WCN 2019
XXIV WORLD CONGRESS OF NEUROLOGY
DUBAI, UNITED ARAB EMIRATES, OCTOBER 27-31 2019

HARRIS-BENEDICT EQUATION WELL PREDICTS RESTING ENERGY EXPENDITURE IN PARKINSON'S DISEASE PATIENTS UNDER DOPAMINERGIC TREATMENT? A CONTROL-CASE STUDY.

M. Barichella[1], G. Piuri[1], S.A. Faierman[1], E. Cassani[1], E. Cereda[2], E. Vaccarella[1], O.V. Donnarumma[1], V. Ferri[1], G. Pinelli[1], C. Bolliri[1], S. Caronni[1], C. Pusani[1], G. Pezzoli[1].

[1]Parkinson Institute- ASST G.Pini-CTO, ASST G.Pini-CTO, Milan, Italy.
[2]Clinical Nutrition and Dietetics Unit- Fondazione IRCCS Policlinico San Matteo, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy.

OBJECTIVES

Parkinson's disease (PD) patients have a complex weight homeostasis with body weight changing substantially throughout the course of the disease.

We designed a case-control study to:

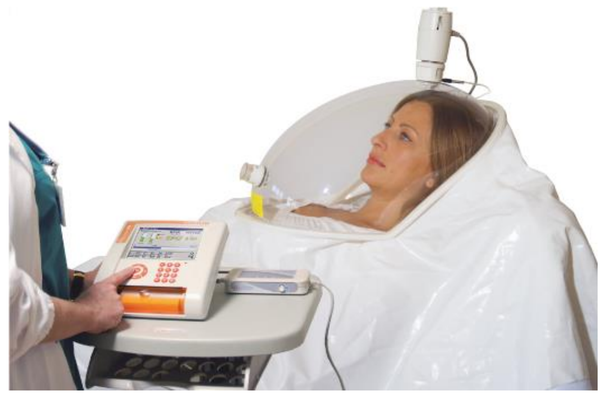
→ Investigate whether PD is associated with changes in resting energy expenditure (REE)

→ Assess the accuracy of REE predictive equations for healthy people in PD

→ Eventually construct a new formula.

