

Validation study of the Chinese Identification Pain Questionnaire for neuropathic pain

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Objectives For diagnosing neuropathic pain, a simple 6-item patient-completed identification pain questionnaire has been validated among Caucasians. We aimed to study the validity and reliability of this questionnaire among Hong Kong Chinese patients.

Design Questionnaire survey.

Setting Two pain clinics and two neurology clinics in Hong Kong.

Patients Patients with either neuropathic pain or nociceptive pain were recruited randomly from the four clinics. The patients completed the questionnaire themselves and the diagnosis of neuropathic pain and nociceptive pain was made by the pain specialists. We determined the optimal cutoff, positive and negative predictive values, sensitivity, specificity, the area under the receiver operating characteristic curve, and test-retest reliability of the translated version.

Results Among the 92 participants, 60 (65%) had neuropathic pain and 32 (35%) had nociceptive pain. At an optimal cutoff score of 3 or higher, the positive predictive value was 87% while the negative predictive value was 55%, and it correctly classified 71% of cases. The specificity and sensitivity were 81% and 65%, respectively. The area under the curve was 0.78 ($P < 0.001$). Test-retest reliability in the 10 randomly selected patients showed a good intraclass correlation of 0.72.

Conclusion The Chinese Identification Pain Questionnaire is a valid and reliable scale that may be used as an initial diagnostic tool for neuropathic pain among Hong Kong Chinese patients.

Key words

Neuralgia; Pain measurement; ROC curve; Reproducibility of results; Sensitivity and specificity

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New knowledge added by this study

- Hitherto, a simple tool that can aid general practitioners in diagnosing neuropathic pain was lacking among Hong Kong Chinese population.
- The Chinese version of the Identification Pain Questionnaire is a simple and valid tool that can support a diagnosis of neuropathic pain among Hong Kong Chinese patients.

Implications for clinical practice or policy

- This brief Chinese Identification Pain Questionnaire can help differentiate between neuropathic pain and nociceptive pain among Hong Kong Chinese patients presenting with pain.
- If the patient scores 3 or more, further examination, investigation, and/or specific treatment relevant to neuropathic pain may be warranted.

Introduction

Neuropathic pain (NeP) is generally defined as pain caused by a primary lesion or dysfunction in the central and/or peripheral nervous system. Common causes include painful diabetic neuropathy, trigeminal neuralgia, carpal tunnel syndrome, and post-herpetic neuralgia. As a group, NeP has an annual incidence of almost 1% in the general population¹ and impairs quality of life of patients irrespective of cultural background.²

Given that the initial presentation of most NeP is not an emergency, patients with NeP commonly first report their symptoms to their general practitioners. Yet, diagnosing NeP is sometimes difficult for general practitioners, as the signs and symptoms may vary among individuals and a specific diagnostic test is not available. Although various clinical scales have been developed for diagnosing NeP (eg Leeds assessment of neuropathic symptoms

針對評估神經痛的中文版ID疼痛問卷效度研究

- 目的** 檢視一個經西方文獻確認、針對診斷神經痛的簡易中文版六項ID疼痛問卷，應用於香港華籍患者時其有效性和可靠性。
- 設計** 問卷調查。
- 安排** 香港兩間疼痛科診所和兩間神經內科診所。
- 患者** 從上述四間診所隨機揀選神經痛或傷害感受性疼痛患者。患者完成問卷後，疼痛科專家會為他們確診神經痛或傷害感受性疼痛，並確定問卷翻譯版的最佳切截分、陽性與陰性預測值、敏感性、特異性、ROC曲線分析區域以及再測信度。
- 結果** 在92名參與者中，60名（65%）有神經痛、32名（35%）患傷害感受性疼痛。在最佳切截分3分或以上的時候，陽性預測值為87%，陰性預測值則為55%，並能準確把71%病例分類。特異性和敏感性分別為81%和65%。ROC曲線分析區域為0.78（ $P<0.001$ ）。隨機揀選的10名患者的再測信度方面，其組內相關度良好，達0.72。
- 結論** 中文版ID疼痛問卷準確和可靠，可為香港華籍患者作神經痛的初步診斷工具。

and signs [LANSS], NeP 4 questions [DN4]),^{3,4} they may not be applicable in primary care settings due to their relative complexity. Recently, a very simple 6-item identification (ID) pain questionnaire has been developed with acceptable discriminating ability (area under the curve [AUC], 0.73) and good inter-rater reliability (0.742) in the evaluation of NeP.⁵ Apart from brevity, another advantage of this scale is that it is a patient-completed questionnaire and does not require help from trained professionals to complete. Such properties make it an ideal tool for use in busy primary settings. The ID pain questionnaire was also translated into another language⁶ and has been used in recent study.⁷ Since pain perception may vary in different ethnic groups and no such questionnaire is available in Chinese, we aimed to study the validity and reliability of a Chinese version of the ID pain questionnaire in Chinese patients.

