkinsons.va.gov/>

March 8, 2018

EES/PADRECC Movement Disorders Series

Topic: Tardive Dyskinesias

<http://www.parkinsons.va.gov/>

April 21-27, 2018

American Academy of Neurology~ Annual Meeting

Los Angeles, CA

<https://www.aan.com/conferences/annual-meeting/>

May 10, 2018

EES/PADRECC Movement Disorders Series

Topic: Psychiatric Issues in Parkinson's Disease

<http://www.parkinsons.va.gov/>

September 13, 2018

EES/PADRECC Movement Disorders Series

Topic: Neurotoxin use for treating PD Symptoms

<http://www.parkinsons.va.gov/>

October 5-9, 2018

International Parkinson and Movement Disorder Society (MDS)~International Congress

Hong Kong

<http://www.mdscongress.org/Congress-2018.htm>

Southwest PADRECC Updates

Director: Dr. Indu Subramanian

The Southwest PADRECC is comprised of the Greater Los Angeles VA and consortium sites in Albuquerque, NM; Las Vegas, NV; Long Beach, CA; Loma Linda, CA; San Diego, CA; and Tucson, AZ.

Consortium Updates:

- Dr. Sarah Pirio-Richardson now has a 7/8 position at the Albuquerque, New Mexico VA Healthcare System, where she participates in clinical care, education, and research in motor control and neurostimulation.
- West LA VA welcomed a new nurse care manager to the team: Patricia Pittman, RN.

Consortium Activities:

- Joann Harnar, RN and Patricia Pittman, RN have worked together to host the monthly PD @ Home telephone support group for patients and their caregivers.
- The Southwest PADRECC performed 7 Deep Brain Stimulation surgeries and 26 battery replacements in FY17.
- The West LA PADRECC expanded the botulinum toxin clinic in FY17, adding another half-day clinic per month.

Future Directions:

- The West LA VA PADRECC is in the process of developing a Telemedicine clinic to reach veterans with movement disorders in rural areas.
- The West LA team looks forward to hosting the next PADRECC Consortium meeting in tandem with the American Academy of Neurology annual meeting in Los Angeles, CA in April 2018.

Publications from Research Team:

1. Chang TS, Patel CB, Keener AM, Keselmann I, Jamal NJ. Movements here today, gone tomorrow: Images in clinical neurology case of hyperglycemic hemichorea. *The Neurohospitalist* 2016. doi: 10.1177/1941874416671748
2. Ng DW, Magaki S, Terashima KH, Keener AM, Salamon N, Karenezis M, Macyszyn K, Vinters HV. Amyloid- β related angiitis: a report of two cases with unusual presentations. *Human Pathology* 2017. doi: 10.1016/j.humpath.2017.01.008
3. Norris SA, Jinnah HA, Espay AJ, Klein C, Bruggermann N, Barbano RL, Malaty I, Rodriguez RL, Vidailhet M, Roze E, Reich SG, Berman B, LeDoux MS, Pirio Richardson S, et al. Clinical characteristics, onset site and spread of focal and segmental cervical dystonia. *Movement Disorders* 2016; Oct 18. doi: 10.1002/mds.26817. [Epub ahead of print]
4. Pirio Richardson S, Wegele AR, Jinnah HA, Skipper B, Deligtisch A for the Dystonia Coalition Investigators. Dystonia treatment: a survey of medication use in an international biorepository. *Neurology* 2017 Feb 7;88(6):543-550.
5. Cavanagh JF, Mueller AA, Brown DR, Janowich JR, Story-Remer JH, Wegele A, Pirio Richardson S. Cognitive states influence dopamine-driven aberrant learning in Parkinson's disease. *Cortex* 2017 90:115-124.
6. Pirio Richardson S, Altenmüller E, Alter K, Alterman RL, Chen R, Frucht S, Furuya S, Jankovic J, Jinnah HA, Kimberley TJ, Lungu C, Perlmutter JS, Prudente CN and Hallett M (2017). Research Priorities in Limb and Task-specific Dystonias. *Front Neurol* 2017 8:170. doi: 10.3389/fneur.2017.001
7. Phelan, M., Gillen, D., Mulnard, R. and Schreiber, S.S. Phase II Clinical Trial of Nicotinamide for the Treatment of Mild to Moderate Alzheimer's Disease. *J Geriatr Med Gerontol* 2017, 3:021. DOI: 10.23937/2469-5858/1510021

8. Schreiber. S.S. Teleneurology for Veterans in a Major Metropolitan Area. in press, Telemedicine and e-Health.

Under Revision, Submitted or In preparation:

1. Cavanagh JF, Kumar P, Mueller AA, Pirio Richardson S, Mueen A. Diminished EEG habituation to novel events effectively classifies Parkinson's patients. (Under revision, Clinical Neurophysiology)
2. Keener AM, Duarte Folle A, Paul KC, Bronstein J, Ritz B. Cognitive impairment and mortality in a population-based Parkinson's disease cohort. (Submitted)
3. Connor KI, Cheng, EM, Siebens HC, Mittman BS, Ganz DA, Lee ML, Edwards LK, McGowan MG, Barry F, Vickrey BG. A randomized control trial of a care management program to improve quality of care in Parkinson's disease (In preparation)
4. Connor KI, Siebens HC, Ernst EJ, Mittman BS, Cheng, EM, Vickrey BG. Inside the black box of Parkinson's disease care management (in preparation)