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Screening hypersexuality in Parkinson's disease in everyday practice

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ABSTRACT

Objective: The purpose of this study was to develop a short and reliable measure of hypersexuality that could be used in everyday practice in patients with Parkinson's disease (PD).
Design: The original questionnaire containing twenty-five-items, the Sexual Addiction Screening Test (SAST), was shortened and tested in a PD population.
Methods: Successive reductions were performed until a final set of items satisfied the model fit requirements. The testing phase consisted of administering the SAST questionnaire to 159 PD patients. It included i) acceptability, ii) dimensionality construct validity, and iii) a complete general correlation structure of data. Finally, criterion validity of the final version of the instrument was assessed.
Results: The initial questionnaire was reduced to five items (PD-SAST) with a cut-off score of 2. Psychometric analysis revealed three factors corresponding to "Preoccupation", "Cannot stop" and "Relationship disturbance". The discriminant validity of the PD-SAST was high (ROC area under the curve: 0.96).
Conclusions: The PD-SAST performs well as a screening instrument. It has been found to be acceptable to patients and is ready for use. Moreover, it tests multidimensional aspects of hypersexuality.

1. Introduction

Impulse Control Disorders (ICDs) have been increasingly reported in individuals with Parkinson's disease (PD) [1,2]. Among them, hypersexuality was described in PD for the first time in 1983 [3]. It involves recurrent and excessive time consumed by sexual fantasies and urges, and by planning for and engaging in sexual behavior, and sexual behavior in association with repetitive but unsuccessful efforts to control or significantly reduce these sexual fantasies, urges, and behavior. Hypersexual behaviors range from intrusive sexual thoughts, urges or remarks, to overt, inappropriate and often offensive sexual behaviors. There may be increased demands for sexual activity in an established context or attempts at indiscriminate sexual activity in random contexts [4,5]. This corresponds to criterion-based definition for Hypersexual Disorder in DSM-IV-TR Psychiatric Disorders [6] and is under consideration for in Section 3 of the new DSM-V [7].

Risk factors associated to an increased risk of hypersexuality in patients with PD are male gender, younger age at PD onset, current major depression and history of novelty-seeking behaviors [8,9] and dopaminergic drug therapy [5,10,11]. Furthermore, dopamine agonist treatment was also implicated in the emergence of this sexual behavior [12–14].

As expressed by Bronner in 2011 [15], sexual problems are among the most common nonmotor symptoms of PD. Indeed, the prevalence of hypersexuality in PD has been estimated to be from 2.0% to around 10.0% [10,11,16] depending on the period of time that was explored (lifetime) and the tools used. We notice that in some studies, a validated instrument, the Minnesota Impulsive Disorders Interview (MIDI), was used. This requires just one affirmative answer to one of the only two questions. The QUIP questionnaire is another screening questionnaire for ICDs including hypersexuality and other compulsive behaviors in PD [17,18]. Even if it may offer satisfactory results, its combining questions on all ICDs could limit the extent to which it is actually applied in clinical practice.

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A shortened version of the QUIP [17], the QUIP-S, exists but also has only two questions to assess hypersexuality. The QUIP-S, as expressed for the MIDI, due to the lack of an explicit ordered continuum of items, cannot represent the multifactorial dimension of this behavior. Finally, another hypersexuality questionnaire for PD with specific criteria (Voon's criteria) has been also used [10], although is based on clinical practice and has not been validated.

Other instruments are used in general population. Self-assessment seems to be a good method for diagnosing hypersexuality [19]. DeRogatis [20] and Hook et al. [19] provided a critical review of instruments using patient reported outcomes to assess sexual functioning. Among questionnaires commonly used to assess hypersexuality [19,21], the Sexual Addiction Screening Test (SAST) [22] had an established validation profile [19].

The SAST is a 25 items, self-administered, dichotomously answered questionnaire [22–24]. The original scale development study found a single construct [23,25] but recently Carnes et al. [26] described several factors for the new forms of the SAST. The creator of the SAST recommended a cut-off score of 13, out of a possible maximum of 25, for indicating the presence of sexual addiction. This scale has been used in a large variety of settings, including treatment facilities, criminal justice systems and educational programs.

The aim of our work was to develop a short version of the SAST (Table 1) to be used as a screening tool, efficiently to detect evidence of sexual addiction in a PD population.

Table 1
The SAST questionnaire.

