Late-Breaking Abstracts

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MDS Virtual Congress 2020 Late-Breaking Abstracts

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LBA 1

Simvastatin as a neuroprotective treatment for Parkinson's disease (PD STAT): results of a double-blind, randomised, placebo-controlled futility study

C. Carroll, K. Stevens, B. Jones, S. Campbell, A. Jeffery, R. Chapman, M. Webber, A. Foggo, J. Zajieck, A. Whone, S. Creanor (Plymouth, Devon, United Kingdom)

Objective: To determine whether simvastatin is clearly ineffective in preventing the clinical decline of Parkinson's disease (PD).

Background: No drug has been shown to slow PD progression. Epidemiological and pre-clinical data support simvastatin having neuroprotective properties. We aimed to determine whether simvastatin has the potential to slow PD progression. The study is part of the International Linked Clinical Trials initiative coordinated by The Cure Parkinson's Trust.

Method: PD STAT is a double-blind, randomised, placebo-controlled, multi-centre, futility trial in patients with mild-moderate PD. It started in July 2015 and completed in June 2020. The study population included idiopathic PD patients aged 40-90 years, modified Hoehn and Yahr stage ≤3.0 (ON state), on dopaminergic treatment and experiencing wearing-off. Participants were randomly allocated (1:1) to receive oral simvastatin or matched placebo. One month at low-dose (40mg/day) was followed by 23-months at high-dose (80mg/day) and ended with a 2-month washout period. The recruitment target was at least 198 participants progressing to high-dose. Follow-ups in clinic were at 1, 6, 12, 18, 24 and 26 months post-baseline, with interim telephone monitoring for adverse events. The primary outcome was change in Movement Disorder Society Unified Parkinson's Disease Rating Scale part III motor subscale score (OFF state) between baseline and 24 months. Primary analysis on a modified intention to treat basis includes only those progressing to the high-dose.

Results: 235 participants were recruited (median age 62 years [range 41-87]; 41.3% female) across 23 UK sites. 216 progressed to the higher dose, of whom 52 (24%) discontinued study medication before 24 months, including 33 (15%) who withdrew from the study; 183 (85%) of those who progressed to the higher dose completed the primary outcome. 76 SAEs were reported, one possibly related to study drug. 6 severe and 86 moderately severe drug-related AEs were reported. The primary findings of the study will be presented.

Conclusion: Our study has demonstrated that high dose simvastatin is relatively well tolerated in people with moderate Parkinson's disease. We will present whether simvastatin is found to be (non-)futile as a therapy to slow disease progression in PD.

LBA 2

First experience of the levodopa-entacapone-carbidopa intestinal gel in clinical practice

D. Nyholm, M. Öthman (Uppsala, Sweden)

Objective: To report the first experience of clinical use of the levodopa-entacapone-carbidopa intestinal gel (LECIG).

Background: Continuous infusion of levodopa-carbidopa intestinal gel (LCIG) is approved in many countries for the treatment of motor fluctuations in Parkinson's disease (PD). The same concept, but with the addition of entacapone 20 mg/mL, LECIG, was approved and reimbursed in Sweden in 2019, based on one clinical trial, where LECIG was compared with LCIG in a randomized crossover trial of 1+1 days, showing similar systemic exposure and stable motor outcome [1].

Method: Observational study of the first patients to start LECIG in our clinic. The gel is contained in a syringe of 47 ml, which is connected to a portable pump, together measuring 55 x 150 mm, with a total weight of 227 g. The same PEG-J tubing system as with LCIG can be used, but a connector is required between the syringe and the PEG-J.

Results: Twenty patients (11 female) initiated LECIG from June 2019 to May 2020. Median age was 72 years, and median PD duration was 16 years. Median treatment time until 10 June 2020 was 133 days (range: 3-366). Median doses were: 6.0 mL as morning dose, 2.5 mL/h as infusion rate, 1.0 mL as extra dose. Half of the patients were switched directly from LCIG. In these patients, the median proportion of doses were 100% for morning dose, 75% for infusion rate and 92% for extra dose. Five patients discontinued LECIG, 3 due to diarrhea (probably entacapone-induced) and 2 deceased (one cardiac arrest and one COVID-19). The remaining patients are generally doing well, most express that they are happy with the size and weight of the LECIG pump.

Conclusion: LECIG is possible to use as long-term therapy, at least up to one year in our experience so far. Efficacy seems to be comparable to LCIG and safety seems to be comparable to oral levodopa and entacapone. Further, prospective research is needed.

Reference: [1] Senek M, Nielsen E, Nyholm D. Levodopa-entacapone-carbidopa intestinal gel in Parkinson disease – a randomized, crossover study. Mov Disord. 2017 Feb;32(2):283-286."

LBA 3

THN 102, an association of modafinil and low dose flecainide, in the treatment of excessive daytime sleepiness associated with Parkinson's Disease: a double-blind, placebo controlled study

J.C. Corvol, F. Klostermann, N. Kovacs, W. Ondo, R. Pahwa, W. Rein, M. Valis, A. Videnovic, O. Rascol (Paris, France)

Objective: To assess the safety and efficacy of two doses of THN 102 vs placebo in Parkinson (PD) patients suffering from excessive daytime sleepiness (EDS).

Background: EDS is a frequent non-motor symptom in PD with considerable functional impact and no approved treatment. Modafinil showed inconsistent results in previous trials. Preclinical and Phase I data indicate that the association of modafinil with very low doses of flecainide (THN 102) can improve wakefulness and cognition, probably by modifying the interaction between neuronal and glial networks.

Method: This was a placebo-controlled, double-blind, randomized 3-way cross-over study in PD patients with EDS (Epworth sleepiness scale (ESS) total score ≥ 14). Treatment consisted of THN102/200/2 or THN102/200/18 (modafinil 200mg/day +2 or +18mg/day flecainide) or placebo for 2 weeks each separated by a 1-2 week wash-out period. Primary objectives were safety (adverse events [AEs], vital signs, ECG, MDS-UPDRS), and efficacy assessed with ESS. Additional assessments included vigilance (Psychomotor Vigilance Test), and cognition (MoCA).

Results: A total of 75 subjects (63.5±9.35 yrs., 50 male, ESS 16.5±2) were included (safety population). No treatment related serious AEs were reported, 6 patients discontinued due to AEs (3 in each THN102 treatment period). Most frequent AEs were headache (4), nausea (3), and nasopharyngitis (3), all with THN102/200/18. Parkinson signs and symptoms did not change under treatment, and there were no issues with vital signs, cardiac and lab safety.The efficacy population (72 subjects) showed no significant treatment*period interaction, THN102/200/2 significantly improved sleepiness (ESS) compared to placebo (LS-Means/SE): -3.84(0.5) vs -2.44(0.5), p=0.012. THN102/200/18 also improved but did not reach statistical significance: -3.18(0.5), p=0.177. Remission of sleepiness (ESS"

Conclusion: THN 102 was well tolerated. PD patients with EDS were significantly improved when treated with THN 102. These results warrant further confirmation in future clinical trials.

LBA 4

UCB0599 transition to the clinic: An orally available brain-penetrant inhibitor of α-synuclein (ASYN) misfolding in Phase 1 development for Parkinson's disease (PD)

J.W. Smit, R.P. Maguire, A. Avbersek, M. Bani, D. Dastros-Pitei, M. Germani, M. Key-Prato, M. Lalla, F.X. Mathy, J. Mercier, A. Schmidt, J. Streffer, J. Genius (Braine-l'Alleud, Brabant Wallon, Belgium)

Objective: To assess pharmacokinetics (PK) and brain bioavailability of UCB0599, a brain penetrant oral small molecule inhibitor of ASYN misfolding, in healthy volunteers (HV) and patients with PD.

