EVALUATION OF VALIDITY OF UHDRS TRANSLATIONS IN THE REGISTRY STUDY

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Background The REGISTRY study was designed to obtain natural history data on a wide spectrum of HD patients in Europe over the course of 15 years. Several scales were administered to characterise and evaluate HD patients’ progression, which included the Unified Huntington’s Disease Rating Scale (UHDRS).

Aims The aim of this study was to evaluate the validity of translations of UHDRS to German, French, Italian, Dutch, Polish, Portuguese and Spanish as applied in the REGISTRY study.

Methods/techniques This study was submitted to European Huntington’s Disease Network Scientific Bio-ethics Assessment Committee for authorisation and access to the REGISTRY data. Data was provided with baseline and follow up evaluations, by country and site. The analysis was performed for translated versions of the UHDRS if a minimum of 100 cases were observed per language and limited to HD gene expansion carriers with manifest disease. Statistical analysis included Cronbach’s alpha and Confirmatory Factorial Analysis (CFA) trough SPSS and R software.

Results/outcome A total of 6,009 manifest HD patients were analysed from 8 different languages (English was used as a control language), 53% female with a mean age of 48.2 years (SD 13.8), age-at-onset of 45 years (SD 12.3) and a CAG of 44.3 (SD 4.9). Cronbach’s alpha results showed a high internal consistency in each of the four components of the UHDRS for all translated languages. Regardless the language assessed, CFA analysis demonstrated that motor items of dystonia, chorea and arms rigidity, and most of the behavioural items are not well explained by their respective latent component, with loadings below 0.7.

Conclusions Results demonstrate that the translation process used in the REGISTRY did not affect UHDRS structure and basic cinemetrics indices across the different languages. However, this analysis revealed structural issues concerning UHDRS and its latent dimensions which require further evaluation.

VALIDATION OF THE SPANISH VERSION OF THE PROBLEM BEHAVIOURS ASSESSMENT SHORT (PBA-S)

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Background PBA-s is a core assessment in ENROL, the largest observational study in Huntington disease. It is recommended that the PBA-s be administered in any study where an intervention, pharmacological or not, is performed that could cause changes in behaviour. Despite this fact, this instrument is not yet validated into Spanish. Considering the Spanish speaking population all over the world, validating this assessment tool is extremely important in HD.

Aim Validate the PBA-s into Spanish to dispose of an extremely important evaluation tool in Huntington disease subjects.

Methods/techniques The validation process includes: direct translation, back translation, pilot testing of the consensus version and cognitive debriefing. After completing this process, we have a final consensus Spanish PBA-s version (Spa. PBA-s).

We carried out a statistical analysis of Inter- and intra-rater reliability measured by the Inter-class Correlation Coefficients (ICC).

Results/outcome We present preliminary results: 70 subjects (42 women, 28 men) age: mean 48.24 y. (SD 12.94) were assessed. 7.1% were at risk individuals, 8.6% asymptomatic carriers, 64.3% manifest HD, 20% controls. TFC: stage I: 27.1%; II: 8.6%; III: 15.7%; IV: 24.3%; V: 4.3%. This sample represents the 63.6% of the sample required (110 individuals).

Reliability of Inter-rater severity scores are good, with an ICC between 0.886 and 0.979 (n = 25); Intra-interview show ranges from 0.977 to 1.000 (n = 15). Frequency Inter- and intra-rater also were good with scores from 0.820 to 0.991. (Inter: n = 25; Intra: n = 15).

Conclusions The PBA-s Spanish version demonstrates in these preliminary results a very good reliability. Although our preliminary results show better inter and inter-rater reliability that reported in previous studies, it is necessary to achieve the complete sample to conclude it.
worse functioning at baseline compared to controls. For longitudinal changes, companions but not participants in the medium and high groups reported significantly worse functional decline over time compared to controls. Participant and companion longitudinal trajectories showed divergence in the high group, suggesting reduced validity of self-report. The 12-item WHODAS detected longitudinal change better than the 36-item version and the TFC in the medium group.

Conclusions Both the 36-item and 12-item WHODAS 2.0 can detect baseline and longitudinal differences in prodromal HD, and may be useful in HD clinical trials. Companions may provide more accurate data as the disease progresses.