Methods

An expert panel consisting of eight local pain specialists translated the original English 6-item ID pain questionnaire into Chinese and was back translated into English by a bilingual research assistant blinded to the original English version (Appendix). Patients with either NeP or nociceptive pain (NoP) were recruited randomly from two pain and two neurology clinics. We aimed to recruit a total of 100 patients. The proportion of patients with NeP was monitored during the course of recruitment so that around 50 to 60% of them would have NeP. The

diagnosis of NeP or NoP was made by pain specialists based on a detailed history, physical examination, relevant investigations results, and other available medical records of the patients. The causes of the pain as well as demographic data were collected for each patient, who was given the translated questionnaire for self-completion without assistance. Patients with mixed NeP and NoP and illiterate patients who could not understand the written instructions about the questionnaire were excluded from the study. All subjects were of Chinese ethnicity. The Ethics Committee of each participating institution approved the study protocol and informed written consent was provided by each participant.

We evaluated the validity of the questionnaire by undertaking receiver operating characteristics curve and AUC analyses. The clinical judgement by the pain specialists was taken as the gold standard for diagnosing NeP. The optimal cutoff score, positive and negative predictive power, specificity, and sensitivity were determined. Ten randomly selected participants were asked to complete the questionnaire around 2 weeks later for evaluation of test-retest reliability and intra-class correlation coefficient (ICC) based on a two-way mixed model was determined.

Results

One hundred patients were initially recruited, of whom eight were eventually excluded as review of their data suggested they had mixed pain rather than pure NeP or NoP. Hence, only data from 92 patients were analysed. The mean age of the participants was 51 (range 16-75) years and 54% were female. Sixty (65%) of the patients had NeP and 32 (35%) had NoP. The most common causes for NeP were trigeminal neuralgia (n=19; 32%), followed by central pain (ie NeP secondary to lesion of the central nervous system, eg pain after stroke or spinal cord injury) [n=11; 18%], and post-herpetic neuralgia (n=8; 13%). The most

TABLE. Pain types and diagnosis

Pain types/diagnosis	No. of patients
Neuropathic pain	60 (65%)
Trigeminal neuralgia	19
Post-herpetic neuralgia	8
Diabetic or peripheral neuropathy	4
Central pain (eg poststroke or transverse myelitis)	11
Others	18
Nociceptive pain	32 (35%)
Arthritis	19
Headache	4
Musculoskeletal pain	9

common cause for NoP was arthritis (n=19; 59%) [Table]. The mean pain scores for those with NeP and NoP were 3 and 2, respectively. At an optimal cutoff score of 3 or higher, the specificity and sensitivity was 81% and 65%, respectively; the positive predictive value was 87% while the negative predictive value was 55%, and it correctly classified 71% of the cases. The AUC was 0.78 ($P<0.001$). The specificity/sensitivity values at respective cutoff values are shown in the Figure. The specificity increased with increasing pain score while sensitivity increased with decreasing pain score. Test-retest reliability among the 10 randomly selected patients showed a good ICC of 0.72.

Discussion

Our study showed that this Chinese version of ID pain questionnaire had good overall accuracy (AUC=0.78) in diagnosing NeP, which was even better than that obtained in the original study (AUC, 0.69-0.73).⁵ This may be because unlike our investigation, the original study included patients with mixed pain that compromised diagnostic accuracy. Our study also showed that as the score increased, so did the likelihood of having NeP. The specificity increased from 19% at a score of 1 to 100% at a score of 5, which was similar to the original study. Hence, if patients score 3 or higher, further examinations, investigations, and even specific treatment relevant

to NeP may be warranted. Overall, the optimal cutoff score depends on the clinical context. If high sensitivity is required, a lower score (eg score ≤ 2 , sensitivity 85%) can also be used. Furthermore, our version has a good inter-rater reliability, with an ICC (0.72) that was similar to the value in the original study (0.74).

In a recently validated Spanish ID pain questionnaire, the AUC (0.89) was higher than that in our Chinese version (0.78). Given that pain perception may vary with ethnicity and culture, this suggests that their questionnaire may be more valid when applied in Spanish context.⁶ Another reason may be that assistance to complete the questionnaire was provided to about 15% of their participants, whereas all our study participants did so by themselves without assistance. Providing assistance may clarify uncertainties that patients encounter with the questionnaire and lead to better overall diagnostic accuracy.

The overall diagnostic accuracy of our brief patient-completed Chinese ID pain questionnaire was lower than that in two other widely used scales for diagnosing NeP, the LANSS and DN4.^{3,4} The diagnostic accuracy of LANSS and DN4 for NeP are 82% and 86%, respectively.^{3,4} The better performance of LANSS is not unexpected as it is more complex, and requires completion by physicians as well