Background: ASYN misfolding is one of the best genetically and pre-clinically validated first steps in the cascade leading to loss of dopaminergic neurons and PD pathology. UCB0599 is under development to address the most urgent need of disease-modification in PD, offering promise to inhibit the earliest events in this pathological cascade.

Method: UCB0599 was studied in >100 HVs (single and multiple ascending doses [MAD], biodistribution and PET) and 27 patients with PD (MAD, 4-week study, H&Y stage 1–3; aged 40–80 years inclusive). Concentration-time profiles were determined in blood/plasma and brain/cerebrospinal fluid (CSF). Biodistribution and PET studies were performed with 11C-UCB0599 and 14C-UCB0599, consecutively. Results: UCB0599 was well tolerated and exhibited an overall positive safety profile. UCB0599 oral absorption was rapid (median tmax ~2h) and bioavailability estimated to be ~50% based on mass balance data. Apparent terminal half-life was 11–13h, clearance was moderate and primarily via the metabolic route, with excretion mainly by urine. UCB0599-protein binding was high and similar in HV and patients with PD. UCB0599 showed good tissue distribution, including brain and CSF. Total brain to total plasma concentration ratio was 0.3–0.8. PET data showed that brain uptake rate was consistent with rapid free distribution across the blood–brain barrier. UCB0599 exposures (Cmax and AUC) increased linearly with dose across the range tested in HV and patients with PD. Exploratory QT/QTc exposure-response analysis indicated that QTcF was not prolonged with increasing UCB0599 plasma concentrations.

Conclusion: UCB0599 was generally well tolerated and drug disposition appeared to be similar in HV and patients with PD. Good oral bioavailability and fast brain penetration were also shown. A close to linear PK was observed and multiple dose was predictable from single dose exposure. Targeted and achieved exposures were similar to pharmacologically active exposures that reduced ASYN fibril formation, loss of dopaminergic neurons and neuromotor dysfunction in preclinical ASYN misfolding models.

LBA 5

An Open-label Phase 2a Study to Evaluate the Tolerability and Safety of Perampanel in Cervical Dystonia (SAFE-PER-CD)

S.H. Fox, M. Swan, H. Fernandez, H. Jinnah, K. Kompoliti, C. Comella (Ontario, Canada)

Objective: To evaluate the effects of Perampanel in Cervical Dystonia.

Background: Cervical dystonia (CD) is the most common focal primary dystonia. Currently there are no effective oral medications for CD, to complement or even replace botulinum toxin injections. The pathophysiology of primary dystonia may involve over activity of glutamate neurotransmission within the basal ganglia. Preclinical studies have suggested that selective AMPA-selective glutamate receptor antagonists improve dystonia in animal models. Perampanel is a clinically available, selective AMPA receptor antagonist that has shown efficacy and safety in epilepsy and pain.

Method: We performed a phase IIa open-label study to evaluate the Tolerability and Safety of Perampanel in CD. Five centers in Canada and US participated, as members of the Dystonia Study Group (DSG). Trial co-ordination and data management was conducted by the Applied Health Research Centre, University of Toronto. Inclusion criteria included subjects with primary CD; those on Botulinum toxin were 8 w post last injection. All subjects received Perampanel 2 mg OD titrated, by 2 mg per w, to maximum 12 mg/d over 6 w; maintenance phase for all patients was minimum 4 weeks, ending at Week 10. Primary endpoints of Tolerability were defined as the ability to continue on Perampanel for the minimum 4 w maintenance period at any dose level; Safety was evaluated as the cumulative number of new adverse events collected at each visit from Baseline to week 10. (Adverse events were recorded at each study visit by direct interview and classified mild, moderate and severe according to CTCAE guidelines). Secondary endpoint of Exploratory endpoints included total and sub-scores of TWSTRS and quality of life (CIDP-58) at week 10.

Results: CD participants (n = 26), aged 18-68y were recruited. One withdrew prior to starting drug. All the remaining 25 subjects tolerated at least 2mg/d for > 4 weeks. Only 1 subject tolerated the maximum dose, 12 mg /d for > 4 weeks. 8/25 subjects (30.8%) tolerated 2mg, while 19.2% tolerated 4mg/d, and 15.4% tolerated 6mg or 8mg/d. Seven subjects withdrew; 4 due to AEs, 2 for other reasons and 1 was lost to follow up. All subjects experienced AEs; there was no SAEs. The commonest AEs were somnolence, fatigue, dizziness, imbalance and irritability. Grade 3 AEs that were definitely or possibly related to drug included dizziness (n = 1); fall (n = 1); disorientation (n = 1). Exploratory endpoints of TWSTRS and CIDP-58 will be presented.

Conclusion: Tolerability to Perampanel was variable in CD subjects. Lower doses would be considered for future studies in this population.

LBA 6

Long term safety and immunogenicity of the alpha synuclein active immunotherapeutic PD01A in patients with Parkinson's disease: a Phase I study series

D.D. Volc, W. Poewe, P. Lührs, N. Majbour, O. El-Agnaf, R. Medori, G. Staffler (Vienna, Austria)

Objective: This phase I study series was designed to assess safety, tolerability and immunological activity of a novel immunotherapeutic in patients with Parkinson's disease (PD).

Background: Extensive evidence supports the causative role of alpha synuclein (aSyn) and its abnormally aggregated oligomeric forms (o-aSyn) in PD. We have developed a specific active immunotherapy (SAIT) involving immunisation with a short antigenic peptide formulation (PD01A), which mimics an epitope in the native c-terminal region of human aSyn.

Method: Patients with early PD were randomised to receive four immunisations with either 15µg or 75µg PD01A injected into the upper arms and followed for 91 weeks. Patients were then re-randomised to receive two booster immunisations with 15µg or 75µg and 21 of 24 study patients completed 228-297 weeks in study. Safety and tolerability were assessed through the recording of all local or systemic TEAEs. Patients motor status was also assessed. Antibody titres were determined for reactivity with PD01 peptide and the native epitope on the target aSyn protein. Exploratory analyses determining aSyn protein concentrations were performed in the CSF.

Results: The most common TEAEs were transient local skin reactions. Most systemic TEAEs were attributed to underlying disease progression or concomitant symptomatic therapies. No patient discontinued due to TEAEs. MDS-UPDRS motor scores were stable over an observation period of almost four years. PD01A was highly immunogenic and induced antibodies which bind to o-aSyn with high selectivity. CSF o-aSyn levels correlated with baseline MDS-UPDRS III motor score. Total aSyn in CSF did not change following immunisation but o-aSyn levels were reduced by 51% in patients immunised with the 75µg dose. Decrease in CSF o-aSyn following immunotherapy correlated with stabilisation in MDS-UPDRS III scores and there was a correlation between PD01 specific antibody titres and changes in MDS-UPDRS III scores over the course of the study, up to week 220.

Conclusion: Repeated administrations of PD01A were safe and well-tolerated over an extended study period. SAIT resulted in a substantial humoral immune response that was associated with a reduction in o-aSyn concentrations in CSF. These data provide a strong basis for continuing development of PD01A with a phase 2 clinical programme to investigate disease modifying efficacy.

LBA 7

Safety, Tolerability and Target Engagement Demonstrated in Phase 1 Study of LRRK2 Inhibitor DNL151 in Healthy Volunteers

D.D. Jennings, J.V.D. Wetering de Rooij, M.F.J.M. Vissers, J.A.A.C. Heuberger, G.J. Groeneveld, R. Maucia, A. Kay, M. Borin, B. Wong, S. Huntwork-Rodriguez, C. Ho, M. Troyer (South San Francisco, CA, USA)

Objective: To evaluate safety, tolerability, pharmacokinetics and pharmacodynamics of the LRRK2 inhibitor, DNL151, in healthy volunteers (HV).

Background: Increased LRRK2 kinase activity impairs lysosomal function and drives Parkinson's disease (PD) pathogenesis. Inhibition of LRRK2 kinase activity resulting in improved lysosomal function is a promising new approach to treating both familial PD with a LRRK2 kinase activating mutation and sporadic PD. DNL151 is a potent, selective, CNS-penetrant LRRK2 kinase inhibitor under investigation for the treatment of PD.

