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Original article

The relationship between chief complaint and comparable sign in patients with spinal pain: An exploratory study

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ABSTRACT

Many musculoskeletal management philosophies advocate the exploration of the relationship between the patient's chief complaint (CC) and the physical examination findings that reproduce/reduce/change that CC. Geoffrey Maitland developed the concept "*comparable sign(s)* (CS), which are physical examination findings related to the CC(s) that are reproduced during an examination/treatment. These include observed abnormalities of movement, postures or motor control, abnormal responses to movement, static deformities, and abnormal joint assessment findings. There are no studies that have explored the potential clinical relationships between the patient's CC and a CS, thus this exploratory study evaluated the associations, outcomes, and prevalence of the findings. This cohort study involved 112 subjects age 54.3 years (SD = 13.4 years), with neck (25.9%) or low back pain (74.1%) who were treated with physiotherapy for an average of 42 days. Data analysis revealed 88.4% identified a CC at baseline. There was a moderate statistical association between CC and the active physiological finding of a CS ($r = 0.36$), and small-moderate associations between all examination phases ($r = 0.25–0.37$). There were no statistical differences in pain and disability outcomes for those with and without a CC or CS; however, baseline pain levels were higher for those without CC ($p = 0.04$). Further, rate of recovery was lower in those without a CS during passive physiological examination. The results would suggest that there may be content validity to the concept of CS but further research with larger samples sizes is required to explore the extent of the validity is warranted.

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1. Introduction

Within clinical practice, the term *chief complaint* (CC) is used to describe reports of symptoms from the patient during the patient history. Many musculoskeletal management philosophies espouse the importance of recognizing the CC of the patient and then identifying elements of the physical examination that influence the *chief complaint*. These philosophies are well documented in orthopedic/manual therapy textbooks (Stoddard, 1969; Cyriax, 1975; Maitland et al., 2001; Dutton, 2013; Cook et al., 2014). It is believed that establishing primary symptom(s) and the movement patterns impacting those symptoms initiates the process of determining whether the problem may be amenable to manual therapy care.

Cyriax (1975) emphasized the significance of establishing the physical complement to the patient's CC as the "correct symptom". Maitland developed the concept *comparable sign(s)* (CS) over many years and presented these ideas in his clinical teaching and publications (Maitland, 1963, 1983). According to Maitland, a CS refers to the "*combination of pain, stiffness, motor response or other findings which the examiner discovers on physical examination and considers being comparable with the patient's symptoms as described in the subjective examination*". Clinically, a CS is integrated with the patient's CC and the coordinated identification of both is often used to direct treatment application (Maitland et al., 2001).

At present, despite that the introduction of the concept of the CS was over 50 years ago there are no studies that have investigated the relationship of a CS with a *chief complaint*. This may be related to the complex multifactorial nature of an examination or the fact

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that the CS is typically evaluated continuously throughout all phases of assessment. The aims of this exploratory study were the following:

1. Identify trends in distinguishing characteristics of those with and without a *chief complaint*.
2. Explore the relationship of the presence of a CC and CS during selected phases of the examination (during active physiological movements [AP], passive physiological movements [PP] and passive accessory movements [PA].)
3. Evaluate trends in outcomes of those with and without a defined CC or CS to explore differences in pain, recovery, and disability outcomes.

2. Methods

2.1. Study design

This study was a prospective cohort design in which data were collected from May of 2011 to April of 2014. The study was exploratory in concept, and was specifically implemented to examine the relationship of CS findings at selected examination phases (e.g., AP, PP, and PA) and the patient's *chief complaint*. The examination phases of AP, PP, and PA were selected only for repeatability purposes and to streamline data collection and ease of reporting. The design involved no prospective assignment of human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes, thus clinical trials registration was not required.

