

Prevalence of neuropathic component of pain in a cohort of patients admitted to an Internal Medicine Department for chronic pain

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ABSTRACT

Due to the increasing age of the population the number of people suffering from chronic pain has significantly increased. People with chronic pain suffer from various diseases. Often this pain is not adequately controlled and is refractory, while its neuropathic component, which requires a different treatment, is perhaps underestimated compared to more properly nociceptive pain. The purpose of this study was to evaluate the presence of a neuropathic component in a cohort of 105 patients consecutively admitted to three Internal Medicine Units in Emilia Romagna. For the identification of the component of neuropathic pain diagnostic (DN4) questionnaire, previously validated, has been used. The average age of the patients studied was 64.4 years. The group of subjects with chronic non-cancer pain (78%) was numerically higher than the group of patients suffering from cancer pain (22%). All patients had pain and, according to the visual analogue scale (VAS), pain ranged from moderate to severe (median 7). Although without reaching statistically significant data, according to the VAS scale, cancer pain had an average higher value than non-cancer pain (7 vs 6.5). The prevalence of neuropathic component of pain was higher in patients with non-cancer pain (66% vs 57%). Instead, the recorded pain intensity in patients with neuropathic component was statistically much higher than the group in which the neuropathic component was absent (6.9 vs 6.1; $P < 0.05$). In patients suffering from chronic pain, regardless of its nature and its etiology, the presence of a neuropathic component is significant. We must become aware of it and must search for it regularly through appropriate tools, such as the DN4 questionnaire. The presence of a neuropathic component usually makes the pain more intense and more refractory to treatments commonly used. Search for it may have therapeutic implications, suggesting that doctors use drugs active on this component. Since the majority of patients suffering from chronic pain are admitted to internal medicine wards, this awareness ought to become cultural heritage for the internist.

Introduction

With the progressive ageing of the population and the increase of chronic diseases, chronic pain has become common in non-cancer patients.

Meanwhile the awareness of this problem is increas-

ing among patients and health care professionals. In the past few years legislators have intervened several times to facilitate the access to the best health care for all patients affected by this problem, as pointed out in Law 38 recently approved by the Italian Parliament.¹

Legislative measures have made it easier for physicians to prescribe opiates and made pain assessment during hospitalization mandatory.

However optimal pain control is not always achieved due to the presence of a neuropathic component of pain as well as to a nociceptive component. The treatment of the neuropathic component² requires its recognition and, at the same time, the use of drugs different from those usually employed in nociceptive pain.

A simple and specific score for the detection of this component of pain is the neuropathic pain diagnostic (DN4) questionnaire³ which has been chosen due to its simplicity, facility of administering and reproducibility according to scientific validate literature. The aim of this study was to evaluate a series of patients affected by chronic pain admitted to three internal medicine wards of Emilia-Romagna. Using the DN4 questionnaire the prevalence of the neuropathic component of pain was determined in a cohort of patients.

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Materials and Methods

The study consisted in all patients being consecutively admitted to three Internal Medicine Units in Emilia Romagna [Scandiano (RE), Carpi (MO) and Ferrara Hospitals] between May and September 2012 with a diagnosis of chronic pain disorder. Pain intensity was recorded according to the visual analogue

scale (VAS) scale in all patients. The DN4 questionnaire was then delivered (Figure 1).

All patients who had a DN4 score ≥ 4 were considered affected by the neuropathic component of pain as reported by Bouhassira *et al.* with a sensitivity of 82, 9% and a specificity of 89, 9%.^{3,4}

The care providers were allowed to choose their own pain treatment and the study had not been thought to test

DN4 Questionnaire

Please complete this questionnaire by ticking one answer for each item in the 4 questions below:

INTERVIEW OF THE PATIENT

Question 1: Does the pain have one or more of the following characteristics?

- 1 – Burning
- 2 – Painful cold
- 3 – Electric shocks

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Question 2: Is the pain associated with one of more of the following symptoms in the same area?

- 4 – Tingling
- 5 – Pins and needles
- 6 – Numbness
- 7 – Itching

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

EXAMINATION OF THE PATIENT

Question 3: Is the pain located in an area where the physical examination may reveal one or more of the following characteristics?

- 8 – Hypoesthesia to touch
- 9 – Hypoesthesia to prick

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Question 4: In the painful area, can the pain be caused or increased by:

- 10 – Brushing

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

The total score is calculated as the sum of the 10 items and the cut-off value for the diagnosis of neuropathic pain is a total score of 4/10.

Total
<input type="text"/>

Figure 1. Neuropathic pain diagnostic (DN4) score for the evaluation of the neuropathic component of pain. Modified from Bouhassira et al., 2005.⁴

the efficacy of the drugs on the different components of pain. The most frequently used drugs for this purpose in the units involved were opiates (oxycodone, transdermal fentanyl and various preparations of slow-release morphine) and, at a lower extent, non-steroidal anti-inflammatory drugs (NSAIDs), gabapentin or pregabalin, carbamazepine and tricyclic antidepressant as also reported by more recent indications of the Literature.⁵

Results

A total of 105 patients (61 females and 44 males) were enrolled in the study. The average age was 64.4 years (+/-15.2 to 26-90; median 67 years). The majority of patients (78%) were affected by non-cancer pain, *versus* 22% by cancer pain. The average level of pain showed significantly high values with a median of 7 points. The comparison between cancer and non-cancer pain showed no statistically significant differences, although cancer patients showed a higher average pain trend (7.0+/-1.9 vs 6.5+/-1.8). The administration of the DN4 questionnaires using as cut-off the value of ≥ 4 showed the presence of neuropathic pain in 67 patients (63%). The prevalence of pain with a neuropathic component was not significantly different between the group of patients with cancer and the other with no cancer. In the overall population study the average value obtained with the test DN4 was 3.8+/-1.4. Dividing the patients into two groups, oncological and non-oncological, a statistically significant difference in the prevalence of neuropathic component of pain was not achieved (57 vs 66%; $P=0.26$). However, when using the VAS scale to compare the intensity of pain in the

group of patients with a neuropathic component versus the group of patients without a neuropathic component, a statistically significant difference (6.9+/-1.7 vs 6.1+/-1.9; $P<0.05$) was found (Table 1).