Method: An interim analysis of this ongoing double-blind, placebo-controlled Phase 1 trial occurred upon completion of single dose, 10-day and 28-day multiple dose cohorts. The study is conducted at two clinical trial centers evaluating safety, tolerability and biomarker responses of DNL151. Safety assessments included vital signs, ECG, laboratory tests, pulmonary function testing, and adverse events. Both plasma and CSF pharmacokinetic measures were evaluated. Pharmacodynamic biomarkers included whole blood phosphorylation of LRRK2 at Serine 935 (pS935) and BMP in urine, an exploratory marker of lysosome function.

Results: HV subjects were randomized to active treatment at multiple dose levels (n=120) or placebo (n=33). DNL151 was generally well tolerated. The majority of treatment emergent adverse events (TEAEs) were mild. There were no serious adverse events, no discontinuations related to study drug, and no severe TEAEs. Headache was the most common TEAE across active treated dose groups. No dose dependent changes on ECG, vital signs, physical or neurological exams, safety laboratories, or pulmonary function testing were observed. LRRK2 inhibition of >75% based on reduction of LRRK2 pS935 was achieved across the dosing period at steady state at multiple dose levels. Additional data on urinary BMP, a lysosomal biomarker, will be presented.

Conclusion: DNL151 achieved target engagement and biomarker goals supporting the hypothesis that LRRK2 inhibition modulates and improves lysosomal function at doses that are safe and generally well tolerated. These interim data from a first in human healthy volunteer study of DNL151 support continued investigation of LRRK2 inhibition in patients with Parkinson’s disease.

LBA 8

Analytical validity and operational tolerance of a new algorithm in healthy individuals to calculate gait and balance feature scores from an iPhone application

R.R. Ellis, P. Kelly, C. Huang (New York, NY, USA)

Objective: To determine the analytical validity and operational tolerance of a new algorithm to calculate stride period, walking speed, distance, duration, step count in healthy individuals using an application deployed on an iPhone 8 plus.

Background: The use of smartphone applications to assess gait and balance symptoms of Parkinson's disease was pioneered by teams at Sage Bionetworks [1], Johns Hopkins [2], UCL [3] and Roche [4]. Gait and balance is impaired in Parkinson's disease [5] and features in several MDS-UPDRS Part III items [6].

Method: In study VS001, walking measures were calculated for 11 self certified healthy subjects using a mobile application to record accelerometer data installed on an Apple iPhone 8 Plus. Subjects walked a marked course in a large office for each of 5, 10, 15 and 20 seconds under supervision from 3 raters. Turns were allowed if a subject walked far enough that they had to turn within space available. Raters recorded duration of walk, step count and measured distance walked. A rater measure of walking speed was calculated from rater duration and distance. Analytical validity was determined by Intraclass Correlation Coefficient (ICC) for agreement between algorithm and rater measures. Operational tolerance was examined by subjects placing the phone in a trouser pocket, loose shorts pocket and shoulder bag for the same 20 second duration walk and then comparing ICC for each configuration.

Results: Mean subject compliance was 80%. Each subject completed a minimum of 2 attempts at each of the walking test configurations. The study dataset comprised 83 completed assessments. The smartphone assessment and algorithm measures demonstrate ICC > 0.9 for duration, distance and step count compared with "gold standard" rater measures [Table 1]. Placing the iPhone 8 plus in a shoulder bag or loose pocket over a fixed duration 20 second walk results in ICC > 0.8 for distance, step count and stride period.

Conclusion: Results suggest that under supervised conditions, a smartphone based assessment of gait and balance plus algorithm can accurately record walking measures in healthy individuals, further that the algorithm is operationally tolerant of different wear modalities. This algorithm may be of use in the study of CNS disorders, such as Parkinson's disease.

Table 1 Agreement, measured by ICC between 3 human raters and algorithm measures for analytical validity and operational tolerance of the new gait and balance algorithm

Assessment	Duration (s)	Distance (m)	Steps (count)	Speed (m/s)	Stride Period (s)
Analytical Validity (combined results for 5s, 10s, 15s, 20s walk)	0.989	0.987	0.992	0.764	0.593
Operational Tolerance (Loose Pocket)	N/A 20s walk of fixed duration	0.850	0.868	0.741	0.850
Operational Tolerance (Shoulder Bag)		0.932	0.858	0.837	0.798

LBA 9

Cardiovascular biomarkers with Parkinson's Disease clusters and prognosis: the Oxford Discovery Cohort

K. H.N. Chiu, S. Evetts, B. Yiu, M. Lawton, C. Lo, Y. Ben-Shlomo, A. Morovat, M.T. Hu (Hong Kong, Hong Kong)

Objective: To identify baseline cardiovascular serum biomarkers for Parkinson's disease (PD prognosis prediction.

Background: PD is a neurodegenerative disorder with marked variation in motor and non-motor baseline phenotype and subsequent progression. Biomarkers can help stratify patients in clinical trials. Diabetes has been described as a risk factor for PD; glucose dysregulation facilitating glycation, aggregation, and subsequent □-synuclein toxicity.[1] Serum fructosamine can serve as a surrogate marker of protein glycation. Lower apolipoprotein A-I, an HDL component, is associated with cognitive decline in PD.[2] High total serum cholesterol is associated with lower risk of PD.[3]

Method: 866 patients with PD (64.3% male; median disease duration, 0.96 years; IQR, 0.43-1.98)[table 1] from the Oxford Discovery cohort provided baseline non-fasting serum, from which corrected fructosamine, HDL, and total cholesterol were measured for baseline and prognostic prediction. The three selected biomarkers were compared against previously described data-derived PD subtypes based on clinical features [table 2].[4] Multilevel models with MDS-UPDRS parts I, II, III, MoCA, BDI, HADS-A, HADS-D) were used to determine whether these biomarkers predicted disease progression (mean 3.98 years; SD 2.23; median 4.30 years; IQR 2.67-5.96) from baseline [table 3].

Results: HDL and total cholesterol levels differed significantly across PD baseline subtype clusters. The subtype associated with severe motor disease, poor psychological well-being, and poor sleep had reduced HDL and cholesterol. Reduced HDL and cholesterol were associated with worse baseline non-motor outcomes (MDSUPDRS-I), activities of daily living (MDSUPDRS-II), and more severe depressive symptoms (BDI, HADS-D). Conversely, higher HDL and cholesterol were associated with better cognition (MoCA) at baseline. Surprisingly, reduced fructosamine was associated with worse baseline non-motor outcomes. No biomarker predicted subsequent motor or non-motor PD progression.

Conclusion: A low HDL and total cholesterol metabolomic profile at baseline was significantly associated with a poor motor/non-motor disease subtype. Lower baseline fructosamine levels were also associated with poor non-motor outcomes. However, no biomarker predicted subsequent motor or non-motor PD progression.