2.2. Eligibility criteria

2.2.1. Patients

Patients were from eight distinct outpatient physical therapy clinics in the United States. Subjects were required to be 18 years of age or older with mechanically producible cervical or lumbar spine pain during clinical examination movements. By definition, mechanically reproducible pain suggests that there is no neoplastic, infectious, or primarily inflammatory cause (Deyo and Weinstein, 2001). All subjects were required to have a primary diagnosis demonstrative of spine related disorder; required care beyond a single visit, and had to speak English.

Exclusion criteria involved presence of red flags (tumor, metabolic disease, rheumatoid arthritis, osteoporosis, prolonged history of steroid use) and signs consistent with nerve root compression that resulted in a radiculopathy (i.e., diminished muscle stretch reflex, or diminished or absent sensation to pinprick in any upper or lower extremity dermatome). Because tests and measures used to diagnosis radiculopathy are often specific and not sensitive (Cook and Hegedus, 2013), we allowed the clinicians to exclude patients with negative findings on the examination but who they still suspected may have radicular symptoms. Additionally, any history including prior surgery for a neck or low back related problem or current pregnancy was cause for exclusion. Prior to inclusion, all participants signed an informed consent statement which was approved by a local University Human Ethics committee.

2.2.2. Clinicians

The study included 9 physiotherapists, all of whom had rigorous, extensive training in manual therapy principles, orthopedic manual therapy certification, or were fellows of the *American Academy of Orthopedic Manual Physical Therapists*. All individuals were educators in the Maitland concept of orthopedic treatment and were familiar with the use of the CS during the physical examination and the CC during the patient history, and how these findings influence treatment decision making. All individuals were instructed to enroll individuals as frequently as possible although no formal mechanism was used to evaluate enrollment rates, consecutively of enrollment, or decline rates for study inclusion. Experience ranged from 12 to 24 years and practice settings were either hospital-based or private outpatient orthopedic facilities.

2.3. Examination terminology

For the study, the CC was operationally defined during questioning of the patient (during the patient history). Upon initiation of an assessment, the patient was asked to describe their CC and was asked if there was an activity that could provide their familiar pain or dysfunction. If the patient indicated “yes”, the patient was then asked if that was what brought them in to see the physiotherapist. If the CC was elicited it was scored as “yes reproducible” and if a CC could not be elicited with an activity or a response by the patient then it was scored as “no, not reproducible”.

The CS was operationally defined as; any assessment-related combination of pain, stiffness, motor response or other findings which the examiner discovers on physical examination (Maitland et al., 2001) that reproduced the familiar pain reported in the patient's CC or if originally not reported, was able to reproduce the subjects newly determined *chief complaint*. Findings were scored as “present” or “not present”. All CS findings were captured on the initial visit (initial examination) only and required assessment in three different physical examination phases (AP, PP, and PA movements).

2.4. Examination

Prior to involvement, all clinicians participated in a standardized, mandatory 30 min educational webinar that explained the purpose of the study, the data collection methods, and the requirements for participation. Once part of the study, all clinicians performed a patient responder-based examination in which feedback was gathered with each targeted passive or active movement. For this study, a standardized examination process was used for all patients and the process involved documenting the presence or absence of a CS and formalization of the physical examination phases of AP, PP, and PA movements.

Active physiological movements were osteokinematic movements that were performed by the patient, and generally consisted of plane-based, repeated and sustained active movements (flexion, extension, rotation, side flexion, and combined movements as needed), in a standing or recumbent position. Passive physiological movements were similar to AP movements *directionally*, except that the examiner moved the patient passively, while assuming different positions, with repeated bouts or sustained positioning. Passive accessory movements were designed to reflect arthrokinematic movements and consisted of central posterior-anterior or unilateral posterior anterior glides, or variations including unilateral anterior-posterior glides and rarely transverse glides.

2.5. Intervention

Specific interventions were not the purpose of the study thus the components of each were not collected. Nonetheless, treatment interventions were performed pragmatically and almost exclusively consisted of manual therapy, strengthening, and patient-specific education. To ensure ecological validity, clinicians were instructed to treat patients as they normally would, outside the research study.

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