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Course and prognosis of older back pain patients in general practice: A prospective cohort study

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ABSTRACT

The aim of the current study was to determine the course of back pain in older patients and identify prognostic factors for non-recovery at 3 months' follow-up. We conducted a prospective cohort study (the BACE study) of patients aged >55 years visiting a general practitioner (GP) with a new episode of back pain in the Netherlands. The course of back pain was described in terms of self-perceived recovery, pain severity, disability, pain medication, and GP visits at 6 weeks' and 3 months' follow-up. Prognostic factors for non-recovery at 3 months' follow-up were derived from the baseline questionnaire and physical examination. Variables with a prognostic value were identified with multivariable logistic regression analysis (method backward), and an area under the receiver operating curve (AUC) was calculated for the prognostic model. A total of 675 back pain patients (mean age 66.4 (SD 7.6) years) participated in the BACE cohort study. At 6 weeks' follow-up 64% of the patients reported non-recovery from back pain. At 3 months' follow-up 61% still reported non-recovery, but only 26% of these patients had revisited the GP. Longer duration of the back pain, severity of back pain, history of back pain, absence of radiating pain in the leg below the knee, number of comorbidities, patients' expectation of non-recovery, and a longer duration of the timed 'Up and Go' test were significantly associated with non-recovery in a multiple regression model (AUC 0.79). This information can help GPs identify older back pain patients at risk for non-recovery.

1. Introduction

In clinical guidelines the course of back pain is often described as favorable for most patients, although it is also often emphasized that recurrence of back pain is common [2,3,10]. Recovery rates vary widely between studies because of different study populations and outcomes [6,8]. The course of back pain may also differ between patients, because individual factors (e.g. age, duration of back pain, or general health) can influence the course [7,13].

Information on the course and prognostic factors for non-recovery of back pain is helpful for clinicians to better inform their patients. It might also be useful to select (effective) treatment when modifiable prognostic factors for non-recovery are found. Hayden et al. reported that many inconsistent findings exist between reviews on prognostic factors for back pain [6]. Variables consistently reported as prognostic factors for different unfavorable outcomes were older age, poor general health, increased psychological or psychosocial stress, poor relations with colleagues, physically heavy work, worse functional disability at baseline, sciatica, and the presence of work compensation [6]. Although older age is frequently reported as a prognostic factor for non-recovery [7,9], information on demographic and clinical factors associated with non-recovery during follow-up for older back pain patients is lacking [19]. The course of back pain and factors associated with non-recovery might differ between younger and older adults, because 1) older age is often reported as a prognostic factor for non-recovery, 2) older age is also considered a "red flag" in patients

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with back pain, i.e. indicating possible underlying pathology, which could influence the course of back pain [2,11], and 3) older people have more comorbidities [25].

Therefore, the aim of the present study is to describe the course of back pain patients aged >55 years recruited in general practice, and to identify prognostic factors for non-recovery of back pain in these patients at 3 months' follow-up.

2. Methods

2.1. Study design

This is a prospective cohort study including back pain patients aged >55 years consulting their general practitioner (GP) with a new episode of back pain (the BACE study). An episode was defined as 'new' if the patient had not visited a GP during the preceding 6 months for the same back complaint. Back pain was defined as pain in the region from the top of the scapulae to the first sacral vertebra. Exclusion criteria were language problems, cognitive disorders, or being unable to complete the physical examination (e.g. wheelchair-bound patients). Eligible back pain patients were invited to participate in the BACE study by their GP either directly during consultation, or in writing within 2 weeks after consultation. After inclusion in the BACE study and having signed informed consent, the baseline measurements included a questionnaire and a physical examination of the back. The follow-up period of this study was 3 months, with two follow-up measurements: at 6 weeks and at 3 months. The study protocol was approved by the local Medical Ethics Committee. The BACE study design is described in detail elsewhere [20].