References: [1] H. Vicente Miranda, E.M. Szego, L.M.A. Oliveira, C. Breda, E. Darendelioglu, R.M. de Oliveira, D.G. Ferreira, M.A. Gomes, R. Rott, M. Oliveira, F. Munari, F.J. Enguita, T. Simoes, E.F. Rodrigues, M. Heinrich, I.C. Martins, I. Zamolo, O. Riess, C. Cordeiro, A. Ponces-Freire, H.A. Lashuel, N.C. Santos, L.V. Lopes, W. Xiang, T.M. Jovin, D. Penque, S. Engelender, M. Zweckstetter, J. Klucken, F. Giorgini, A. Quintas, T.F. Outeiro, Glycation potentiates alpha-synuclein-associated neurodegeneration in synucleinopathies, Brain 140(5) (2017) 1399-1419. [2] D.A. Hottman, D. Chernick, S. Cheng, Z. Wang, L. Li, HDL and cognition in neurodegenerative disorders, Neurobiol Dis 72 Pt A (2014) 22-36. [3] F. Fang, Y. Zhan, N. Hammar, X. Shen, K. Wirdefeldt, G. Walldius, D. Mariosa, Lipids, Apolipoproteins, and the Risk of Parkinson Disease, Circ Res 125(6) (2019) 643-652. [4] M. Lawton, Y. Ben-Shlomo, M.T. May, F. Baig, T.R. Barber, J.C. Klein, D.M.A. Swallow, N. Malek, K.A. Grosset, N. Bajaj, R.A. Barker, N. Williams, D.J. Burn, T. Foltynie, H.R. Morris, N.W. Wood, D.G. Grosset, M.T.M. Hu, Developing and validating Parkinson's disease subtypes and their motor and cognitive progression, J Neurol Neurosurg Psychiatry 89(12) (2018) 1279-1287.

Table 1. Baseline demographics of 866 PD patients

	Mean (SD); Median (IQR) / % (n)
Demographics	
Age, yr	67.21 (9.69); 67.91 (61.21-74.23)
Male, %	557 (64.3%)
Age at diagnosis (years)	65.97 (9.748); 66.67 (59.66-73.22)
Disease duration from diagnosis (years)	1.24 (0.947); 0.96 (0.43-1.98)
Vascular variables	
Heart failure	1% (9)
Angina	8.6% (74)
Myocardial infarction	4.4% (38)
Transient ischaemic attack/stroke	4.6% (40)
Vascular risk factors	
Diabetes	7.7% (67)
High cholesterol	32.1% (278)
Hypertension	34.5% (298)
Rheumatoid arthritis	0.1% (1)
BMI (kg/m^2)	27.50 (5.013); 26.95 (24.3-29.76)
Blood pressure, average of two systolic	143.65 (19.97); 141.50 (129-156)
Orthostatic hypotension (systolic drop >20 mmHg or diastolic drop >10 mmHg)	19.5% (169)
Smoking	
Non-smoker	59.0% (505)
Ex-smoker	38.6% (330)
Current smoker	2.6% (21)
Light	1.1% (9)
Moderate	1.1% (9)
Heavy	0.4% (3)
Current coffee intake (cups per day)	
Less than 1	9.4% (81)
1	6.3% (54)
2-3	26.2% (226)
4 or more	58.1% (503)
Cardiovascular medication	40.9% (329)
Beta-blockers	12.2% (98)
ACE inhibitors	18.5% (149)
Angiotensin II and renin blockers	7.0% (56)
Diuretics	12.2% (98)
Calcium antagonists and other vasodilators	12.8% (103)
Centrally acting antihypertensives	0.4% (3)
Nitrates and other antianginals	2.6% (21)
Peripheral vasodilators	0.1% (1)
Alpha blockers	2.1% (17)
Chronic Kidney Disease	0.1% (1)
Atrial Fibrillation	2.19% (19)
Parkinson's medications	
L-DOPA	54.8% (475)
COMT inhibitors	1.3% (11)
Amantadine	0.7% (6)
Anticholinergics	2.0% (17)
Dopamine agonists	29.6% (256)
MAO-B inhibitors	24.8% (215)
Untreated	13.0% (113)
LEDD	277.24 (209.53); 300 (100-400)
Biomarker variables	

Fructosamine (□mol/L)	238.20 (43.12); 235.93 (214.88-257.01)
Albumin (g/L)	40.28 (3.35); 40.4 (38.5-42.3)
Corrected Fructosamine	592.92 (105.10); 584.44 (538.15-634.25)
HDL (mmol/L)	1.51 (0.397); 1.47 (1.22-1.76)
Cholesterol (mmol/L)	4.85 (1.11); 4.84 (4.06-5.58)
Cholesterol/HDL ratio	3.33 (0.805); 3.23 (2.76-3.82)
Baseline clinical data	
MDS-UPDRS I	8.84 (5.11); 8 (5-12)
MDS-UPDRS II	8.70 (6.09); 8 (4-12)
MDS-UPDRS III	26.47 (10.91); 25 (18-34)
MDS-UPDRS IV	0.28 (1.10); 0 (0-0)
MoCA	24.86 (3.35); 25 (23-27)
HADS-A	4.54 (3.75); 4 (2-7)
HADS-D	4.39 (3.39); 4 (2-7)
BDI	8.87 (6.33); 8 (4-12)

Table 2. Biomarkers versus PD subtypes cluster

Blood biomarker	Cluster 1 n = 276	Cluster 2 n = 144	Cluster 3 n = 204	Cluster 4 n = 231	Adjusted P value	q value
Corrected Fructosamine	603.25 (107.70)	595.75 (124.14)	591.21 (105.77)	581.06 (86.00)	0.261	0.326
HDL	1.53 (0.38)	1.64 (0.39)	1.37 (0.37)	1.53 (0.40)	**<0.001**	**0.005**
Total Cholesterol	4.88 (1.14)	5.10 (1.05)	4.55 (1.10)	4.91 (1.07)	**0.008**	**0.020**

Note on Clusters[4]:
(1) fast motor progression with symmetrical motor disease, poor olfaction, cognition, and postural hypotension;
(2) mild motor and nonmotor disease with intermediate motor progression;
(3) severe motor disease, poor psychological well-being, and poor sleep with an intermediate motor progression;
(4) slow motor progression with tremor-dominant, unilateral disease.

Table 3: Longitudinal follow-up associations (per standard deviation change in biomarkers)

	Biomarker	Intercept	Slope	Intercept q value	Slope q value
MoCA	Corrected Fructosamine	0.17 (-0.06 to 0.40); 0.15	-0.04 (-0.10 to 0.02); 0.17	0.15	0.36
	HDL	0.33 (0.08 to 0.58); **0.01**	-0.04 (-0.1 to 0.02); 0.24	**0.02**	0.36
	Total Cholesterol	0.34 (0.10 to 0.59); **0.01**	-0.01 (-0.07 to 0.05); 0.67	**0.02**	0.67
UPDRS-I	Corrected Fructosamine	-0.43 (-0.80 to -0.05); **0.03**	0.06 (-0.02 to 0.14); 0.14	**0.03**	0.42

	HDL	-0.94 (-1.35 to -0.53); **0.00**	-0.01 (-0.09 to 0.08); 0.88	**0.00**	0.88
	Total Cholesterol	-0.47 (-0.86 to -0.06); **0.02**	-0.02 (-0.11 to 0.05); 0.56	**0.03**	0.84
UPDRS-II	Corrected Fructosamine	-0.04 (-0.49 to 0.39); 0.86	0.08 (-0.02 to 0.18); 0.16	0.86	0.20
	HDL	-0.74 (-1.22 to -0.26); **0.00**	-0.08 (-0.19 to 0.04); 0.20	**0.00**	0.20
	Total Cholesterol	-0.51 (-0.98 to -0.05); **0.03**	-0.08 (-0.19 to 0.04); 0.18	**0.05**	0.20
UPDRS-III	Corrected Fructosamine	-0.35 (-1.19 to 0.50); 0.42	0.14 (-0.1 to 0.37); 0.26	0.42	0.39
	HDL	-0.82 (-1.74 to 0.10); 0.08	-0.10 (-0.35 to 0.15); 0.44	0.24	0.44
	Total Cholesterol	-0.66 (-1.56 to 0.25); 0.16	-0.17 (-0.42 to 0.08); 0.18	0.24	0.39
BDI	Corrected Fructosamine	-0.10 (-0.58 to 0.38); 0.68	-0.02 (-0.12 to 0.08); 0.65	0.68	0.65
	HDL	-0.93 (-1.44 to -0.41); **0.00**	-0.07 (-0.17 to 0.03); 0.19	**0.00**	0.29
	Total Cholesterol	-0.52 (-1.03 to -0.01); **0.04**	-0.09 (-0.20 to 0.01); 0.08	0.06	0.24
HADS-D	Corrected Fructosamine	-0.15 (-0.41 to 0.11); 0.25	0.02 (-0.04 to 0.07); 0.54	0.25	0.77
	HDL	-0.50 (-0.78 to -0.22); **0.00**	0.01 (-0.05 to 0.07); 0.77	**0.00**	0.77
	Total Cholesterol	-0.28 (-0.55 to -0.01); **0.05**	-0.01 (-0.07 to 0.04); 0.64	0.08	0.77
HADS-A	Corrected Fructosamine	-0.05 (-0.33 to 0.22); 0.70	0.00 (-0.05 to 0.05); 0.92	0.70	0.96
	HDL	-0.35 (-0.66 to -0.05); **0.02**	0.00 (-0.05 to 0.06); 0.90	0.06	0.96
	Cholesterol	-0.31 (-0.60 to -0.02); **0.04**	0.00 (-0.05 to 0.06); 0.96	0.06	0.96

