PAIN® 154 (2013) 1769–1777

PAIN®

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Patterns of multisite pain and associations with risk factors

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http://dx.doi.org/10.1016/j.pain.2013.05.039

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

ARTICLE INFO

Article history:
Received 25 March 2013
Received in revised form 16 May 2013
Accepted 20 May 2013

Keywords:
Pain
Multisite
Widespread
Definition
Risk factors

ABSTRACT

To explore definitions for multisite pain, and compare associations with risk factors for different patterns of musculoskeletal pain, we analysed cross-sectional data from the Cultural and Psychosocial Influences on Disability (CUPID) study. The study sample comprised 12,410 adults aged 20–59 years from 47 occupational groups in 18 countries. A standardised questionnaire was used to collect information about pain in the past month at each of 10 anatomical sites, and about potential risk factors. Associations with pain outcomes were assessed by Poisson regression, and characterised by prevalence rate ratios (PRRs). Extensive pain, affecting 6–10 anatomical sites, was reported much more frequently than would be expected if the occurrence of pain at each site were independent (674 participants vs 41.9 expected). In comparison with pain involving only 1–3 sites, it showed much stronger associations (relative to no pain) with risk factors such as female sex (PRR 1.6 vs 1.1), older age (PRR 2.6 vs 1.1), somatising tendency (PRR 4.6 vs 1.3), and exposure to multiple physically stressing occupational activities (PRR 5.0 vs 1.4). After adjustment for number of sites with pain, these risk factors showed no additional association with a distribution of pain that was widespread according to the frequently used American College of Rheumatology criteria. Our analysis supports the classification of pain at multiple anatomical sites simply by the number of sites affected, and suggests that extensive pain differs importantly in its associations with risk factors from pain that is limited to only a small number of anatomical sites.

1. Introduction

Musculoskeletal pain often occurs simultaneously at more than one anatomical site, and there is a case that pain with a distribution that is unusually widespread should be viewed as a separate clinical entity, distinct from more localised pain. Various criteria have been advanced by which to define widespread pain [11,16,27–29]. In particular, the American College of Rheumatology (ACR) has proposed that pain should be classed as widespread if it occurs axially, in at least one upper limb, and also in a contralateral lower limb [28,29].

Others have argued that pain occurs in a continuum of severity characterised by the number of sites that are painful [12], implying that there is no fundamental distinction between widespread pain and pain that is more localised. In support of this view, longitudinal studies have demonstrated that over time, transition between diagnoses of localised and widespread pain (in either direction) is quite common [9,13,15,21].

In the absence of a clear gold standard related to pathogenesis, the validity of diagnostic criteria depends on their ability to distinguish usefully a group of people with illness that has distinctive risk factors, prognosis, or response to treatment [2]. Epidemiological studies have established various risk factors for chronic widespread pain, including female sex [1,6,14,24], older age [1,6], tendency to somatise [6,7,10,11,15,18,22,23], and depression or mental distress [6,11,12,16,17]. In addition, elevated risks have been found for various physically stressing occupational activities [18]. However, it is unclear whether associations with these risk factors differ importantly from those for more limited musculoskeletal pain.

Furthermore, if there is value in distinguishing widespread from other categories of pain, then clarification is required regarding its optimal definition. The ACR criteria have face validity, and were met by almost all of a series of patients with a clinical diagnosis of fibromyalgia, as compared with only 69% of a control group who suffered from other disorders that might be confused with fibromyalgia [29]. However, clinical diagnosis of fibromyalgia cannot be considered a robust gold standard, and it may be that other case definitions would perform better. An alternative approach might be to distinguish those patterns of multisite pain, which are found with higher frequency than would be expected if the occurrence of pain at each individual anatomical site were statistically independent.

To explore possible definitions for multisite pain, and compare associations with risk factors for different patterns of musculoskeletal pain, we analysed baseline data from the Cultural and Psychosocial Influences on Disability (CUPID) study [3].

2. Methods

The CUPID study sample comprised workers aged 20–59 years from 47 occupational groups (office workers, nurses, and "other workers") in 18 countries (Table 1). During 2006–2011, participants completed a standardised questionnaire about musculoskeletal pain, associated disability, and possible risk factors, either at interview (25 groups), by self-administration (18 groups), or a combination of interview and self-administration (4 groups). Response rates among those invited to take part were mostly higher than 80% (33 groups), but were lower than 50% in 5 groups. For logistic reasons, data collection was earlier in some countries than in others.

The questionnaire was originally drafted in English, and then translated into local languages where necessary. The accuracy of translation was checked by independent back-translation, and amendments were made if needed. Among other things, the questionnaire asked whether during the past month, pain had been present for a day or longer in each of 6 anatomical regions (low back, neck, shoulder, elbow, wrist/hand, and knee) depicted in diagrams, and for the limb regions, whether the pain had been on the right, left, or both sides. It also asked about sex, age, age at which full-time education was completed, smoking habits, somatising tendency, mental health, physical activities at work, psychosocial aspects of work, and fear-avoidance beliefs about musculoskeletal pain.

Somatising tendency was assessed using questions from the Brief Symptom Inventory [8], and graded according to the number of common somatic symptoms from a total of 5 (faintness or dizziness, pains in the heart or chest, nausea or upset stomach, trouble getting breath, hot or cold spells) that had been at least moderately