DOULEUR NEUROPATHIQUE EN 4 QUESTIONS (DN4)

FRENCH (ORIGINAL VERSION)

Bibliographic and contact information for questionnaire

Reference

Bouhassira D, Attal N, Alchaar H, Boureau F, Brochet B, Bruxelle J, Cunin G, Fermanian J, Ginies P, Grun-Overdyking A, Jafari-Schluep H, Lantéri-Minet M, Laurent B, Mick G, Serrie A, Valade D, Vicaut E. Comparison of pain syndromes associated with nervous or somatic lesions and development of a new neuropathic pain diagnostic questionnaire (DN4). Pain. 114: 29-36, 2005.
PubMed identifier (PMID): http://www.ncbi.nlm.nih.gov/pubmed/15733628

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Properties of the questionnaire

Language

French

Purpose

Diagnostic/screening: To identify whether pain is likely to be neuropathic in origin.

Assessment

SYMPTOMS (INTERVIEW):

Two questions addressing symptoms:

- Pain quality (presence of three symptoms assessed: burning, painful cold, electric shocks)
- Non-painful symptoms (presence of four symptoms assessed: numbness, tingling, itching, pins-and-needles)

SIGNS (CLINICAL EXAMINATION):

Two questions addressing sensory signs (requires a suitably trained person to administer the instrument):

- Assessments for mechanical hypoaesthesia (two modalities assessed: touch and pin-prick sensations)
- Assessment for mechanical dynamic allodynia (one modality assessed: brushing)

Scoring system

All items are answered in the affirmative ('yes') or negative ('No'). All 'yes' responses are scored as 1, and 'no' responses are scored as 0. The individual item scores are summed and a total score calculated. A score of 4 or greater indicates that the pain is likely to be of neuropathic origin.

If only the two questions dealing with sensory symptoms are completed, and no assessment of signs is made, then a total score of 3 of greater for the symptom component of the questionnaire indicates that the pain is likely to be of neuropathic origin.

Scoring direction

Complete questionnaire

Score ≥ 4 indicate that the pain is likely to be neuropathic in origin

Assessment of symptoms only

Score ≥ 3 indicate that the pain is likely to be neuropathic in origin

Validation population

Data from one-hundred and sixty (160) patients with pain of at least moderate severity (≥40mm on a 100mm visual analogue scale), of at least three months in duration, and a clinical diagnosis of neuropathic (n = 89) or non-neuropathic (n = 71) pain by two independent clinicians was analyzed. In the neuropathic pain group, 69 patients had peripheral neuropathy and 20 had central neuropathy. None of the 160 patients had pains of unknown origin, diffuse pains (e.g. fibromyalgia), mixed pain syndromes (e.g. lumbar or cervical radiculopathies and cancer pains), CRPS type I, headaches, visceral pains, severe depression, chronic alcoholism or substance abuse, or any other reason that prevented an accurate understanding of the questionnaire. There were no significant differences between the groups (neuropathic vs. non-neuropathic) with respect to age, sex ratio, ratings of pain intensity and duration of pain. Participants were administered the questionnaire twice, within a three-day period by two independent clinicians.

The original questionnaire used in the development process consisted of 17 items, which included five pain quality descriptors (burning, squeezing, painful cold, electric shock,

lancinating), four non-painful symptom descriptors (pins-and-needles, tingling, numbness, itching), four measures of hypoaesthesia (touch, pin-prick, heat, cold), and four measures of evoked pain hypersensitivity (brushing, pressure, contact with cold, contact with heat).

Psychometric properties

Face validity

Good face validity. Wording and clinical relevance of the 17 individual items and the questionnaire as a whole were rated between 90 and 95% by clinicians and participants.

Construct validity

Not assessed

Convergent/criterion validity

Not assessed

Principal component analysis (with varimax rotation)

Principal component analysis of the 17 items yielded a 9-factor solution:

- Factor 1 included 4 items related to measures of hypoaesthesia (touch, pin-prick, heat, cold); Factor 2 included 3 items related to evoked pain (brushing, heat, cold);
- Factor 6 included 2 items related to non-painful symptoms (tingling, pins-and-needles);
- All other factors contained single items.
- No items loaded onto more than one factor.

Questionnaire refinement

Seven items were excluded from the original 17-item questionnaire to generate the final 10-item questionnaire:

- Three items were excluded because of similar prevalence in patients with neuropathic and non-neuropathic pain (squeezing, lancinating, pain evoked by pressure).
- Four items were excluded because of high intercorrrelation and difficulty in testing thermal sensitivities in the clinical setting (hypoaesthesia to heat, hypoaesthesia to cold, pain evoked by heat, pain evoked by cold).

Diagnostic validity of the 10-item questionnaire

(using an empirically derived threshold score ≥ 4)

Sensitivity: 82.9%

Specificity: 89.9%

Youden index: 0.73

Positive predictive value: 86%

Area under the curve of Receiver Operating Characteristic (ROC) curve of total score: 0.92

Diagnostic validity of the 7-item questionnaire (interview assessment of symptoms only) (using an empirically derived threshold score ≥ 3)

Sensitivity: 78%

Specificity: 81.2%

Youden index: 0.59

Positive predictive value: 79.5%

Area under the curve of Receiver Operating Characteristic (ROC) curve of total score: 0.87

Reliability

Inter-rater reliability: Good agreement between raters for all 17 individual items on the scale (Cohen's kappa coefficient values ranged between 0.66 and 0.96).

Validation studies for specific pain conditions

PAINFUL DIABETIC POLYNEUROPATHY (ITALIAN VERSION OF DN4)

Spallone V, Morganti R, D'Amato C, Greco C, Cacciotti L, Marfia GA. Validation of DN4 as a screening tool for neuropathic pain in painful diabetic polyneuropathy. Diabet Med 29: 578-585, 2012

PMID: http://www.ncbi.nlm.nih.gov/pubmed/22023377

SPINAL CORD INJURY: (SWEDISH VERSION OF DN4)

Hallström H, Norrbrink C. Screening tools for neuropathic pain: can they be of use in individuals with spinal cord injury? Pain 152: 772-779, 2011.

PMID: http://www.ncbi.nlm.nih.gov/pubmed/21272997

Additional information

n/a