

Current issues in case definitions for common musculoskeletal disorders in workers for clinical practice and research

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KEY WORDS

Work-related musculoskeletal disorders; diagnostic criteria

SUMMARY

Background: *Several reviews and attempts at meta-analysis have pointed out that comparisons between studies on work-related musculoskeletal disorders are problematic, since different studies use different case definitions. In a clinical setting, the case definition involves a detailed history, a physical examination, and laboratory testing. Discussion and conclusions:* *When determining which tests should be included in a clinical examination, it is necessary to take into consideration the characteristics of clinical tests in terms of likelihood ratio for confirming and ruling out disease in addition to the pre-test probability of disease. If the different musculoskeletal symptoms and signs do not completely comply with the criteria for a disease, we recommend the choice of an ICD label (International Classification of Diseases – WHO) that focuses on the symptoms rather than the pathology. We suggest that the process for a new feasible case definition system for the neck and upper extremities should start with the creation of a consensus of criteria for diagnosis of common musculoskeletal disorders in primary care, developed by a panel consisting of researchers in the key disciplines. Furthermore, we suggest that in workers whose musculoskeletal function is crucial for employment, use of the International Classification of Function (ICF) may be one way to improve classification of health problems.*

RIASSUNTO

«Problematiche attuali legate alla definizione dei disturbi muscolo-scheletrici nella pratica clinica e nella ricerca». *Numerose reviews e tentativi di metanalisi hanno messo in evidenza la difficoltà nel confrontare i vari studi sui disturbi muscolo-scheletrici correlati al lavoro, dal momento che tali studi si avvalgono di differenti definizioni di caso. In un contesto clinico la definizione di caso comprende una dettagliata raccolta anamnestica, un esame obiettivo ed esami strumentali. Quando si stabilisce quali test clinici utilizzare nella valutazione diagnostica è necessario prendere in considerazione le caratteristiche di tali test in termini di rapporto di verosimiglianza (likelihood ratio) nel confermare o escludere la diagnosi. Nel caso in cui differenti sintomi e segni muscolo-scheletrici non rispondano completamente ai criteri per la diagnosi di malattia, noi raccomandiamo di scegliere una definizione che rientri nella Classificazione Internazionale delle Malattie (ICD – International Classification of Diseases – WHO) e che si focalizzi sul sintomo piuttosto che sulla malattia. In aggiunta, per ottenere un nuovo sistema di classificazione delle patologie del collo e dell'arto superiore, sarebbe opportuno elaborare un documento di consenso*

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sui criteri diagnostici dei più comuni disturbi muscolo-scheletrici da applicare nella pratica clinica. Questo documento dovrebbe essere prodotto da un ampio gruppo di ricercatori specialisti nelle discipline chiave. Infine suggeriamo, per quei lavoratori in cui la funzione muscolo-scheletrica è cruciale per l'attività lavorativa, il ricorso alla Classificazione Internazionale delle Funzioni (ICF- International Classification of Function) che può essere utile per migliorare la valutazione della capacità funzionale.

INTRODUCTION

New knowledge is usually accepted as “truth” if different investigators arrive at the same conclusion. However, in the field of work-related musculoskeletal disorders, several reviews and attempts at meta-analysis have pointed out that comparisons between studies are problematic since different studies use different case definitions (6, 14). Thus, valid case definitions for general use among researchers are crucial for the advancement of knowledge. Furthermore, valid case definitions are required in order to develop and compare different methods for primary prevention (the prohibition of disease onset), secondary prevention (curative treatment), and tertiary prevention (palliative treatment). Improved management of patients with work-related musculoskeletal disorders can reduce both the number of working days lost and the incidence of work-related illness. A patient's quality of life and potential economic loss is largely dependent on medical consultation and a correct diagnosis. Medical-legal decisions are heavily dependent on diagnosis, for example in workers' compensation claims. Valid case definition is a requirement for practicing clinical medicine according to science and best practice.

CURRENT CASE DEFINITION SYSTEMS AND THEIR SHORTCOMINGS

There are no scientific consensus criteria for most ICD-10 (International Classification of Disease) musculoskeletal-related diagnoses relevant in workers (23). When seeking criteria for different musculoskeletal diagnoses, one could to some extent consider the proposed criteria for surveillance and epidemiological studies (10, 16). If the different musculoskeletal symptoms and signs do not

completely comply with the criteria for a disease, the recommendation is to choose an ICD label that focuses on the symptoms rather than the pathology (7). An example for non-specific neck-shoulder pain is to use the label “cervicobrachial syndrome” M53.1 (ICD-10).

Historically, research into work-related musculoskeletal disorders has used concepts that have hampered the development of a valid case definition; for example, RSI (repetitive strain disorders), CTD (cumulative trauma disorders), and OCD (occupational cervicobrachial disorders) (9). The use – or rather misuse – of these terms has decreased. The main problem with these terms was that they implied a pathophysiology that could often not be proven. Furthermore, some terms, such as “tension neck syndrome”, may have impaired communication of the work-relatedness of musculoskeletal disorders due to lack of approval from clinicians (9).