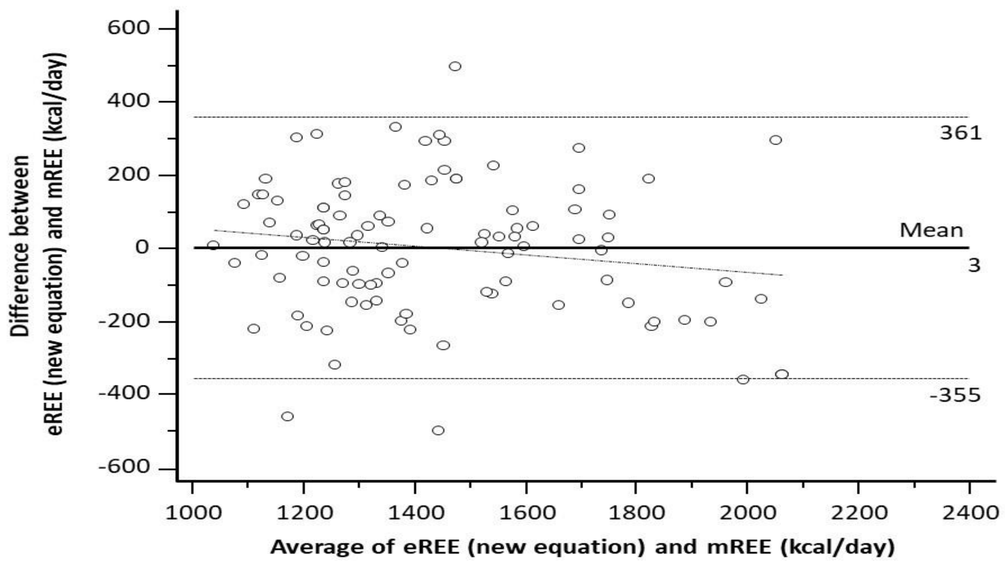
METHODS

Measured REE (mREE) was compared between 122 PD patients and 122 sex and body mass index (BMI)-matched controls. The accuracy of estimated REE by 5 common equations (Harris/Benedict-1919, Harris/Benedict-1984, Mifflin St. Jeor, WHO/FAO and aggregate formula) was investigated in PD using Bland-Altman analysis and reported as the frequency of accurate predictions (±10%). Concordance correlation coefficients (CCC) were also calculated. Then, we regressed a new REE equation - using sex, age, weight, height and Hohen-Yahr stage - and validated it in an independent sample (N=100).



RESULTS

Compared to healthy controls, mREE was not different in the whole PD sample but it was increased in patients with BMI≥30 kg/m^2 and Hohen-Yahr stage≥3.



VARIABLE	PD patients [Derivation sample] (N=122)	Controls (N=122)	P-value [a]	PD patients [Validation sample] (N=100)
Age (years), Mean (SD)	66.8 (8.7)	66.9 (8.8)	0.95	66.7 (9.0)
Weight (kg), Mean (SD)	74.2 (15.3)	72.8 (13.1)	0.44	74.3 (14.3)
Body Mass Index (kg/m^2), Mean (SD)	27.5 (4.7)	27.5 (4.5)	0.93	27.6 (4.7)
Disease duration (years), Mean (SD)	8.4 (6.8)	-	-	8.5 (7.2)
UPDRS part III (score), Mean (SD)	21.2 (11.3)	-	-	20.8 (11.1)
Hoehn-Yahr stage, Mean (SD)	2.2 (0.7)	-	-	2.2 (0.7)
Levodopa dose (mg/day), Mean (SD)	436 (259)	-	-	435 (243)
Levodopa dose (mg/kg/day), Mean (SD)	6.2 (3.9)	-	-	6.1 (3.6)

Table 1. Clinical and demographic characteristics of the study population.
Abbreviations: **UPDRS**, Unified Parkinson's Disease Rating Scale; **SD**, standard deviation.
[a] P-value (patients vs. controls) are provided according to unpaired Student's t-test.

Available REE equations showed limited accuracy (accurate prediction [±10%] frequency, <60% for all). For the new equation the proportion of accurate prediction was 67.0% (overestimation, 24.0%) and a CCC of 0.77.

CONCLUSIONS

PD patients are not commonly characterized by an increase in REE. This is limited to patients suffering from obesity and more severe disease. Common REE equations appear to be inaccurate.
The new formula provided better REE estimates and its use can be proposed.

This work was supported by " Fondazione Grigioni per il Morbo di Parkinson " www.parkinson.it and "Brain and Malnutrition in Chronic Diseases Association Onlus" www.bm-association.it

WFN
ACCELERATING THE PACE OF CHANGE
DUBAI
EMA EMINS
WCN 2019
XXIV WORLD CONGRESS OF NEUROLOGY
DUBAI, UNITED ARAB EMIRATES, OCTOBER 27-31 2019

VITAMIN 25(OH)D AND COGNITIVE FUNCTION IN PARKINSON'S DISEASE

M. Barichella[1], C. Bolliri[1], G. Pinelli[1,2], L. Iorio[1], V. Ferri[1], E. Cassani[1,3], A. Giana[1], S. Caronni[1], C. Pusani[1], F. Del Sorbo[1], R. Cilia[1], E. Quacci[1], G. Riboldazzi[3], S. Lanfranchi [3], E. Cereda[4], G. Pezzoli[1.]