LBA 10
Breaking Barriers for Inclusivity in Parkinson's Disease Research

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Objective: Understanding the reasons behind the low participation of minorities, especially Hispanics, in Parkinson's disease (PD) research and to increase recruitment.

Background: Minorities are underrepresented in PD research as indicated by the 2009 meta-analysis of PD clinical trials, of the last 20 years, showing that only 17% of them reported ethnicity and 8% of subjects were non-white. [1] This affects the generalizability of PD research. We chose the Hispanic population as the focus of our study because of the documented high incidence of PD in Hispanics [2]. Our study was funded by Michael J Fox Foundation and conducted under the supervision of Massachusetts General Hospital as a part of the larger study "Foster Inclusivity in Research Engagement for Under-represented Populations in PD (FIRE UP PD)".

Method: Our study consisted of Pre-intervention, Intervention, and Post-intervention phases. Participants were asked to fill surveys during pre and post-intervention phases to assess awareness of the disease, research, barriers to research participation, and means to alleviate them. The research was conducted in Broward, Palm Beach, and Miami-Dade counties. During intervention phase seminars were conducted regarding PD and PD research. Statistical analysis was done using SAS. We conducted univariate analysis using the Chi-square test or Fisher's exact test and multivariate analysis using a logistic regression model.

Results: We enrolled 64 subjects with two-thirds being Hispanic. [Table 1] The most common barriers identified were; lack of awareness of research resources 65.6%, financial issues 64.1%, and lack of awareness of disease 60.9%.[Table2] Lack of awareness of the disease as a barrier was significantly associated with male gender and household income.

Conclusion: The study identifies barriers to minority participation in PD research and underscores the importance of multifaceted approaches to increase enrollment; such as the involvement of community leaders, financial compensation, engagement of physicians with patients and caregivers.

References: [1] Schneider MG, Swearingen CJ, Shulman LM, Ye J, Baumgarten M, Tilley BC. Minority enrollment in Parkinson's disease clinical trials. Parkinsonism Relat Disord. 2009;15(4):258-262. [2] Van Den Eeden SK, Tanner CM, Bernstein AL, et al. Incidence of Parkinson's disease: variation by age, gender, and race/ethnicity. Am J Epidemiol. 2003;157(11):1015-1022.

Factor	N (%) or Mean(SD)
Gender	
Female	29 (48.3%)
Male	31 (51.7%)
Age	63.7 (13.7)
Age	
<60	21 (33.9%)
≥60	41 (66.1%)
Age	
≤70	41 (66.1%)
>70	21 (33.9%)
Ethnicity	
Hispanic/Latino	42 (66.7%)
Not Hispanic/Latino	21 (33.3%)
Race	
Specify origin	1 (4.2%)
African American, Black, West Indian, Afro-Caribbean, Afro-Latino, African (sub-Saharan)	12 (50.0%)
American Indian/Alaska Native	2 (8.3%)
Caucasian, White	9 (37.5%)
Unknown(Missing: N=40)	
Total household Income	
Less than 50,000	33 (51.6%)
≥50,000 or not prefer to answer	31 (48.4%)
Marital status	
Living with partner	3 (4.8%)
Married	46 (73.0%)
Never Married	5 (7.9%)
Separated/Divorced	7 (11.1%)
Widowed	2 (3.2%)
Education level	
9th-12th grade (no diploma)/ High school graduate/ GED	11 (18.0%)
Post High School vocational, technical or trade school	2 (3.3%)
Some college but no degree	15 (24.6%)
Associate's degree/ Bachelor's degree	19 (31.1%)
Master's degree/ Professional or doctoral degree	14 (23.0%)

Barriers to Participation in PD Research

	N (%)
1.Lack of awareness of disease	39 (60.9%)
2.Lack of awareness of research resources	42 (65.6%)
3.Lack of diagnosis	23 (35.9%)
4.Misdiagnosis	19 (29.7%)
5.Stigma attached to the diagnosis of PD	21 (32.8%)
6.Financial issues	41 (64.1%)
7.Insurance issues	31 (48.4%)
8.Lack of access to health care	24 (37.5%)
9.Transportation	29 (45.3%)
10.Lack of trust in government or private research or personnel	23 (35.9%)
11.Language barrier	22 (34.4%)
12.Religious barrier	8 (12.5%)
13.Afraid of harm being done by the research	25 (39.1%)
14.Afraid of misinformation or false information being provided by research team	19 (29.7%)
15.Lack of time/time constraints	25 (39.1%)
16.Lack of motivation or interest in research	19 (29.7%)
17.Lack of awareness of utility of research	7 (10.9%)
18.Memory issues	19 (29.7%)
19.Movement/walking issues that in turn lead to inability to participate	31 (48.4%)
20.Lack of information regarding benefit of research	21 (32.8%)
21.Caregiver burden	19 (29.7%)
22.Unavailability of a caregiver to provider company through the research study	22 (34.4%)

LBA 11

Rapid implementation of a physical activity coaching program via telehealth for people with Parkinson's disease: Recruitment & Feasibility

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Objective: The purpose of this study was to evaluate recruitment and feasibility for a rapid modification of a physical activity (PA) coaching program delivered via telehealth in those newly diagnosed with Parkinson's disease, Engage-PD.

Background: The Engage-PD program is a single cohort, implementation study of a coaching intervention designed to address barriers to exercise and support adherence to individualized exercise plans in PwPD. The coronavirus pandemic initially forced a rapid transition of the Engage-PD program to a telehealth platform after state restrictions on non-essential medical visits were placed in New York. We describe recruitment, preliminary feasibility data, and future directions for the program.

Method: We recruited PwPD (Hoehn & Yahr Stage I-III), from the Columbia University Medical Center Movement Disorders Clinic. The Engage intervention consists of up to 5 individualized coaching session delivered via telehealth platform, over a 3-month period. The coaching program is grounded in the Self-Determination Theory (SDT), and focuses on themes of individual autonomy, competence and relatedness, with aims to enhance levels of PA and Exercise. Coaches are provided a coaching manual, undergo extensive training on motivational interviewing techniques, goal setting and promotion of SDT themes. Participants receive a disease-specific workbook which is reviewed and referenced by their coach during PA coaching sessions. Outcomes are measured at baseline and 3-month follow-up. Outcomes were designed to evaluate Physical Activity (Brunel Lifestyle Inventory), Exercise Self-Efficacy (Norman Exercise Self-Efficacy Scale), patient perceptions of performance and satisfaction (Modified Canadian Occupational Performance Measure) and intervention acceptability.

Results: Data collection is ongoing. From March 25-June 15, we received 55 referrals, and 31 PwPD were enrolled for a recruitment rate of 56%. Mean (SD) age for enrolled participants was 65.7(9.2) years including 19 men and 12 women. Racial subgroups included 81% White (n=25), 3% Asian (n=1), 3% Hispanic/Latinx (n=1), 6% other (n=2), and 6% declined to identify (n=2). Of the 31 enrolled, four experienced technology difficulties that took longer than 15 minutes to address, but all participants were able to connect within the first session. The current retention rate is 97% (30/31).