In symptom surveys, different questionnaires are used, with different neurological modalities of the symptoms; for example, “pain”, “trouble”, “ache”, or “numbness”. We need at least to distinguish between positive and negative neurological symptoms. Pain and tingling are positive symptoms, whereas numbness is a negative symptom (a deficit in function).

Besides health status, function is a parameter to consider in case definitions, especially in randomized controlled trials (2). The perceived disability may differ from the functional loss. Perceived disability from reduced wrist motion has been shown to be greater than measured functional loss using common physical tests and outcome surveys (1).

There is still debate as to whether occupational risk factors do result in morphological pathological changes in contrast to produce symptoms from pathological changes (5). Thus, for the purpose of evaluation of work-relatedness, it may also be of

interest to have case definitions based on pathological changes only.

For economic reasons, case definitions may be based on performance; for example, productivity during work (7). Valid measures of work-related utility and function may result in economic reports that include workers' quality of life as well as costs such as productivity (12).

In a review of classification systems for upper-limb musculoskeletal disorders in workers, Van Eerd and co-workers found twenty-seven classification systems that differed in the disorders they included, the labels used to identify the disorders, and the criteria used to describe the disorders (20). Although the review exposed the variety in classification systems, it also showed that many systems use similar criteria for defined disorders (for example frozen shoulder), which is promising for the future development of a common system.

OCCUPATIONAL INJURIES

The case definition for occupational injuries varies between studies, making comparisons between countries difficult (8). The medical outcome should be distinguished from the causative event. The medical outcome should be termed and defined as any clinical event according to ICD-10. Occupational injury has been defined by an international group as any damage inflicted to the body by energy transfer during work with a short duration between exposure and the health event (usually < 48h) (8). It should be noted that the term "accident" is no longer used, since it implies something that is not preventable (4), and moreover is insufficiently specific since it can denote both the injury and the event that resulted in the injury. Whiplash-associated disorders are also common occupational injuries, and probably consist of several subgroups of disorders (19). The term "whiplash-associated" disorder may suffer similar problems to the term "cumulative trauma disorder", and may also have hampered the development of valid case definition by confounding symptoms and cause, by implying a cause not always proven.

IMPROVEMENT OF CASE DEFINITION – THE CLINICAL DIAGNOSIS

In a clinical setting, the case definition involves a detailed history, a physical examination, and laboratory testing (7). The physical examination and diagnosis in the clinical setting can also be regarded as treatment, especially for non-specific musculoskeletal disorders (11). The physical examination should be performed according to a preset schedule or protocol. The validity of clinical examination has had varied results (15). An example of a minimum clinical protocol for physical examination of work-related musculoskeletal disorders has been published (24). When determining which tests should be included in a clinical examination, it is necessary to take into consideration the characteristics of individual tests in terms of likelihood ratio for confirming and ruling out disease in addition to the pre-test probability of disease. Tests with likelihood ratios close to one do not alter the pre-test probability, and do not offer the diagnosing physician much help in making the diagnosis. Current practice often involves clinical tests with poor likelihood ratios, for example Phalen's test. Several textbooks on physical examination of the musculoskeletal system are available (13). When tests are used for screening or to rule out disease, the test with the highest sensitivity is generally preferred. When tests are used to confirm disease, the test with the highest specificity is usually preferred. Serial (multiple) tests with results that are all normal tend to convincingly rule out disease, and serial tests with results that are all abnormal tend to convincingly confirm disease (3).

THE PROCESS FOR A NEW FEASIBLE CASE DEFINITION SYSTEM

Several successful expert committees have proposed case definition criteria (10, 16-18); however, none concerned with neck and upper extremity disorders has gained worldwide acceptance. The Québec Task Force on spinal disorders was successful in developing a simplified classification based mainly on symptoms and signs (18). To ac-

comply with widespread feasible case definitions, the involvement and approval of clinicians from different disciplines is necessary (11). Even if the case definition is to be used in epidemiological research where no detailed clinical diagnosis is planned, there is a need for clinical approval to ensure understanding and relevance of the result. The addition of information on musculoskeletal function could improve the validity of diagnosis in a way that would facilitate comparisons, especially when diagnosing for intervention studies. A recent worldwide survey concluded that the International Classification of Function (ICF) (22) comprehensively covers the spectrum of problems encountered in patients with musculoskeletal conditions by clinical experts throughout the world (21).

We suggest that the process for a new feasible case definition system for the neck and upper extremity should start with the creation of a consensus of criteria for diagnosis of common musculoskeletal disorders in primary care, developed by a panel consisting of researchers in the key disciplines. Furthermore, we suggest that in workers whose musculoskeletal function is crucial for employment, use of the International Classification of Function (ICF) may be one way to improve classification of health problems. Epidemiological, intervention, and health surveillance case definitions may have the clinical diagnosis as gold standard in addition to an ICF classification.

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