**Background**

Saccadic eye movement parameters, such as its dynamics, latency and error rate are considered as a quantitative biomarkers of disease severity in HD. They possess potential for quick, non-invasive, objective assessment of cortical and subcortical function and when repeated systematically may allow easy tracking of disease progression or evaluation of novel therapies. Subjective evaluation of saccadic function is already included in UHDRS scale, however, most subtle features of saccadic movement cannot be observed without the instrumentation. On the other hand, application of the oculometric equipment is limited by its significantly high costs and complicated testing procedures.

**Methods/techniques**

Authors present Saccadometer Research XY, an integrated system dedicated for rapid, quantitative assessment of horizontal and vertical saccadic eye movement metrics in clinical environment. Subject’s eye movements are captured by a small factor, photo-electric sensor, designed for minimal setup and robust measurement. The stimuli is presented by an integrated system dedicated for rapid, quantitative assessment of smooth pursuit parameters and its quantification. Additionally, the immobilisation of the head usually required in studying smooth pursuit is unnecessary. The sensor is placed on the subject’s head along with the laser servo projector mounted on forehead plate allowing for viewing the moving target on the wall. Eye movement measuring system uses infrared reflectometry, providing high temporal and spatial resolution (1kHz, 5 angular minutes). Such a device, along with accompanying custom-designed software, allows automatic detection of saccadic intrusions as small as 1 degree.

**Conclusions**

The developed instrumentation demonstrated the capability for immediate and quantitative assessment of the smooth pursuit quality. Furthermore, it is characterised by easy application and minimal intrusiveness.

**Clinical studies**

**Background**

During the development of Huntington disease smooth pursuit may become impaired, decreasing the gain of the pursuit and releasing the saccadic intrusions. Although UHDDS includes the pursuit evaluation, it estimates the performance of this oculomotor function only qualitatively. Meanwhile its quantitative evaluation without eye movement recording equipment is practically impossible. It barely allows to notice large saccadic intrusions and it cannot detect reduction of the gain. Furthermore UHDDS motor score uses four point scale to assess the pursuit, rating it from “normal”, through “jerky”, “incomplete range” and “cannot pursue”. Such a subjective method strongly depends on examiner’s skill and experience.

**Technique**

We designed the system that allows objective measurement of smooth pursuit parameters and its quantification. Additionally, the immobilisation of the head usually required in studying smooth pursuit is unnecessary. The sensor is placed on the subject’s head along with the laser servo projector mounted on forehead plate allowing for viewing the moving target on the wall. Eye movement measuring system uses infrared reflectometry, providing high temporal and spatial resolution (1kHz, 5 angular minutes). Such a device, along with accompanying custom-designed software, allows automatic detection of saccadic intrusions as small as 1 degree.

**Conclusions**

The developed instrumentation demonstrated the capability for immediate and quantitative assessment of the smooth pursuit quality. Furthermore, it is characterised by easy application and minimal intrusiveness.

**System for assessment of the visual smooth pursuit impairment in Huntington disease**

**Background**

Postural instability is a major characteristic of Huntington’s disease (HD) causing considerable disability in many patients. Valid and reliable instruments measuring balance in HD patients are crucial in order to perform high quality research and clinical care regarding HD-related postural instability. However, little is known about the measurement properties of instruments that assess this phenomenon in HD patients.

**Aims**

To critically appraise and compare the measurement properties of assessment tools that measure postural stability in patients with HD.

**Methods**

A systematic review of the literature in PubMed, Embase, Web of Science and CINAHL was performed. The COSM-Checklist was applied to evaluate the methodological quality of studies found after this literature search. Only full text, original articles, published in English, French, German or Dutch until January 2014 were included. These articles had to discuss the development or evaluation of measurement properties of clinimetric, posturographic or neurophysiological instruments that assess postural balance in manifest HD patients. The presentation of the outcome of analyses was mandatory.

**Results**

Criteria were met by 11 studies evaluating 23 assessment tools. The number of evaluated measurement properties varied from one to three per article. The methodological quality was rated as either poor or fair. After combining different studies most evaluated measurement properties were found for the Berg Balance Scale, including reliability, measurement error, content