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Original Article

Mechanical or inflammatory low back pain. What are the potential signs and symptoms?

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Abstract

Non-specific low back pain (NSLBP) is commonly conceptualised and managed as being inflammatory and/or mechanical in nature. This study was designed to identify common symptoms or signs that may allow discrimination between inflammatory low back pain (ILBP) and mechanical low back pain (MLBP). Experienced health professionals from five professions were surveyed using a questionnaire listing 27 signs/symptoms.

Of 129 surveyed, 105 responded (81%). Morning pain on waking demonstrated high levels of agreement as an indicator of ILBP. Pain when lifting demonstrated high levels of agreement as an indicator of MLBP. Constant pain, pain that wakes, and stiffness after resting were generally considered as moderate indicators of ILBP, while intermittent pain during the day, pain that develops later in the day, pain on standing for a while, with lifting, bending forward a little, on trunk flexion or extension, doing a sit up, when driving long distances, getting out of a chair, and pain on repetitive bending, running, coughing or sneezing were all generally considered as moderate indicators of MLBP.

This study identified two groups of factors that were generally considered as indicators of ILBP or MLBP. However, none of these factors were thought to strongly discriminate between ILBP and MLBP.

Keywords: Low back pain; Inflammatory; Mechanical; Signs; Symptoms

1. Introduction

Low back pain (LBP) is a common problem with point prevalence ranging from 12% to 33%, 1-year prevalence 22–65% and lifetime prevalence 11–84% (Walker, 2000). While LBP is usually self-limiting, it can persist resulting in a substantial personal, social and economic burden (Walker et al., 2003). In the majority of cases, a specific diagnosis for LBP cannot be defined on the basis of anatomical or physiological abnormalities. Although imaging strategies can be employed to exclude serious causes of LBP (such as tumours and infections), anatomical abnormalities, such as those associated with the aging process, are commonly observed in otherwise asymptomatic, healthy individuals (Deyo, 2002). While specific therapies can be employed to correct identifiable anatomical or physiological abnormalities, non-specific low back pain (NSLBP) can only be treated empirically.

Systematic reviews (Van Tulder et al., 2000; Assendelft et al., 2004) have described the benefit of a broad range of physical and pharmacological interventions over natural history or placebo therapies, but have conceded that effect sizes are small, with little difference in outcomes observed when alternative therapies are compared. This apparent lack of effect may, at least in part, be due to the tendency to treat NSLBP as a homogenous condition, rather than

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a heterogeneous collection of as yet undefined but differing conditions, some of which might respond and others that do not respond to a particular therapy.

There is therefore a need to identify subgroups within the broad classification of NSLBP, and given the failure of classification on the basis of anatomical and physiological abnormalities, attempts have been made to identify subgroups on the basis of symptoms and physical signs (Kent et al., 2005). This syndromic approach has been limited in the past because of the poor inter-rater reliability of proposed classifications. More recently, however, several subgroup classification systems have been demonstrated to have moderate or good inter-rater reliability (Fritz and George, 2000; Flynn et al., 2002; Kilpikoski et al., 2002; Fritz et al., 2006). Subsequent randomised controlled trials (Fritz et al., 2003; Childs et al., 2004; Long et al., 2004; Brennan et al., 2006) have indicated that patients with NSLBP who receive treatment matched to subgroup classifications have better outcomes than those who receive alternative therapies. It therefore seems likely NSLBP does represent a heterogeneous collection of conditions and that the identification of subgroups can result in improved outcomes through directed therapies.

NSLBP is commonly described as being "mechanical" (Batt and Todd, 2000; Chaudhary et al., 2004; Valat, 2005) or "inflammatory" (Saal, 1995; Ross, 2006). Although these labels have no universally accepted definitions, there is evidence to support the involvement of both mechanical and inflammatory factors in the generation of LBP (Biyani and Andersson, 2004; Hurri and Karppinen, 2004; Igarashi et al., 2004; Abbott et al., 2006; Al-Eisa et al., 2006; Ross, 2006). Further, there are two distinct types of treatment for LBP that seem to follow this nosological separation. That is, "mechanical" treatments such as mobilisation, manipulation, traction and exercise are contrasted with notionally "anti-inflammatory" treatments like non-steroidal anti-inflammatory medications and corticosteroid injections. There are studies that examine signs and symptoms of specific inflammatory arthritides of the spine such as ankylosing spondylitis (AS) (Rudwaleit et al., 2006). But once conditions like AS have been ruled out there are no studies that determine whether or not inflammatory low back pain (ILBP) and mechanical low back pain (MLBP) subgroups can be differentiated within the NSLBP classification.

It would therefore seem useful to attempt to divide LBP sufferers into groups that may respond more readily to two types of treatment, mechanical or inflammatory. If this were possible the number of inappropriate therapy decisions could be decreased.

The aims of this study were to identify common symptoms or signs that may allow discrimination between ILBP and MLBP and determine whether the different groups involved in the management of LBP interpret these signs and symptoms in a similar manner.

2. Methods

Prior to the commencement of the study, the authors designed a questionnaire listing 26 symptoms and signs relating to LBP. The signs and symptoms were drawn from the *a priori* knowledge of the authors to be possibly related to LBP. The questionnaire was then pre-tested on a group of four practitioners: a spine surgeon, rheumatologist, chiropractor and manipulative physiotherapist, resulting in the addition of a further question. The final 27 signs and symptoms are found in Table 1. The questionnaire also contained an additional row for "other" signs and symptoms beyond the 27 nominated. This row could be filled out at the discretion of the respondent if they thought that there were other associated factors. Those surveyed were asked "Please circle the number (0–10) which in *your opinion* best matches the sign or symptom as being from [mechanical]/[inflammatory] low back pain."

Responses were assessed on an 11-point semantic differential scale (Streiner and Norman, 2003) requiring the participants to indicate the degree, from strongly disagree (0) to strongly agree (10), with which they associated each symptom or sign with ILBP and/or MLBP. Participants were instructed to use the middle number (5) to indicate neither disagree nor agree and to leave the answer scale blank to indicate "don't know". Respondents were advised that it was important to assume that all serious causes of LBP were excluded, including cancer, infection and associated systemic disease.

In this study the low back was defined as the area between the costal margins and inferior gluteal folds.

A convenience sample of health professionals experienced in the diagnosis and treatment of LBP were surveyed. The sample included both orthopaedically and neurosurgically trained spine surgeons, rheumatologists, medical practitioners with a special interest in musculoskeletal medicine, chiropractors and manipulative

Table 1
Potential signs and symptoms of ILBP or MLBP.

Morning pain on waking	Pain on trunk extension
Intermittent pain during day	Pain on lateral bending
Pain later in the day	Palpatory pain of muscles
Straight leg raising hurts	Palpatory pain of spinous process
Pain wakes the person up	Stiffness after resting (includes sitting)
Pain on sitting for a while	Morning and afternoon pain
Pain when standing for a while	Doing a sit up is painful
Pain when lifting	Driving long distances is painful
Pain bending forward a little	Pain on walking more than 50 m
Burning pain	Pain on running
Aching pain	Pain on repetitive bending
Stabbing pain	Pain getting out of a chair
Constant pain	Pain on cough or sneeze
Pain on trunk flexion	