1. Parkinson Institute ASST G.Pini-CTO, Milan, Italy.
2. Dipartimento Riabilitazione Malattia di Parkinson e Disturbi del Movimento, Ospedale Classificato Moriggia Pelascini, Gravedona, Italy.
3. U.S. Riabilitazione Parkinson, Fondazione Gaetano e Piera Borghi di Brebbia, Brebbia, Italy.
4. Clinical Nutrition and Dietetics Unit, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy.

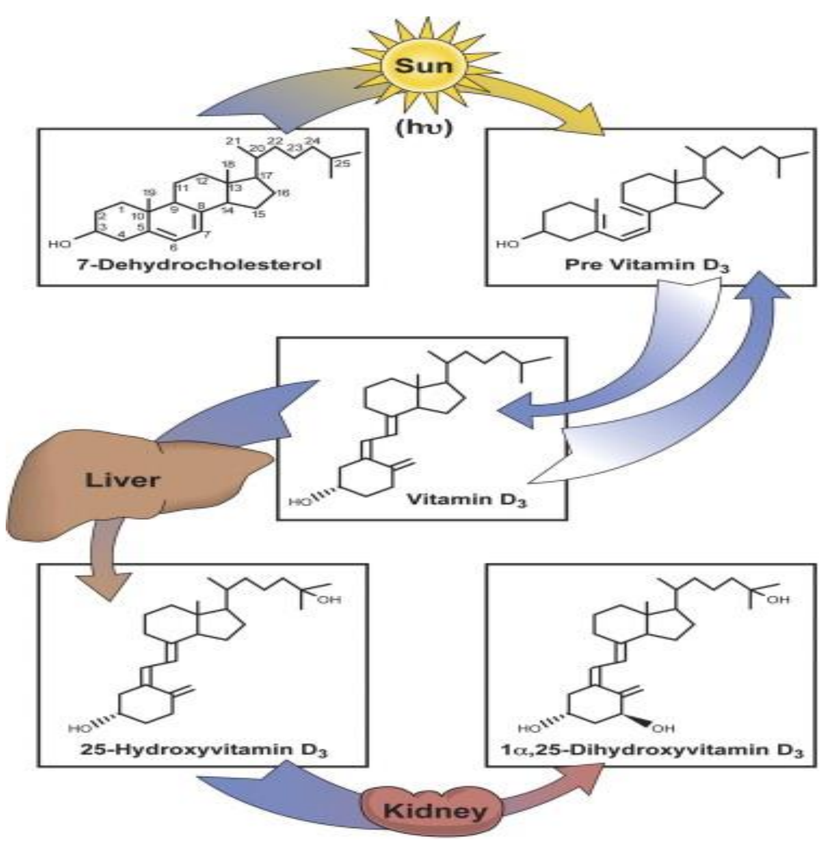
BACKGROUND

The role of vitamin D is gaining attention in neurodegenerative diseases, as low serum concentrations have been consistently found in both Alzheimer's and Parkinson's disease (PD).

OBJECTIVES

This study aims to correlate 25(OH) D plasma levels with global cognitive function and severity of motor function in PD

Plasma levels (ng/ml)	Vitamin D (25-OH) Status
<10	Highly deficient
10-19	Deficient
20-29	Insufficient
>30	Sufficient
> 100	Toxic