Conclusion: Analysis of recruitment & feasibility is crucial to inform future modifications. Preliminary data shows that the initial transition of the Engage-PD program to telehealth is feasible, with high retention and adherence. We acknowledge the lack of diversity in our initial sample and will be implementing strategies to mitigate this inequality. PA coaching has a place in early-mid stage PD care, however further analysis is needed to evaluate total program effectiveness.

LBA 12

Probabilistic Versus Deterministic Tractography-Based Ventral Intermediate Nucleus Targeting in Patients with Essential Tremor

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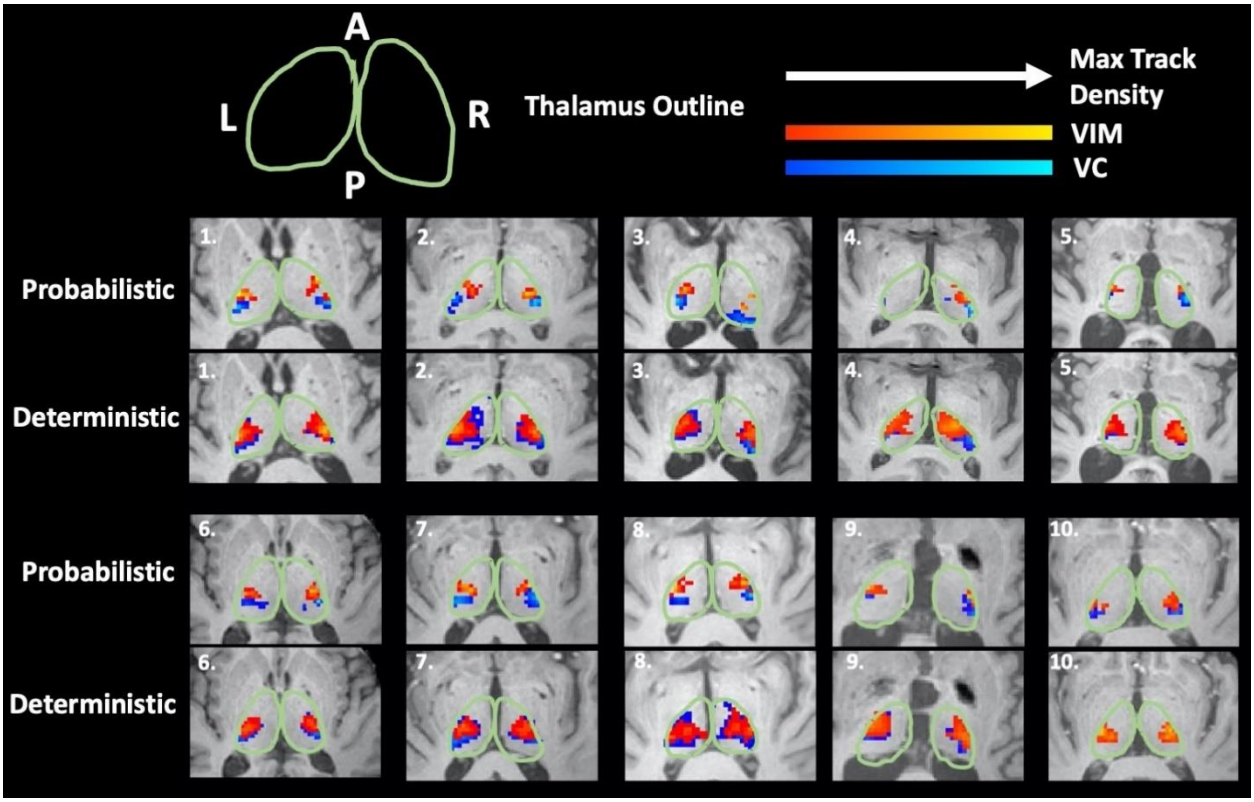
Objective: Compare tractography methods for identifying thalamic fiber bundles relevant to planning target sites for ventral intermediate nucleus (VIM) targeting.

Background: The VIM of the thalamus is an established surgical target for deep brain stimulation in the treatment of tremor in Parkinson's disease, and essential tremor (ET). The VIM is not readily visible on conventional imaging sequences, yet tractography-based analysis of DBS electrode placement using probabilistic and deterministic tractography have linked successful outcomes with modulation of motor input to the VIM nucleus. While more computationally intensive, probabilistic tractography may provide more objective structural connectivity measures and better resolution for crossing fibers. This study compares coordinates of tractography-based VIM targeting to evaluate the robustness of tractography-based VIM localization.

Method: 10 patients with ET received preoperative diffusion imaging. Freesurfer was used to segment the motor and sensory areas of each patient. Manual segmentation of the cerebral peduncles and the medulla were performed as exclusion masks for motor and sensory fibers respectfully. Semi-manual segmentation of the right and left thalamus were performed on proton density images. Fiber assignment was performed using selected cortical areas as initiation seeds and the VIM as an inclusion mask. Probabilistic tractography was performed using FSL and deterministic tractography was performed using MRtrix. All sets of tracts were thresholded at 10% of their maximum intensity, and track density maps were created. The center of mass was calculated and compared between tracking solutions and the distances between the VIM and VC fibers were calculated within tracking solutions.

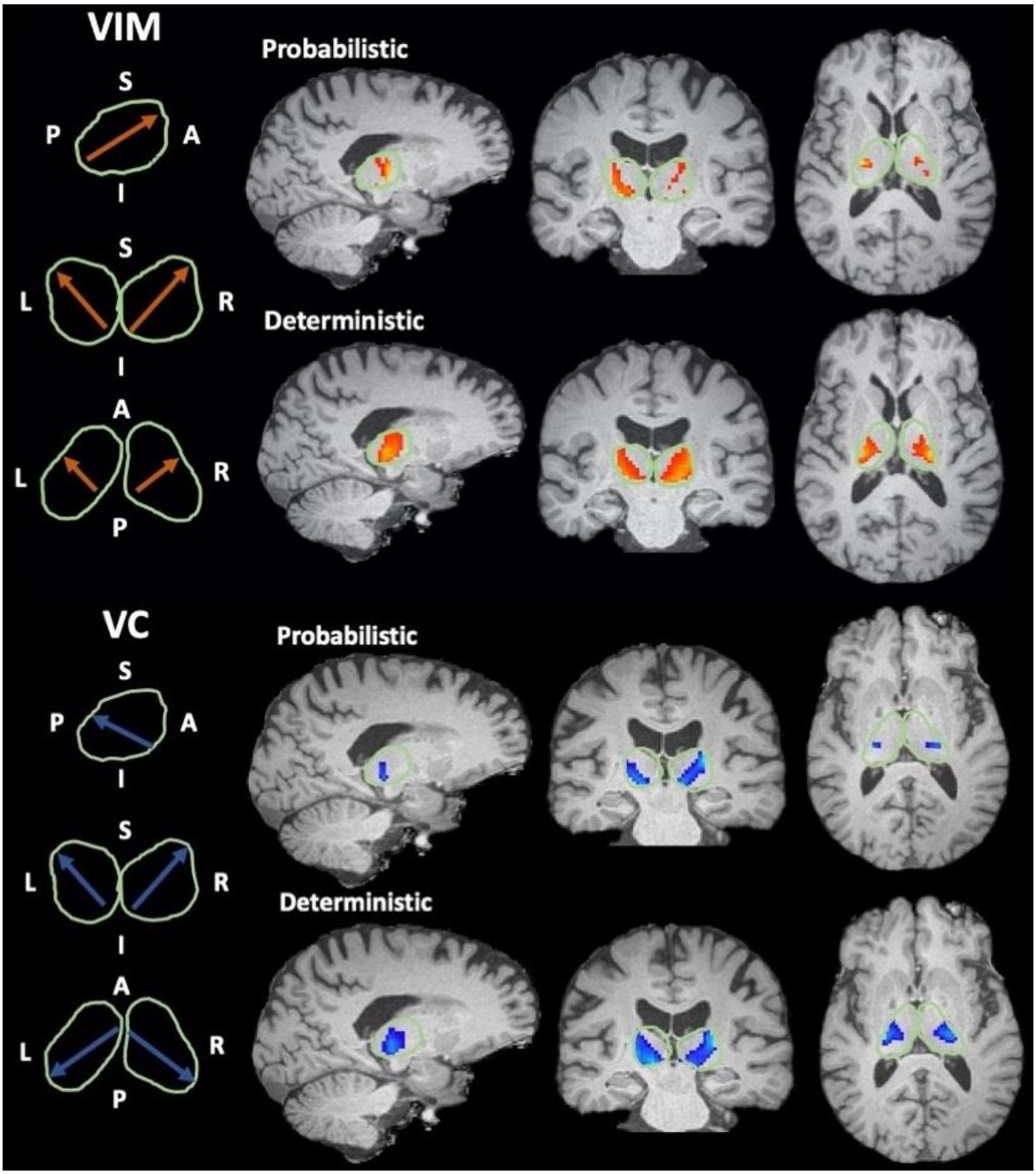
Results: Large differences in distance and direction were observed between tracking solutions for all subjects (Fig 1). Probabilistic VIM fibers were consistently more anterior, lateral, and superior than deterministic, with VC fibers being more posterior, lateral, and superior. (Fig 2) Deterministic solutions were unable to distinguish motor and sensory fibers in the majority of patients with a separation between VIM and VC to be < .5mm, with probabilistic having a separation of up to 2.25 mm.