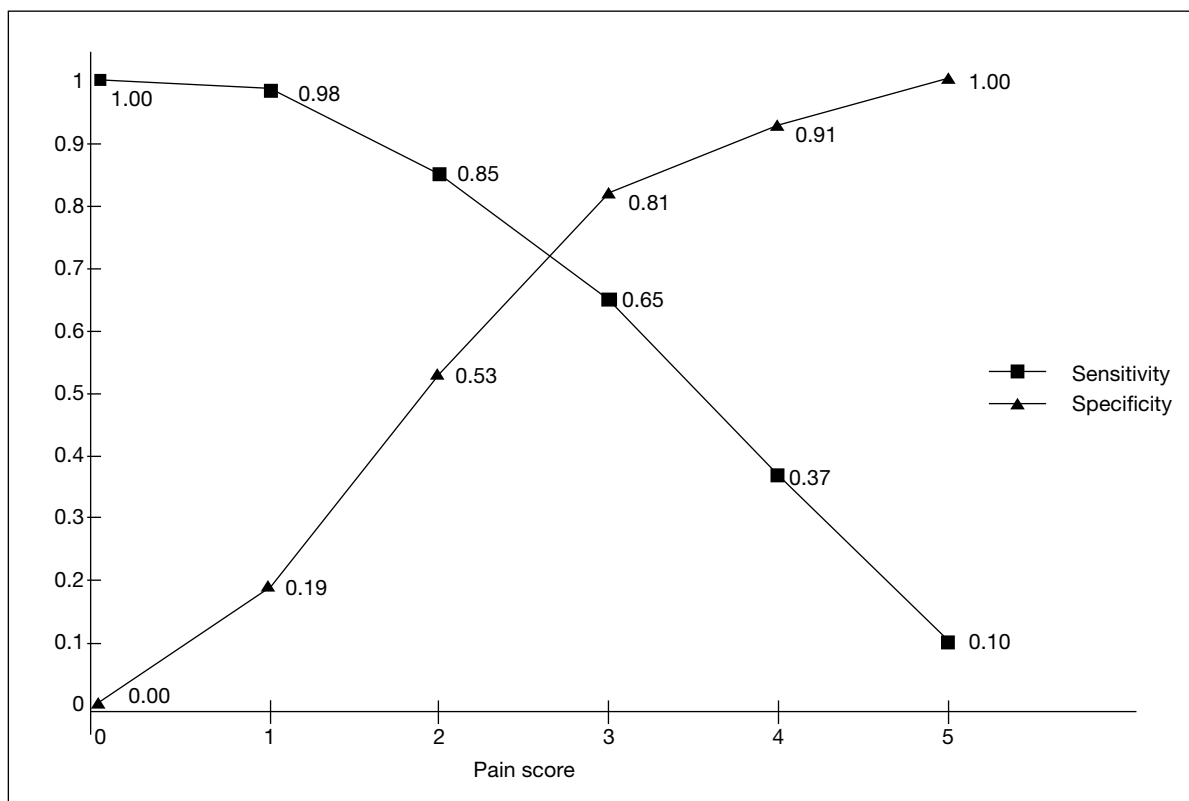


FIG. Sensitivity and specificity

as entailing performance of specific physical examination. As for the DN4, although it is a simpler scale with an excellent diagnostic accuracy of 86%, it is nevertheless a physician-administered questionnaire and a brief physical examination is required for its completion. The advantages of the present ID pain questionnaire are its extreme brevity (may take only 1 minute to complete) and its simplicity (not requiring assistance from physicians or physical examination). Thus, the ID pain questionnaire may help general practitioners by providing an initial impression as to the likelihood of NeP. Furthermore, there is a recently validated simplified version of the LANSS, which is a 7-item patient-completed questionnaire (S-LANSS).⁸ Its overall diagnostic accuracy was similar to that of our Chinese ID pain questionnaire. More study is nevertheless needed to compare the psychometric properties of S-LANSS with ID pain questionnaires and explore whether they serve a similar purpose.

A limitation of this study was that the gold standard we used in diagnosing NeP was based on clinical judgement by different pain specialists. We did not use any specific diagnostic criterion (as was proposed recently),⁹ nor did we evaluate the inter-rater reliability for diagnosing NeP among the pain specialists. Thus, the diagnosis of NeP in our participants may not have been precise. Another limitation was the lack of controls for the use of treatments, which may alter the pain characteristics and affect the overall scoring. Ideally, drug-naïve patients should have been recruited for this study. Lastly, we did not collect data on the education level of our subjects, which may also affect their performances in the questionnaire.

In summary, our study showed that the Chinese ID pain questionnaire has acceptable validity and reliability. Given its simplicity, it may be used in primary care settings as an initial diagnostic tool for NeP.

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APPENDIX. Identification pain questionnaire*

Question	Original version	Chinese version
1	Did the pain feel like pins and needles?	您的痛楚是否好像被針刺般疼痛？
2	Did the pain feel hot/burning?	您的痛楚是否灼熱或好像被火燒一樣？
3	Did the pain feel numb?	您的痛楚是否帶有麻痺？
4	Did the pain feel like electrical shocks?	您的痛楚是否好像觸電一樣？
5	Is the pain made worse with the touch of clothing or bedsheets?	您的痛楚是否因觸碰衣服或床單而加劇？
6	Is the pain limited to your joints?	您的痛楚是否只限於關節部位？

* Scoring: Questions 1-5: Yes = +1 point; No = 0 points; Question 6: Yes = -1 point; No = 0 points