Test and re-test of the pain*DETECT*-Questionnaire

R. Baron[a], R. Freynhagen[c], U. Gockel[d], T. Kohlmann[e], T. Keller[b], E. Stemmler[f] and T.R. Tölle[g]

[a] Sektion Neurologische Schmerzforschung und Therapie, Universitätsklinikum Schleswig-Holstein, Campus Kiel, Germany, [b] StatConsult GmbH, Magdeburg, Germany, [c] Zentrum für Anästhesiologie, Intensivmedizin, Schmerztherapie & Palliativmedizin, Benedictus-Krankenhaus, Tutzing, Germany, [d] Grünenthal GmbH, Aachen, Germany, [e] Institute for Community Medicine, Universität Greifswald, Germany, [f] Pfizer Pharma GmbH, Berlin, Germany, [g] Technische Universität München, Klinik für Neurologie, Munich, Germany

Introduction

Specific pain symptoms differ between patients with neuropathic and those with non-neuropathic pain [1]. The combination of selected symptoms and signs (negative and positive somatosensory changes) is reported to have a high discriminant value for identifying neuropathic pain [2–5].

Based on this knowledge, screening tools for distinguishing neuropathic from non-neuropathic pain have been developed and validated: the Leeds Assessment of Neuropathic Symptoms and Signs [LANSS, 2], the Neuropathic Pain Questionnaire [NPQ, 3], the pain*DETECT* Questionnaire [PD-Q, 4], and Douleur Neuropatique 4 questions [DN4, 5].

All these questionnaires are useful screening tools and helpful in the identification of neuropathic pain [1].

PD-Q has been widely used in the pain*DETECT* project register, which is an open pain register. Data from >225,000 patients have been collected. The most common pain type in this database is chronic low back pain.

Unlike clinical trials, open pain registers are real-life data collections. The physician can use this data for several purposes (diagnostic support, physician's letters, documentation, etc.). A research group (DFNS/DFRS) is responsible for data analyses and for reporting the scientific outcome.

The original PD-Q validation did not include 'test–retest' because of the necessity to suspend or interrupt pain treatment. However, a study was performed validating paper NRS vs. electronic VAS measurement, showing the equivalence of measurements of pain and PD-Q score within predefined limits. However, with the narrow time window (1–3 h) a memory effect could not be excluded [6].

Study goal

The PD-Q is often used as a follow-up instrument in neuropathic pain therapy, although not validated for such purposes. We therefore investigated the test–retest performance of PD-Q items and the derived score.

Table 1: Results for test–retest assessments for PD-Q score

	PD-Q items	PD-Q score	PD-Q categories
ICC	0.65 ... 0.80	0.87	0.76
Pearson's r	0.66 ... 0.80	0.87	0.76
Weighted kappa	0.50 ... 0.66	–	0.66
Bland–Altman (BA) plot	–	Mean (SD) of difference: –0.36 (3.85)	–
Passing–Bablok regression	–	Slope = 1 Intercept = 0	–

Figure 1: BA plot for PD-Q score

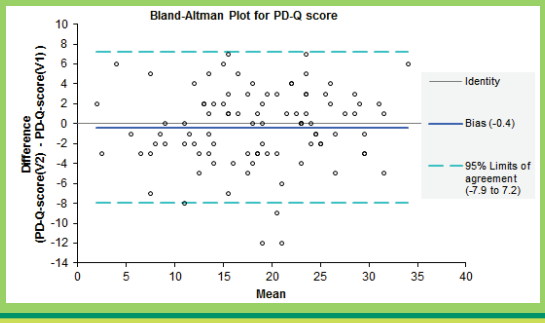
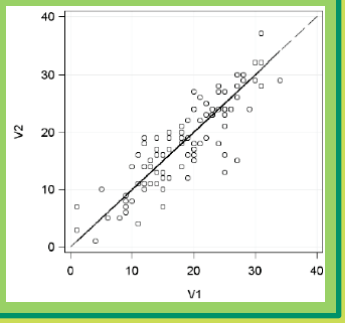


Figure 2: PD-Q score Visit 1 vs. Visit 2



Methods

Design

We performed an analysis of data already sampled within the pain*DETECT* project using consecutive visits of patients. Prospectively planned criteria were applied in order to identify a population with stable condition, as is required for test–retest assessment [7–9].

- Patients with back pain
- Patients with at least 3 visits to the physician
- Time since first capture in database: ≥6 months
- Time between two consecutive visits in this analysis: 7–21 days
- Differences for current, maximum and average pain measured on a 100-mm VAS scale between the two visits: <5 mm.

Data

The patients fill in questionnaires on an electronic device in the doctor's office. The questionnaires and medical history of the patients are transferred to a central data base.

Statistical analysis

It was verified that the selected sub-population was representative of the whole study population by comparing mean values for pain and PD-Q measures of the patients in this analysis with those of all patients with back pain.

The following measures of test–retest performance were calculated:

7 PD-Q Items (each measured as a 5 point NRS), PD-Q categories (pos. / unclear / neg.)
→ Intra-class correlation (ICC)
→ Pearson's r
→ Weighted kappa

PD-Q score (ranging from 0 to 38)
→ Bland–Altman (BA) plot (Figure 1)
→ Passing–Bablok (PB) regression (non-parametric regression method, Figure 2) see [10] and references therein

Results

Data from 94 patients fulfilled the narrow criteria; mean duration between visits was 15 days (Table 1). There was no relevant deviation of mean PD-Q score or pain severity in comparison with the whole study population (results not shown). The measures (Table 1) were in the range of typical results for pain questionnaires [9].

Conclusions

The very large database allows retrospective validation of properties of the PD-Q questionnaire as long as the criteria are prospectively defined. The validation of test–retest properties has shown that the PD-Q is reliable and can be used for follow-up.

Further investigations will be necessary to determine the clinical relevance of changes in PD-Q scores.

In memory of our friend and colleague Uwe Schmidt, who helped to develop the PD-Q

References

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