Conclusion: Probabilistic fiber tracking is more sensitive and provides more accurate delineation of VIM and VC within ET patients. These results have large clinical implications for the performance and evaluation of prospective tractography-based VIM targeting, suggesting probabilistic tractography-guiding to be more proficient in the delineation of sensory and motor fibers in preoperative targeting.



	x [mm]		*y* [mm]		Euclidean Distance [mm]	
Tracking solution	Mean	SD (range)	Mean	SD (range)	Mean	SD (range)
Comparison across tracking solutions						
pL VIM vs. dL VIM	-0.65	0.54 (-1.7; 0.1)	0.72	0.70 (-0.7; 2.2)	2.95	1.25 (0.4; 4.7)
pR VIM vs. dR VIM	-0.55	0.49 (0.0; -1.5)	0.69	0.58 (-0.6; 1.4)	2.62	1.13 (0.0; 3.9)
pL VC vs. dL VC	-0.41	0.62 (-1.2; 0.9)	-0.61	0.54 (-1.2; 0.4)	3.24	2.34 (0.9; 3.6)
pR VC vs. dR VC	-0.75	0.72 (-2.2; 0.4)	-0.55	0.57 (-1.2; 0.6)	1.04	2.75 (1.5; 5.2)
Comparison within tracking solutions						
pL VIM vs. pL VC	0.43	0.66 (-0.4; 1.2)	2.25	0.61 (1.4; 3.5)	5.26	1.2 (3.3; 7.6)
dL VIM vs. dL VC	0.64	0.32 (0.3; 1.3)	0.91	0.47 (0.4; 1.7)	2.70	1.3 (1.0; 5.2)
pR VIM vs. pR VC	0.83	0.93 (0.02; 3.0)	2.00	0.61 (1.2; 2.9)	4.79	1.4 (2.8; 7.1)
dR VIM vs. dR VC	0.44	0.63 (-1.1, 1.2)	0.60	0.29 (0.1, 1.0)	1.99	1.0 (0.6; 3.6)

Table 1. Distance of the centers of mass of the tracts along the axial slice. The two fiber tracking techniques (d = deterministic, p = probabilistic), and the two sets of ROIs were compared. Axes are from medial (+x) to lateral (-x) and from anterior (+y) and posterior (-y). Additionally, the Euclidean distances are shown.


VIM
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LBA 13

Screening peripheral biopsies for alpha-synuclein pathology using deep machine learning

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Objective: To demonstrate the practical utility of a trained AI as a tool for screening for Lewy-type pathology in peripheral biopsy in Parkinson's disease.

Background: Post-mortem assessment remains the only option and a gold standard for a definitive diagnosis of Parkinson's disease (PD). The antemortem diagnosis is challenging due to a variable clinical presentation and the abundance of mimicking conditions, obscuring the clinical picture and delaying the treatment. It is well established that while PD pathologically manifests in central nervous system with aggregation of α-synuclein as Lewy bodies and Lewy neurites, this pathology is also found in the peripheral nervous system. Peripheral Lewy-type synucleinopathy (LTS) is present in early PD, suggesting its utility as a diagnostic and prognostic biomarker. We have previously confirmed that detection of LTS in submandibular gland (SMG) biopsies is sensitive (.75) and specific (.90) for early PD. However, the assessment by a neuropathologist of multiple levels of such biopsy is laborious and time-consuming.

Method: Here work we applied two Convolutional Neural Networks (CNN) for detection of LTS on 283 digital whole slide images (WSI) from 95 unique SMG biopsies. A total number of 8,386 LTS were annotated following the interrater reliability study with kappa=.7. We used transfer learning to train a CNN model to classify image patches (40-by-40 pixels at 20x) with and without presence of LTS objects.

Results: The trained CNNs showed the following performance on image patches: sensitivity: .982/.988, specificity: .998/.999, precision: .852/.950, accuracy: .995/.998, and F-1 score .912/.968 for ResNet30/InceptionV4 respectively. On test WSI the sensitivity in detecting LTS was .963/.971 respectively.

Conclusion: This work is first to demonstrate the practical utility of an CNN for screening for LTS, which can further translate into a practical screening tool facilitating the antemortem diagnosis of PD. We further plan to develop neural networks for accurate and precise detection and quantification of LTS in antemortem SMG biopsies. This, altogether, would offer a screening, confirmatory, prognostic, and quantitative tool for clinical assessment of early PD.

LBA 14

Clinical spectrum of movement disorders at a tertiary care teaching institute in North India

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Objective: We aimed to know the spectrum of movement disorder patients seen at our clinic and to compare them with other published reports.

Background: The sub-specialty of movement disorder is relatively new in India and only a few institutes are running specific movement disorder programs. There is little information available on the number of patients with movement disorders seen by neurologists in India.

Method: We identified all patients seen from March 2014 to February 2020 at the Parkinson disease and movement disorders clinic (PDMDC) of the Govind Ballabh Pant Institute of Postgraduate medical education and research (GIPMER), New Delhi and where a final diagnosis of movement disorder was made.

Results: A total of 3162 patients were seen at the movement disorder clinic from March 2014 to February 2020. We identified 37.2% (1,177/3,162) of patients having parkinsonism, which included, patients of idiopathic Parkinson's disease [40.3% (475/1,177)], young-onset Parkinson's disease [12.4% (146/1,177)], familial Parkinson's disease [14.6% (173/1,177)], atypical parkinsonism [16.8% (198/1,177)], and drug-induced parkinsonism [15.7% (185/1,177)]. Dystonia was the second most common movement disorder seen in 18.6% (591/3162) of patients. Cervical dystonia was the most common and accounted for 41.5% (245/591) of primary dystonia patients. In the group of secondary dystonia, Hemi dystonia was observed in 22 patients (0.7%). We classified tremor patients as per the revised "2018 consensus criteria for the classification of tremor disorders" and non-parkinsonian tremor was seen in 11.5% (364/3162) of patients.1 Out of these, 50.5% (184/364) were diagnosed as dystonic tremors, while the remaining were diagnosed as essential tremors [41.2% (150/364)] and essential tremors-plus [8.2% (30/364)].The frequency of other movement disorders observed were chorea [5.2% (165/3162)], hemifacial spasm [4.7% (150/3162)], stereotypies [2.2% (72/3162)], ataxia [1.9% (63/3162)], tics and Tourette syndrome [0.85% (26/3162)], secondary movement disorder [11.9% (378/3162)] and functional movement disorders [5.3% (169/3162)].

