Neuropathic Pain 4 Questions (DN4)

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- DN4 Scoring/ Administration instructions
- DN4 Complete questionnaire/ Assessment
- DN4 Clinical Validity
- Neuro Pain Info Handout

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Using screening tools to identify neuropathic pain

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1. Introduction

It is widely accepted that the unique painful and non-painful sensations in neuropathic pain are the result of particular mechanisms, and that specific management strategies for neuropathic pain should be applied to tackle them. Ideally, the treatment of chronic pain should be directed at eliminating the cause of pain, but in reality this is rarely possible. The management of chronic pain is therefore often limited to reducing the intensity of such pain and associated symptoms.

Pain is essentially a subjective phenomenon described with patient-specific symptoms and expressed with a certain intensity. It therefore makes sense to examine the value of verbal descriptors and pain qualities as a basis for distinguishing neuropathic pain from other types of chronic pain. Work by Dubuisson and Melzack (1976) and later by Boureau et al. (1990) supported anecdotal opinion that key words might be discriminatory for neuropathic pain. In the last 5 years, much research has been undertaken to develop screening tools for this purpose. These tools are based on verbal pain description with or without, limited bedside testing. This paper reviews the strengths and weaknesses of such tools.

2. Current screening tools for neuropathic pain

2.1. Leeds Assessment of Neuropathic Symptoms and Signs (LANSS)

The LANSS was the first tool to be developed and contains 5 symptom items and 2 clinical examination items, and is easy to score within clinical settings (Bennett, 2001). It has recently been validated as a self-report tool, the S-LANSS (Bennett et al., 2005). The original LANSS was developed in a sample of 60 patients with chronic nociceptive or neuropathic pain and validated in a further sample of 40 patients. Sensitivity and specificity in the latter group were 85% and 80%, respectively, compared to clinical diagnosis.

The LANSS has subsequently been tested and validated in several settings (e.g. Potter et al., 2003; Yucel et al., 2004; Kaki et al., 2005) with sensitivity...
and specificity ranging from 82% to 91% and 80% to 94% respectively, compared to clinical diagnosis. Although the LANSS was not designed as a measurement tool, it has also shown sensitivity to treatment effects (Khedr et al., 2005). Positive scores on the LANSS or S-LANSS identify patients with pain of predominantly neuropathic origin (POPNO) i.e., pain that is dominated by neuropathic mechanisms.

2.2. Neuropathic Pain Questionnaire (NPQ)

The NPQ consists of 12 items that include 10 related to sensations or sensory responses, and 2 related to affect (Krause and Backonja, 2003). It was developed in 382 patients with a broad range of chronic pain diagnoses. The discriminant function was initially calculated on a random sample of 75% of the patients, and then cross-validated in the remaining 25%. The NPQ demonstrated 66% sensitivity and 74% specificity compared to clinical diagnosis in the validation sample. The short form of the NPQ maintained similar discriminative properties with only 3 items (numbness, tingling and pain increase in response to touch) (Backonja and Krause, 2003).

2.3. Douleur Neuropathique en 4 questions (DN4)

The DN4 was developed in 160 patients with either neuropathic or nociceptive pain and consists of 7 items related to symptoms and 3 related to clinical examination (Bouhassira et al., 2005). The DN4 is easy to score and a total score of 4 out of 10 or more suggests neuropathic pain. The DN4 showed 83% sensitivity and 90% specificity when compared to clinical diagnosis in the development study. The 7 sensory descriptors can be used as a self-report questionnaire with similar results (Bouhassira et al., 2005). The tool was developed and validated in French and is being translated into other languages.

2.4. painDETECT

painDETECT was developed and validated in German (Freyhagen et al., 2005, 2006) and incorporates an easy to use patient-based (self-report) questionnaire with 9 items that do not require a clinical examination. There are 7 weighted sensory descriptor items (never to very strongly) and 2 items relating to the spatial (radiating) and temporal characteristics of the individual pain pattern. This questionnaire was validated in a multicentre study of 392 patients with either neuropathic (n = 167) or nociceptive pain (n = 225), as well as a population of patients with low back pain. The tool correctly classified 83% of patients to their diagnostic group with a sensitivity of 85% and a specificity of 80%. It is also available in English.

2.5. ID-Pain

ID-Pain consists of 5 sensory descriptor items and 1 item relating to whether pain is located in the joints (used to identify nociceptive pain); it also does not require a clinical examination (Portenoy, 2006). The tool was developed in 586 patients with chronic pain of nociceptive, mixed or neuropathic etiology, and validated in 308 patients with similar pain classification. The tool

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>LANSS</th>
<th>DN4</th>
<th>NPQ</th>
<th>painDETECT</th>
<th>ID Pain</th>
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<tbody>
<tr>
<td>Prickling, tingling, pins and needles</td>
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<td>Electric shocks or shooting</td>
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<td>IIt or burning</td>
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<td>Numbness</td>
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<td>Pain evoked by light touching</td>
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<td>Painful cold or freezing pain</td>
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<td>Pain evoked by mild pressure</td>
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<td>Pain evoked by heat or cold</td>
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<td>Pain evoked by changes in weather</td>
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<td>Pain limited to joints</td>
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<td>Itching</td>
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<td>Temporal patterns</td>
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<td>Radiation of pain</td>
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<td>Autonomic changes</td>
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</table>

Table 1

Comparison of items within five neuropathic pain screening tools (shaded boxes highlight features shared by two or more tools)
What is Neuropathic Pain?

Neuropathic pain is distinctly different from inflammatory or so-called nociceptive (normal) pain, and is not as well understood. Nociceptive pain results from the stimulation of nociceptors at peripheral nerve endings and normally subsides with time. In contrast, neuropathic pain is caused by a lesion or disease of the somatosensory nervous system. This means that a diagnosis is achieved only once a neurological evaluation is completed. The mechanisms underlying neuropathic pain are complex, multifactorial and evolve over time. Although mechanisms of neuropathic pain are still not entirely understood, current hypotheses include possible genetic predisposition causing susceptibility after nerve injury, interruption of the normal balance of sensory nerve input into the dorsal horn, abnormal growth and synaptic activity of the sympathetic nervous system, and abnormal neuroinflammatory response to injury. There are numerous causes of nervous system injury, including exposure to toxins, bacterial or viral infections, metabolic disease, ischemia, surgical trauma, or stroke. Current research studies indicate that neuropathic pain results from cellular changes that occur in both the peripheral and central nervous system, resulting in abnormal processing of sensory input.

This is the end of the SAMPLE DN4 handout info. Please goto page 1 to purchase complete version.
Translation process:
Iterative forward and reverse translation process. No details of the process are provided.

Changes from original questionnaire:
None

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 hypoesthesia (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

This is the end of the SAMPLE DN4 scoring instructions. Please goto page 1 to purchase complete DN4 questionnaire.