Item 1	Were you sexually abused as a child or adolescent?	Yes	No
Item 2	Have you subscribed to or regularly purchased sexually explicit magazines or frequently browsed the adult sites on the Internet?	Yes	No
Item 3	Did you parents have trouble with sexual behavior?	Yes	No
Item 4	**Do you often find yourself preoccupied with sexual thoughts?**	**Yes**	**No**
Item 5	Do you feel that your sexual behavior is not normal?	Yes	No
Item 6	Does your spouse (or significant other (s)) ever worry or complain about your sexual behavior?	Yes	No
Item 7	Do you have trouble stopping your sexual behavior when you know it is inappropriate?	Yes	No
Item 8	Do you ever feel bad about your sexual behavior?	Yes	No
Item 9	**Has your sexual behavior ever created problems for you and your family?**	**Yes**	**No**
Item 10	Have you ever sought help for sexual behavior you did not like?	Yes	No
Item 11	Have you ever worried about people finding out about your sexual activities?	Yes	No
Item 12	Has anyone been hurt emotionally because of your sexual behavior?	Yes	No
Item 13	Are any of your sexual activities against the law?	Yes	No
Item 14	Have you made promises to yourself to quit some aspect of your sexual behavior?	Yes	No
Item 15	**Have you made efforts to quit a type of sexual activity and failed?**	**Yes**	**No**
Item 16	Do you hide some of your sexual behavior from others?	Yes	No
Item 17	**Have you attempted to stop some parts of your sexual activity?**	**Yes**	**No**
Item 18	Have you ever felt degraded by your sexual behavior?	Yes	No
Item 19	Has sex been a way for you to escape your problems?	Yes	No
Item 20	When you have sex, do you feel depressed afterwards?	Yes	No
Item 21	Have you felt the need to space out a certain part of sexual activity?	Yes	No
Item 22	Has your sexual activity interfered with your family life?	Yes	No
Item 23	Have you been sexual with minors?	Yes	No
Item 24	**Do you feel controlled by your sexual desire?**	**Yes**	**No**
Item 25	Do you ever think your sexual desire is stronger than you are?	Yes	No

Items of PD-SAST are in bold.

2. Methods

2.1. Population study and study design

All patients included in this study suffered from idiopathic PD according to UK Parkinson's Disease Society Brain Bank Clinical Diagnostic Criteria, referred as outpatients to the Unit for Movement Disorder at the Clermont-Ferrand University Hospital, France. All subjects gave written consent for participation. The study received institutional approval from Clermont-Ferrand University Hospital-FRANCE. Demographic data (age, gender) and clinical characteristics (duration of disease, PD medication) and scores at motor section of the unified Parkinson disease rating scale (UPDRS III, Hoehn and Yahr stages) were collected. Calculation of daily L-dopa equivalent units (LEU) was based on levodopa correspondences adapted from Ref. (Thobois) [27].

To develop a short screening instrument of hypersexuality, a three-step strategy was proposed considering an approach based on reliable statistical methods. SAST was administrated to 159 consecutive PD patients. We analyzed answers to the questionnaire in order to reduce the number of items of the SAST by assessing i) acceptability, ii) dimensionality construct validity and, iii) a complete general correlation structure in the data.

Criterion validity of the final version of the instrument was assessed through a comparison with the results of the diagnosis of hypersexuality on the 159 PD patients. Concordance between positive scale screening results and expert-consensus diagnosis was studied. Consensus statements for hypersexuality diagnosis were derived from medical records and structured clinical interview for DSM-IV-TR Psychiatric Disorders [6]. The expert team consisted of a neurologist highly trained in PD and its impulse control disorders and a psychiatrist.

2.2. Statistical methods

The testing phase comprises i) the measurement of acceptability including response rates and levels of missing data, ii) a univariate analysis and multiple correspondence analyses (MCA) which provide techniques for comparing and ranking different outcomes, and iii) the multivariate Poisson regression. Items were removed at each stage in accordance with statistical and clinical analyses detailed below.

Comparisons between categorical parameters were conducted using Chi-square test or Fisher's exact test. To protect against chance findings based on multiple comparisons, we applied the Bonferroni correction. The MCA interpretation is based upon proximities between points in a low-dimensional map. Theses proximities are meaningful only between points from the same set. Associations between variables are uncovered by calculating the chi-square distance between different categories of the variables and between the individuals. These associations are then represented graphically as "maps", which ease the interpretation of structures in data. As in factor analysis or principal component analysis, the first axis is the most important dimension, the second axis the second most important, and so on, in terms of the amount of variance accounted for. The number of axes to be retained for analysis is determined by calculating modified eigenvalues. The multivariate Poisson regression (due to the distribution of dependant variables) allows the selection of the final items with an important significant ($p < 0.001$) impact on the screening scale total score. At each step, the reliability (internal consistency) was measured by Kuder–Richardson Formula 20 (KR-20).