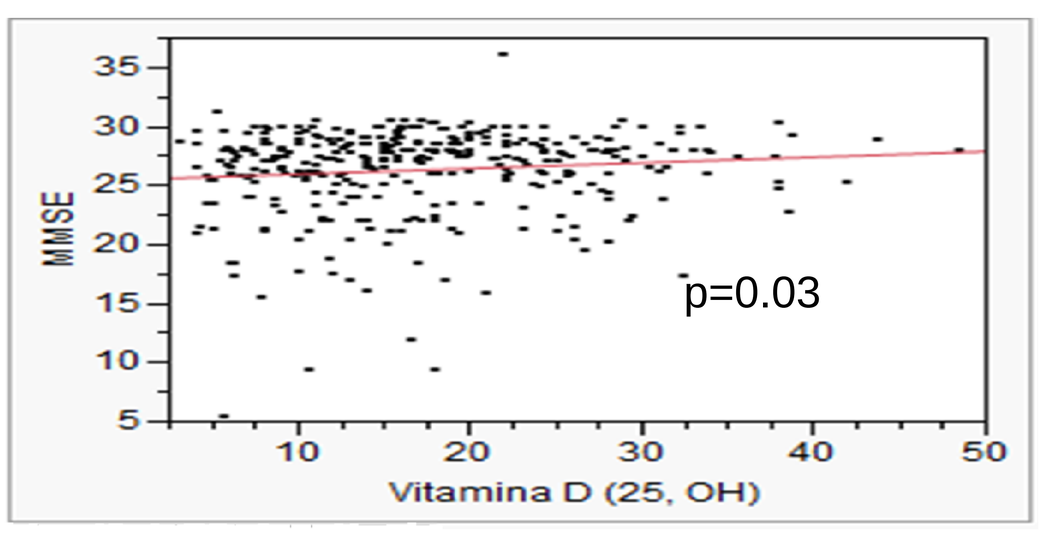
Vitamin D metabolism

METHODS

350 patients with idiopathic PD (66% male, mean age 70.5 yr, range 60-87, mean disease duration ± DS 9.9±5.7 yr) were consecutively recruited at a tertiary referral clinic during an 8-month period. We correlated plasma 25(OH) D levels with demographic and clinical data, including PD severity (Hoehn & Yahr stage) and global cognitive function (Mini Mental State Examination, MMSE).
In addition, Plasma 25(OH) D levels were correlated with sun exposure (hours/day).

RESULTS

Overall, PD patients showed 25(OH) D deficiency (mean level ± DS 17.1±8.34 ng/ml). Using simple linear correlation analysis, we found a direct association between 25(OH) D and MMSE score (p=0.03) and an inverse association between 25(OH) D and age (p<0.01) and the Hoehn & Yahr stage (p=0.01).
Plasma 25(OH) D levels positively correlated with solar exposure (p = 0.04).



CONCLUSIONS

In a large PD cohort, low 25(OH) D levels correlated with older age and with worse global cognitive function and disease severity. Daily time of sun exposure greatly increased 25(OH) D levels. We strongly recommend screening PD patients for 25(OH) D plasma levels and -in case of deficiency- ensuring oral supplementation to reduce the risk of cognitive dysfunction and motor disability.

This work was supported by " Fondazione Grigioni per il Morbo di Parkinson " www.parkinson.it" and "Brain and Malnutrition in Chronic Diseases Association Onlus" www.bm-association.it

BRAIN AND MALNUTRITION
Chronic Diseases Association ONLUS

WFN
ACCELERATING THE PACE OF CHANGE
DUBAI
EMA EMIRS
WCN 2019
XXIV WORLD CONGRESS OF NEUROLOGY
DUBAI, UNITED ARAB EMIRATES, OCTOBER 27-31 2019

EFFECTS OF LIRAGLUTIDE IN THE TREATMENT OF SEVERE OBESITY IN A YOUNG PATIENT WITH PARKINSON'S DISEASE. A CASE REPORT

Michela Barichella MD[a], Erica Cassani MD[a], Valentina Ferri MD[a], Davide Vallauri MD[a], Giovanna Pinelli MD PhD[a], Chiara Pusani RD[a], Roberto Cilia MD[a], Gianni Pezzoli MD[a]

[a]Parkinson Institute, ASST Pini-CTO, Milan, Italy

OBJECTIVES

The Glucagon-like peptide-1 (GLP-1) analog exert disease-modifying effects in patients with Parkinson's Disease (PD). Nonetheless, the significant improvement in motor performance is associated with significant reduction in body weight in Exenatide-treated PD patients, so it could be argued that levodopa pharmacokinetics could have been improved by either body weight loss or by other (GLP-1) analogs effects.