Discussion

Neuropathic pain is usually present in some situations and, more specifically, in neurological diseases such as the phantom limb syndrome, diabetic neuropathy, neuralgia (especially post-viral) and in patients with sequelae of spinal cord damage.^{6,7} Even in Oncology the perception of the presence of a neuropathic component in this context is growing.^{8,9} Neuropathic pain as a component of chronic pain in general is rarely considered, and little evidence is found in the scientific literature.¹⁰ Some studies performed by Spanish general practitioners showed that neuropathic pain may also be present in a significant percentage of subjects seen for chronic pain in outpatient clinics.¹¹ The peculiarity of our study was to evaluate patients affected by chronic pain in internal medicine wards. In these wards the percentage of patients suffering from cancer chronic pain is not all-encompassing. Furthermore, hospitalized patients may be regarded as selected for more serious diseases and with a greater impact of pain. Even in general wards these symptoms are not easy to control, especially when particularly intense.¹² As reported by the literature, such difficulty in controlling the symptoms is probably not only due to real refractoriness, but also to inadequate treatment that very often neglects the neuropathic component in the choice of pharmacological options.¹³

Table 1. Summary of the results obtained with the subdivision of the cases among the individual participating centers.

Center	Total	Carpi	Ferrara	Scandiano
Numbers	105	32	21	52
Average age	64.4 (26-90)	60.4 (26-82)	68.2 (48-85)	69.1 (43-90)
Male	49 (46.7%)	14 (43.7%)	9 (42.8%)	26 (50%)
Female	56 (53.3%)	18 (56.3%)	12 (57.2%)	26 (50%)
Non cancer pain	82 (78%)	15 (46.9%)	19 (90.5%)	48 (92.3%)
Cancer pain	23 (22%)	17 (53.1%)	2 (9.5%)	4 (7.7%)
VAS median	6.6+/-1.8	6.8+/-1.8	4.9+/-1.2	7.2+/-1.0
Non cancer pain VAS median	6.5+/-1.8	-	4.8+/-1.3	7.1+/- 1.1
Cancer pain VAS median	7+/-1.9	6.9+/-2.0	-	-
Point DN4 score	3.8+/-1.4	3.6+/-1.1	-	-
DN4 score ≥ 4	67 (63%)	17 (53.2%)	10 (47.6%)	39 (75%)
Non cancer pain DN4 score ≥ 4	54 (66%)	7 (46.7%)	10 (52.6%)	37 (77%)
Cancer pain DN4 score ≥ 4	13 (57%)	11 (64.1%)	0	2 (50%)

VAS, visual analogue score; DN4, neuropathic pain diagnostic.

In our study, the proportion of patients with non-cancer pain was significantly higher than the proportion of patients with cancer pain. In the first group, despite the lower pain intensity, the percentage of neuropathic pain component was higher than in the group of cancer patients. It should be emphasized how the pain reported by patients with the neuropathic component was significantly higher than the pain reported by those without this component. These data seem to confirm that subjects suffering from chronic pain in which there is also a neuropathic component present on average a greater intensity of pain.¹⁴ Our study did not take in consideration differences in individual treatments and therefore, whether this greater severity of pain is to be considered as an independent fact or it is rather, as suggested by others,¹³ due to an incomplete and not entirely correct treatment of the neuropathic component,¹⁵ remains controversial. Other studies showed that a neuropathic component of pain may be present making it more difficult to achieve pain control, for example an important neuropathic component was shown in a cohort of patients apparently affected only by osteoarticular pain.⁹

In the light of our contribution it is important that internists and also the nursing staff working in internal medicine wards learn to recognize this component of chronic pain and use appropriate scores (for example DN4) to confirm clinical suspicion.¹⁶ Nowadays such awareness is of great importance to set a more comprehensive therapeutic regimen including also drugs active on the neuropathic component of pain, avoiding the indiscriminate dosage increase of others medications (opiates, NSAID, etc.), non-optimal pain relief and frequent and serious side effects.^{17,18}

A specific analysis regarding modifications in the use of analgesic treatment as a result of the increased attention in the neuropathic component of chronic pain through the DN4 questionnaire systematic administration has not been carried out. The department's physicians have definitely an increased perception of the need to expand the range of therapeutic interventions against chronic pain, as well as increased attention to implement therapeutic interventions specifically oriented to treat its different components. Future studies are currently being planned about modification of analgesic treatment as a result of the increased attention to pain, its measurement and recognition of its various components.

Conclusions

In the past few years the scientific community has showed great interest in the different components of chronic pain and particularly in the neuropathic component. This component appears to be quite common not only in the area of neurological diseases or cancer, but also in general practice and internal medicine. It is there-

fore mandatory that all doctors working in general or internist wards become able to use the most appropriate tools for the identification of neuropathic pain with the aim of reducing the number of patients with *falsely* refractory chronic pain and making the best possible use of available drugs for this insidious component of pain.

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