2.2. Measurements

The questionnaires are based on the Multinational Musculoskeletal Inception Cohort Study (MMICS) statement [14]. This is a consensus statement designed to improve the quality of back pain prognosis research by recommending a core set of measurements. The baseline questionnaire and physical examination included measurements of potential prognostic factors for non-recovery. Follow-up questionnaires at 6 weeks and 3 months included the following outcome measurements: 1) self-perceived recovery measured with the Global Perceived Effect (GPE) on a 7-point scale ranging from 'completely recovered' to 'worse than ever' [1], 2) average severity of back pain during the previous week measured on an 11-point numeric rating scale (NRS) ranging from 0 'no pain' to 10 'worst pain ever' [22], 3) disability, measured with the Roland Disability Questionnaire (RDQ), ranging from 0 points (no disabilities) to 24 points [17], 4) medication used for back pain: a dichotomous variable asking if the patient took pain medication in the 3 months preceding the follow-up questionnaire, and 5) a GP visit in the 3 months preceding the follow-up questionnaire (yes/no).

The potential prognostic factors for non-recovery selected for this study were those factors that had been identified as prognostic factors in the previous literature and/or deemed clinically relevant. These factors were divided into two categories:

(1) History taking: including patients' characteristics and characteristics of the back disorder. The following patient characteristics were included: age, sex, education level, body mass index (BMI), patients' expectation of recovery, quality of life; physical and mental summary scales of the Short Form-36 (SF-36) [24], depressive symptomatology measured with the Center for Epidemiologic Studies Depression Scale (CES-D) [16], kinesiophobia measured with the Fear-Avoidance Beliefs Questionnaire (FABQ) physical activity subscale [23], pain catastrophizing measured with the Pain Catastrophizing Scale (PCS) [21], comorbidity of musculoskeletal symptoms (neck, shoulder, knee or hip symptoms) and the number of comorbidities measured with the Self-Administered Comorbidity Questionnaire (SCQ) [18]. The symptoms measured with the SCQ were heart disease, high blood pressure, lung disease, diabetes, ulcer or stomach disease, kidney disease, liver disease, anemia or other blood disease, cancer, depression, osteoarthritis, rheumatoid arthritis, neck/shoulder complaint, headache, foot problems, and neurological disorder. The following characteristics of the back disorder were included: duration of the back pain at baseline, severity of back pain at baseline measured on an 11-point NRS, baseline disability measured with the RDQ, history of back pain, the presence of radiating pain in the leg below the knee, and perceived cause of the back pain.

(2) Physical examination: including anteflexion (finger-floor distance in cm), difference in quadriceps strength between the right and left leg, Lasègue test [5], timed 'Up and Go' test [15], and bone quality measured using Lunar Achilles InSight (quantitative ultrasound measurement of the heel) [4]. Low bone quality is defined as a score of >2.5 standard deviations (SD) lower than the population mean. Information regarding red flags (indicators for possible underlying pathology) were also collected in the BACE study. However, the prognostic value of these factors was not the subject of this study. The prevalence of these factors and their diagnostic value will be described elsewhere.

2.3. Statistical analysis

Descriptive analysis was used to report the characteristics of the participants and the course of back pain over the 3-month follow-up period.

To identify prognostic factors, an unfavorable outcome was defined as non-recovery, i.e. a score a score of 'somewhat improved', 'stayed the same', 'somewhat worsened', 'strongly worsened' or 'worse than ever' on the GPE scale. Recovery was defined as a score of 'completely recovered' or 'strongly improved'. Imputation of missing data of the baseline prognostic variables was carried out by multiple imputation, creating five imputed databases [12]. Bivariate logistic regression analysis was performed to gain insight into the association between the baseline variables and outcome. A multivariate logistic regression analysis (method backward, entry $P < 0.05$, removal $P > 0.10$) was first performed with the history-taking variables on all five imputed databases. If a variable was selected in at least three of the five imputed databases in the multivariate analysis, it was included in the final model (method enter). To determine the discriminative ability of the model, the area under the receiver operating curve (AUC) was calculated. An AUC of 0.5–0.7 is considered as moderate discrimination, and an AUC of $\geqslant 0.7$ as good. After selection of these variables, the same analysis of the multivariate (backwards) regression analysis was performed with the variables of the physical examination added to the history-taking model in order to examine the additional value of the physical examination. Sensitivity analysis was performed for the method of patient recruitment in the study.

3. Results

3.1. Population characteristics

The flowchart of the study is presented in Fig. 1. A total of 675 back pain patients participated in the study. During follow-up, 639 (95%) patients returned the 6-week follow-up questionnaire and 626 (93%) patients returned the 3-month follow-up questionnaire. The baseline characteristics of the study population are presented in Table 1. The mean age of the patients was 66.4 years (SD 7.6;