METHODS

We describe a 42-year-old female Italian PD patient with a 2-year history of PD (confirmed by Spet- Datscan), who presented a few month after the onset (October 2017) with severe obesity (BMI 47 kg/m2). To assess the effects of body weight loss both on efficacy of pharmacological treatment and on PD symptoms, the GLP-1 analog Liraglutide was prescribed for obesity (according to Italian guidelines) in adjunct to pramipexole PR 1 mg/day and levodopa/benserazide 400 mg/day.
Plasma Levodopa levels were investigated.

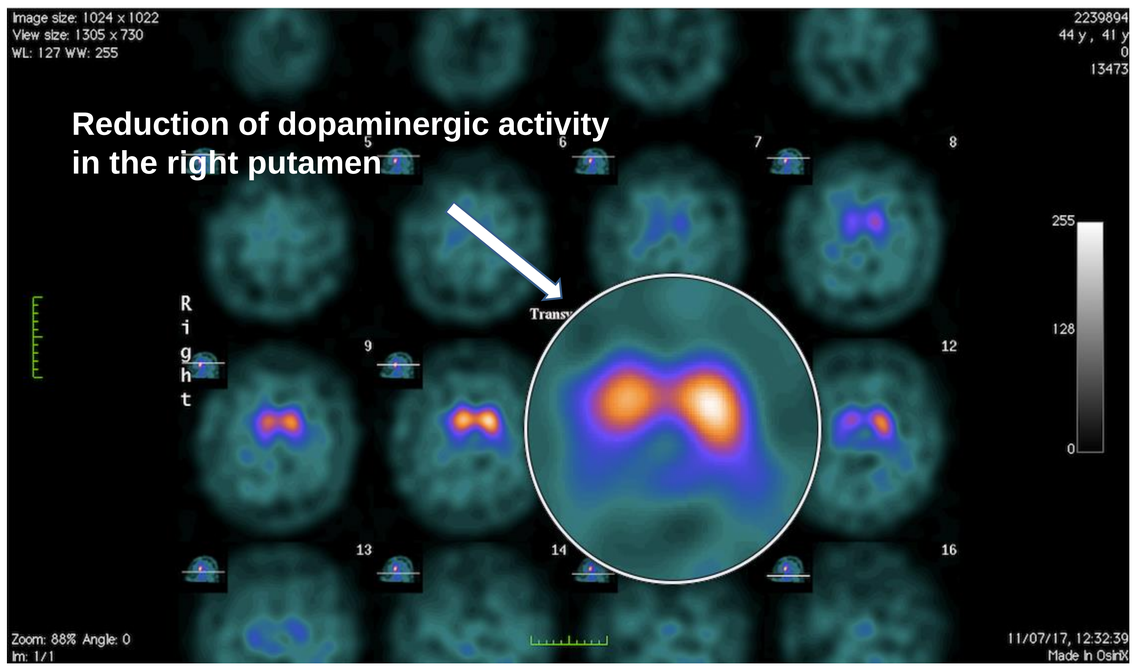


Figure 1

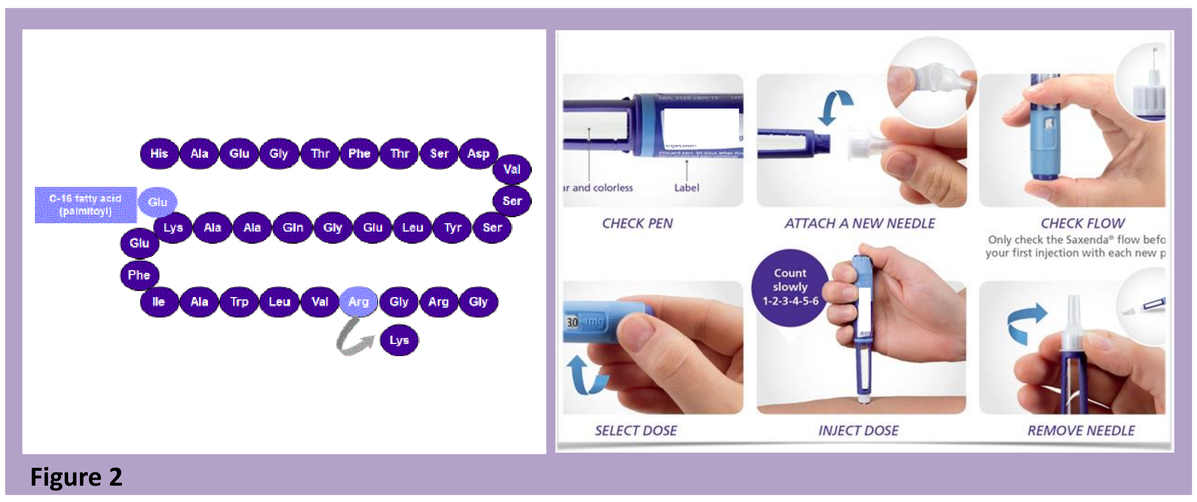


Figure 2

Year of visit	*2017*	*2018*					
Month of visit	*October*	*January*	*February*	*March*	*April*	*June*	*August*
WEIGHT kg	138	138	129	126	122	116	109
Δ WEIGHT from 1st visit	-	-	-9 kg (-7 %)	-12 kg (-9 %)	-16 kg (-11.7 %)	-22 kg (-16 %)	- 29 kg (-21 %)
BMI Kg/m² Δ Kg/m²	47 Obesity III	47 - Obesity III	44.2 (- 2.8) Obesity III	42 (-5) Obesity III	41 (-6) Obesity III	39 (-9) Obesity II	37.2 (-9.8) Obesity II
FM kg (BIA) Δ kg Δ %	-	66.8	-	-	57 (-9.8 kg) (-14.6 %)	-	49.5 (-17.3 kg) (-25.9 %)
DIET Kcal kjoule	1600 6690	1600 6690	1600 6690	1600 6690	1600 6690	1600 6690	1600 6690
LIRAGLUTIDE mg	-	1.2	1.8	1.2	1.2/1.8 On alternate day	1.2/1.8 On alternate day	1.2/1.8 On alternate day