Conclusion: We have provided a robust data of the spectrum of movement disorders from our center. The frequency of some (e.g., Parkinsonism) of the movement disorders is similar to the previous reports but different for others (e.g., dystonia). Our observations highlight that we need to do more epidemiological studies to know the exact frequency of movement disorders prevalent in this part of the world. Also, our observations document the need for more awareness of Parkinson's Disease and other movement disorders among neurologists in India, including an urgent need for specialized training in this field.

References: 1. Bhatia KP, Bain P, Bajaj N, et al. Consensus Statement on the classification of tremors. from the task force on tremor of the International Parkinson and Movement Disorder Society. Mov Disord. 2018;33(1):75-87.

LBA 15
Clinical conditions “suggestive of progressive supranuclear palsy”

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Objective: To evaluate the diagnostic performance of “suggestive of progressive supranuclear palsy” in a large autopsy-cohort.

Background: The Movement Disorder Society diagnostic criteria for progressive supranuclear palsy (MDS-PSP criteria) introduced the diagnostic certainty level “suggestive of progressive supranuclear palsy” for clinical conditions with subtle signs of the disease, suitable for early identification of patients not meeting the threshold for possible or probable diagnosis yet, but in whom a diagnosis may be confirmed as the disease evolves.

Method: Diagnostic performance of different diagnostic certainty levels was analyzed for the MDS-PSP and the Neurological Disorders and Stroke and Society for Progressive Supranuclear Palsy (NINDS-SPSP) criteria for each year after symptom onset based on retrospective data of 195 autopsy-confirmed patients with progressive supranuclear palsy and 161 patients with pathologies other than 4-repeat tauopathies.

Results: “Suggestive of progressive supranuclear paly” strongly increased the sensitivity of the MDS-PSP criteria compared to the NINDS-SPSP criteria. In the first year, 40% of patients with progressive supranuclear palsy fulfilled criteria for “suggestive of progressive supranuclear paly”, 53% fulfilled the total MDS-PSP criteria, and 11% the NINDS-SPSP criteria. Two thirds of patients with “suggestive of progressive supranuclear palsy” converted into possible or probable progressive supranuclear palsy. Specificity of “suggestive of progressive supranuclear palsy” was 89% in the first year.

Conclusion: The introduction of “suggestive of progressive supranuclear palsy” by the MDS-PSP criteria allows early identification of patients that are likely to develop possible or probable progressive supranuclear palsy later in the course and have underlying progressive supranuclear palsy pathology.

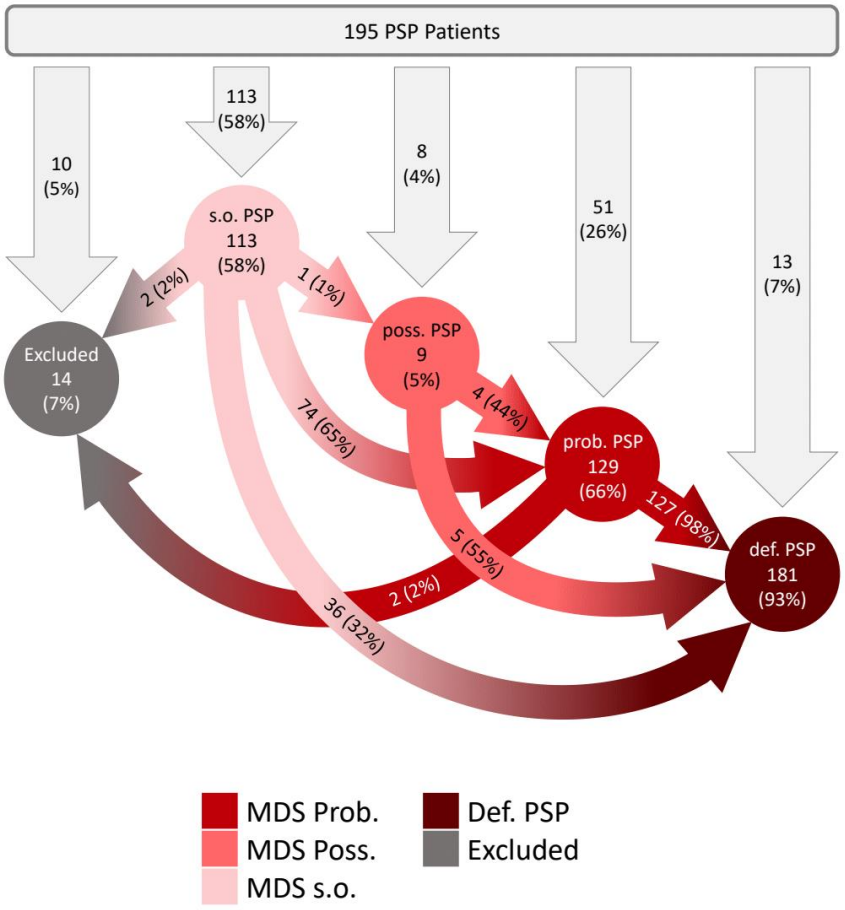

Fig. 2A: Initial allocation and categorical evolution of diagnostic certainty levels of the MDS PSP criteria showing the quantitative relevance of the s.o. PSP category as most frequent first clinical diagnosis in N=195 definite PSP cases. Percentages in the arrows refer to the amount of patients in the bubble at the beginning of the arrow. Definite PSP is a neuropathological diagnosis and therefore can only be stated post mortem.

LBA16

MDS Peer Reviewing Education and Mentoring Program: Early Implementation and Strategies

D. Garbin Di Luca1, A. Kirby, C.Goetz (USA)

Objective: To report the design, early development and results of a formal education program in peer reviewing by the MDS Young Members Group in collaboration with the past Editors of MDS Journals.

Background: Whereas entering into the arena of peer-reviewing for scientific journals is paramount to academic advancement, there is no training program specific for movement disorders to allow young professionals to learn the needed skills. To address this knowledge gap, the MDS Young Members Group created a formal education program in peer reviewing.

Method: The MDS Peer Reviewing Education and Mentoring Program creation and early implementation are described. An electronic survey was sent to all participants before program initiation.

Results: We received 101 applications from the members of the MDS Young Members Group, comprised of early stage professionals younger than 40 years of age. From these candidates, ten MDS members were selected across the sections (PAS: 3; ES: 3; AOS: 3; AF: 1). The number of peer-reviews performed prior to enrollment varied from none to 32 papers. Performance on objective skills assessment showed room for growth (median 6, intraquartile range 4.25-6.75; scored out of 10). There was no correlation between number of prior reviews and score (R2=0.05), but the amount of confidence in their knowledge of peer review skills was positively correlated with their score (R2=0.21). Anticipated milestones include the creation of a platform with materials on the peer-review process, followed by an independent peer-review by the mentee followed by a feedback session with mentors. At the end of the 12-month period, the mentor will write an evaluation of the program and the mentees to submit to the current editors of the MDS-journals.

Conclusion: With the appropriate support and mentorship, a peer review program was successfully incorporated as an educational activity by the MDS Young Members Group. Overall, this program will give young professionals experience in performing high-quality peer review and allow them to establish a mentoring relationship with former journal editors. Our baseline data show a diverse group of mentees and suggest that they have room to improve as well as insight into their knowledge of peer-review. A dedicated peer review program may help young professionals to learn to peer review with confidence and may engage a new cohort of reviewers for the MDS journals.