Clinical Study

Risk factors for a recurrence of low back pain

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Abstract

BACKGROUND CONTEXT: The clinical importance of lumbar pathology identified on magnetic resonance imaging (MRI) remains unclear. It is plausible that pathology seen on MRI is a risk factor for a recurrence of low back pain (LBP); however, to our knowledge, this has not been investigated by previous studies.

PURPOSE: The aim was to investigate whether lumbar pathology, identifiable on MRI, increases the risk of a recurrence of LBP.

STUDY DESIGN: This was a prospective inception cohort study with 1-year follow-up.

PATIENT SAMPLE: Seventy-six people who had recovered from an episode of LBP within the previous 3 months were included.

OUTCOME MEASURES: The primary outcome was time to recurrence of LBP, which was determined by contacting participants at 2-month intervals for 12 months.

METHODS: All participants underwent a baseline assessment including MRI scan and completion of a questionnaire, which assessed a range of potential risk factors for recurrence. Magnetic resonance imaging scans were reported for the presence of a range of MRI findings. The primary analysis investigated the predictive value of two clinical features (age and number of previous episodes) and six MRI findings (disc degeneration, high intensity zone, Modic changes, disc herniation, facet joint arthrosis, and spondylolisthesis) in a multivariate Cox regression model. We decided a priori that dichotomous predictors with hazard ratios (HRs) of greater than 1.5 or less than 0.67 would be considered potentially clinically important and justify further investigation.

RESULTS: Of the eight predictors entered into the primary multivariate model, three (disc degeneration, high intensity zone, and number of previous episodes) met our a priori threshold for potential importance. Participants with disc degeneration score greater than or equal to 3 (Pfirrmann scale) had a HR of 1.89 (95% confidence interval [CI] 0.42–8.53) compared with those without. Patients with high intensity zone had an HR of 1.84 (95% CI 0.94–3.59) compared with those without. For every additional previous episode, participants had an HR of 1.04 (95% CI 1.02–1.07).

CONCLUSIONS: We identified promising risk factors for a recurrence of LBP, which should be further investigated in larger trials. The findings suggest that pathology seen on MRI plays a potentially important role in recurrence of LBP. © 2015 Elsevier Inc. All rights reserved.

Keywords: Low back pain; Recurrence; MRI; Prevention; Cohort study; Prospective

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Introduction

Studies of the course of low back pain (LBP) have re-shaped the contemporary view of this common, disabling, and costly condition. We now know that although most people recover quickly from an episode of LBP, many will go on to have an unpredictable pattern of recurrent symptomatic episodes, which are responsible for much of the burden of LBP [1–4]. The rates of 1-year recurrence reported in the literature range from 25% to 80% [4,5]. Preventing these recurrences would be a major breakthrough, but currently there is a lack of strong evidence for any effective preventative approach.

The lack of effective interventions for prevention of LBP is not surprising given the limited understanding of etiology and risk factors for developing either a first or recurrent episode of LBP. Few previous studies have been conducted on this topic, and those that have been done have significant limitations. Previous studies typically recruit a mixed sample of people who have had previous LBP episodes and those who have not [6]. These mixed cohorts make interpretation difficult as the risk factors for a first-time episode may be different from risk factors for recurrence. Studies of risk factors for recurrence should ideally recruit an inception cohort of people who have recently recovered from an episode of LBP; however, few studies have done so.

One previous study from our group [4] recruited an inception cohort of people who had recently recovered from an acute episode of LBP and followed them for 12 months. This study found that the number of previous episodes was a risk factor for recurrence but did not identify any other informative or modifiable predictors. Limitations of the study included recall bias due to irregular follow-up and the investigation of a limited range of predictor variables. At the time of this study, there was also no agreed definition of what constituted a recurrence of LBP. Since this time, a Delphi study has been conducted on this topic and achieved very high rates of agreement (95%) for the following standardized definition: "a return of LBP lasting at least 24hrs with a pain intensity of 3 or more on a 0-10 numeric pain rating scale" [7].

Low back pain is widely considered a multifactorial condition, yet the importance or otherwise of magnetic resonance imaging (MRI) findings as risk factors for a recurrence of LBP has not been investigated to our knowledge. Magnetic resonance imaging findings have been reported to be common in people without current LBP [8,9], and this is often used to argue against their clinical importance; however, it is possible that the presence of anatomic abnormalities identified on MRI may be risk factors for a recurrence of LBP in the same way that high blood pressure or cholesterol increases the risk of future cardiovascular episodes [10].

Therefore, the aim of this study was to investigate risk factors, including MRI findings, for development of a recurrence of LBP in an inception cohort of people who have recently recovered from an episode of acute LBP.

EVIDENCE & METHODS

Context

The authors sought to perform a prospective investigation correlating lumbar pathology by MRI to the risk of recurrent episodes of low back pain.

Contribution

This was a prospective study that included 76 patients and followed them at two-month intervals for a period of 12 months. The authors found that both the extent of disc degeneration (as determined by Pfirrmann grade) as well as high intensity zones were significantly associated with a greater risk for recurrent episodes of low back pain. The approximate risk of a future back pain episode increased by 4% with each recurrent event. The authors maintain that their findings identify radiographic risk factors for recurrent episodes of low back pain.

Implications

This study sheds important light on possible risk factors for recurrent low back pain, although further study is clearly necessary. The information at present can be used to inform patients regarding recurrence risk and expectation management during evaluation after an episode of clinically significant back pain. The authors' findings, however, cannot be considered as indicative of causation. Thus, treatment (surgical or otherwise) of the risk factors identified may not necessarily correlate with a lower risk of back pain recurrence.

—*The Editors*

Materials and methods

Study design

This observational study investigated an inception cohort of people who had recently recovered from LBP. All participants underwent a baseline assessment including MRI scan and were followed up for 12 months. Participants were drawn from two previous clinical studies of acute LBP. The Paracetamol for Low Back Pain (PACE) study [11] was an RCT investigating the efficacy of paracetamol for patients with acute LBP. The TRIGGERS study [12] was a case-crossover study investigating triggers for an acute episode of LBP. The present study was approved by Macquarie University Human Ethics Committee (Ref No: 5201200547).

Inclusion criteria/participants

Potential participants who had recently completed their involvement in either the PACE or TRIGGERS study were