CALORIMETRY	-	MB=2078 Kcal/die	-	-	-	-	-
LEVODOPA/ BENSERAZIDE mg	100+25 x 4	100+25 x 2 150+37.5 x 2	150+37.5 x 4	150+37.5 x 4	150+37.5 x 4	150+37.5 x 4	150+37.5 x 4
PRAMIPEXOLE RP	1 mg	1 mg	3 mg	3 mg	3 mg	2.2 mg	2.2 mg
SAFINAMIDE	-	-	-	-	-	-	50 mg
L-DOPA PHARMACOKINETICS	-	-	done	-	-	done	-

TABLE 1. The table display variation of metabolic parameters, diet therapy and pharmacological therapy

RESULTS

The overall body weight loss of 29 kg (-21% , from 138 kg to 129 kg) was associated to: a) a significant improvement in the motor disability (UPDRS in ON from 20/108 to 6/108) b) a greater absorption of levodopa with a 2-fold increase in the area-under-the curve (AUC from 119 to 235 (ug/ml)*min) and the Cmax (from 1.45 to 2.98 ug/mL).

CONCLUSIONS

The use GLP-1 analog Liraglutide is able to improve PD motor disability in the short-term, likely because of optimized levodopa pharmacokinetics. It remains to be elucidated whether this is a consequence of either body weight loss or greater levodopa intestinal absorption or both.

This work was supported by " Fondazione Grigioni per il Morbo di Parkinson " www.parkinson.it and "Brain and Malnutrition in Chronic Diseases Association Onlus" www.bm-association.it

BRAIN AND MALNUTRITION
Chronic Diseases Association ONLUS