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STUDY OF MECHANICAL PHYSIOTHERAPY FOR LUMBAR DISK PROLAPSE

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ABSTRACT

Objectives: To evaluate the long-term effect of a specific conservative treatment method for patients with lumbar disc prolapse. ***Background data:*** Low back pain and symptoms of disc herniation have a good prognosis. ***Methods:*** Fifty consecutive patients with clinically and neuroradiologically confirmed lumbar disk prolapse, who responded to the first five daily physiotherapy sessions with pain centralization, were prospectively treated with mechanical physiotherapy with repeated end range spinal movements and leg movements. ***Results:*** From the initial cohort of 50 patients, 5 patients were operated within one year after discharge and one patient died. One patient had surgery for disc prolapse 13 months after discharge. Three patients were lost for follow-up. None of the 40 remaining patients has had surgery until the last follow-up. ***Conclusion:*** Pain centralization during the first 5 treatment sessions of mechanical physiotherapy is a useful diagnostic tool to predict a good longterm outcome. Mechanical physiotherapy with end range spinal movements and leg movements is an effective treatment strategy for many patients with lumbar disk disease.

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INTRODUCTION

Nonspecific low back pain and lumbar disc herniation have a good prognosis with several conservative treatment strategies [5,20]. Nevertheless the rate of recurrences and the costs because of demand on health care and sick-leave are high. The present single arm prospective study examined the efficacy of specific physiotherapy with repeated end range spinal movements in a preferred direction [11,14] and leg movements to move the affected nerve root [12] in a consecutive series of 50 patients with neuroradiologically confirmed and clinically symptomatic lumbar disk prolapse. In the acute phase of the disease the therapy was guided by the reduction of symptoms and signs. The main aim was pain centralization defined as the resolution of the most distal extent of the referred or radicularpain, even if the pain had only spread as far as the lateral back. Repeated spinal movements are useful to reduce signs and symptoms inpatients with low back pain, who show pain centralization [13, 1]. Patients learned repeated end range spinal movements which they were asked to exercise on their own with 10 repetitions every hour. Leg movements were performed when the severe pain was reduced and when they improved symptoms and the straight-leg-raise test. They consisted of full flexion of hip and knee and then full extension of the knee with slide extension of the hip so that the patient felt a tension in the back of the leg, but no pain. Patients performed leg movements starting with three repetitions three times a day with both legs one after the other. Patients were asked to continue the exercises after discharge with repeated end range spinal extension standing or prone and rotation prone to both sides and leg movements supine with 10 repetitions once or twice a day with the aim to prevent disc displacement and epidural fibros.

PATIENTS AND METHODS

To be eligible for this prospective single arm trial of mechanical physiotherapy for lumbar disk prolapse, the patients had to be older than 17 years of age, have neuroradiologically confirmed and clinically symptomatic lumbar disc prolapse, show pain centralization during the first 5 physiotherapy sessions and give informed consent. Inpatient treatment was conducted in pacific college of physiotherapy, udaipur. Fifty consecutive patients (39 males and 11 females; median age: 44 years) were entered into the trial. All patients, who did not have surgery in the first year after discharge, were invited to come to the hospital to an assessment and for a structured interview focused on activities of daily living and employment for 3-5 years. The major endpoints were relief from pain and restoration of neurological function, extending beyond the inpatient treatment period. Further endpoints were patient satisfaction, carrying out of exercises, ability to work upon discharge from hospital, sick-leave because of recurrences of symptoms and surgery because of symptomatic relapse of disc prolapse.

RESULTS

Of the initial population of 50 patients, 5 patients had been operated within the first year after discharge, 3 were lost for follow-up because they moved, and one died from pulmonary embolism. The patients lost for follow-up were not different regarding the parameters studied here at baseline or at discharge from the hospital from the patient population that was available for follow-up. Forty-one patients were

reevaluated. Twenty-seven patients came to the hospital and were assessed, the other 14 patients just filled in the questionnaire or were interviewed by telephone. One patient had surgery for disc prolapse 13 months after discharge. Of the 40 patients who did not have surgery, all attended the 3-year, 38 patients the 4-year and 36 patients attended the 5-year follow-up examination. This article presents the results of the examination of the 40 patients who were not operated and not lost to follow up . Seven patients (18%) had pain of grades 5-10/10, and two patients (5%) had moderate pain of grades 1-4/10 within the past 24 hours. Only two patients were using analgesic medications. Twenty-one patients (52%) suffered from pain during some daily life activities. The main risk factors triggering symptoms were bending, sitting and lifting heavy weights. In most instances, patients managed pain by exercises themselves. Twenty-three patients (57%) did exercise at the time of assessment to prevent recurrence or to eliminate fluctuating pain.

No patient was unable to work or had retired because of back or leg pain. The median time of limited daily life activities and off work (n=50) had been 35 days from discharge in the first year after treatment (range: 0-300 days) [6]. After that time 12 of 39 patients were transiently unable to work because of back or leg pain. The median time off work in the time course of 5 years for these 12 patients was 3 weeks (range 1-52 weeks). One patient provided no data. Concerning their back problem thirty-one (77%) patients felt good, eight (20%) patients fair, one (2.5%) patient bad. Thirty-three (82.ed.5%) patients were satisfied, seven (17.5%) not satiesfied. Patient motivation to come to the hospital for assessment was excellent for the one year follow-up and became poorer thereafter. That is why the restoration of neurological function could not be evaluated in all patients with initial paresis or sensory loss. Of 30 patients with initial paresis, one was operated and three were lost for follow-up. At one year follow up five patients had a paresis. Three of them were also assessed 5 years after discharge. One had a weakness grade 4, two had no weakness. The rate of patients with paresis decreased from 30/50 patients (60%) at diagnosis to 5 patients (10%), assuming that the lost and operated patients still would have weakness (worst case scenario). Fifteen of the 17 patients, who had sensory deficits at the one year follow up, could be assessed 5 years after discharge. Ten patients had the same sensory loss as at the one year follow-up. Five patients reported improvement. Of those one had residual sensory loss and four of them had no sensory loss. From the initially 38 of 50 patients with sensory loss, two were operated and four were lost for follow-up. The rate of patients with sensory loss thus decreased from 38 of 50 patients (76%) at diagnosis to 17 patients (34%), assuming that the lost and operated patients still would have sensory loss (worst case scenario).

DISCUSSION

Pain centralization within five daily physiotherapy sessions predicted a good outcome of conservative therapy inpatients with lumbar disc herniation. This protocol and time frame is consistent with previous studies of longterm results obtained with the nonsurgical treatment of patients with low back pain [2, 8, 10,11]. Recurrence and sick-leave are frequent problems for patients with nonspecific low back pain and symptoms of disc herniation.

Annual recurrence rates for low back pain vary between 30% and 86% [7, 9,17]. Residual back pain after discectomy has been reported in up to 75% of patients [4, 18,19]. Patients with lumbar disk prolapse, who were initially treated conservatively, were operated in 16-40%, and up to 20% did not resume work [3, 5]. Therapies with active exercises have the potential to reduce low back pain and to reduce the recurrence rate [9, 10, 15, 16]. Here we report mature 5 year data from a prospective phase II trial on mechanical physiotherapy in patients with lumbar disc prolapse [6]. We find that exercise compliance during the time course of 5 years was good. 57% of patients still did exercises at the time of assessment to prevent or treat recurrent pain and to prevent relapse. Neurological function recovered nearly completely in all patients (Table 1). Recurrent back and leg pain, if present, was triggered by bending, sitting and lifting. Repeated end range spinal extension is the opposite movement and was confirmed here to have the potential to prevent or resolve recurrence. The rate of recurrences with sick-leave was low. No requirement for surgery within one year of treatment predicted a longterm favourable outcome. Few patients in this high risk population went on to surgery and the minimal time lost from work was cost saving for the health care system. The limitation of this study is the lack of a control group. The strengths include its prospective nature, the specific diagnostic and therapeutic tools, and its long follow up. This was a proof of concept study. Randomised trials are needed to evaluate the best diagnostic tool to find out which patients with lumbar disc herniation need surgery and which kind of conservative therapy is most effective.

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