Research activities in Amsterdam
Musculoskeletal disorders in primary care

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In this article we describe the research activities of the Musculoskeletal System subdivision of the Institute for Research in Extramural Medicine of the Vrije Universiteit of Amsterdam, the Netherlands, with emphasis on projects related to physiotherapy. We first describe the systematic literature reviews that have been carried out or are in progress and then ongoing studies concerning the diagnosis and treatment of musculoskeletal disorders. Lastly, we present our plans for future research projects in this field.

The Institute for Research in Extramural Medicine (EMGO Institute) is one of the six research institutes of the Medical Faculty of the Vrije Universiteit in Amsterdam, the Netherlands. The EMGO Institute encompasses all extramural research projects of the Medical Faculty. Extramural research is focused on the study of health and disease ‘outside hospital walls’ and covers, for example, the work of general practitioners and physiotherapists. The research projects are grouped into three main divisions. Projects that are closely related form a subdivision within a main division. One of those subdivisions is ‘Musculoskeletal System’ within the main division ‘Common Complaints’.

This article describes the research activities of this subdivision, with emphasis on projects related to physiotherapy. Firstly, systematic literature reviews that have been carried out or which are in progress are described. Subsequently, ongoing studies concerning the diagnosis and treatment of musculoskeletal disorders are described. Finally, we present our plans for future research projects in this field.

Systematic reviews

One of the activities of the Musculoskeletal System subdivision is the systematic review of the literature on randomized clinical trials of the efficacy of treatments of musculoskeletal disorders. In contrast to a ‘narrative’ review, which is usually a subjective summary of the literature by an expert, a systematic review focuses on the methodological quality of the individual randomized clinical trials. The principles of systematic reviews are explained in more detail elsewhere in this issue by our colleagues in Maastricht [1].

Systematic reviews of randomized clinical trials of the efficacy of physiotherapy that have been performed by members of the Institute include physiotherapy exercises for back pain, spinal manipulation and mobilization for back and neck pain, chiropractic manipulation for back pain, bedrest and orthoses for low back pain, and back schools (2–6). The number of randomized clinical trials that were traced ranged from 5 to 35. A wide range of scores for the quality of the methodology were found (16–82) and many conflicting results were observed. In general, we concluded that there was no convincing evidence about the efficacy of the various treatment modalities, because of the poor methodological quality of the randomized clinical trials. In the studies on the efficacy of exercise therapy and back school programs, however, the randomized clinical trials reporting positive results (i.e., in favor of the treatments under consideration) tended to have the highest scores for methodology (2,6).

A systematic review of 52 reviews on spinal manipulation for low back pain and a systematic review of physiotherapy for tennis elbow have been completed recently. A mega-analysis of commonly applied treatments for low back pain is in preparation. In addition, our group participates in the Musculoskeletal Working Group/Back Pain of the Cochrane Collaboration in order to update and further disseminate the above-mentioned reviews.
A number of reviews have been carried out in cooperation with our colleagues from Maastricht (7). A review of the efficacy of physiotherapy for shoulder complaints is in preparation.

Other publications from our research group (also often conducted in cooperation with others) include systematic reviews about treatments other than physiotherapy and articles concerning the theoretical and methodological aspects of reviews (8–15).

Research projects

Our institute has carried out various research projects concerning the efficacy of physiotherapy (16–19). The following projects are currently being carried out at the EMGO Institute and concern the diagnosis and treatment of musculoskeletal disorders with respect to physiotherapy.

**Patients with low back pain in general practice: diagnosis and prognosis**

A 1-year follow-up study was performed in order to study and predict the clinical course of low back pain in a general practice population. The study population consisted of 603 consecutive patients with low back pain who consulted 1 of the 15 participating general practitioners. During the 1-year follow-up, data were collected by means of questionnaires that were sent, by mail, to the patients every 4 weeks. Topics included the severity and duration of pain, disability, and recurrence of pain. The referral rate to physiotherapists was also studied. Information about prognostic indicators was collected at baseline. The results of this study will be available at the end of 1995.

**Diagnosis and treatment of low back pain**

This study, which is conducted in close cooperation with the Department of General Practice of the University of Limburg, focuses on the management and costs of chronic low back pain in the Netherlands. In addition, the reliability and validity of the Dutch adaptation of the Quebec Back Pain Disability Scale will be addressed.

The study population consists of a sample of 600 patients with chronic low back pain from 25 general practices. Baseline data have been collected regarding the use of diagnostic and therapeutic interventions during the preceding year. Patients will be monitored prospectively for 1 year. The results of the retrospective part of the study on the management of patients with chronic low back pain showed that general practitioners do not seem to have a rational policy towards the use of diagnostic techniques and therapeutic interventions (including treatment by physiotherapists). We concluded that the management of chronic low back pain could be improved by developing standard clinical guidelines. Prospective data are still being collected.

**Chiropractic in the Netherlands**

The main objectives of this study are to describe the position of chiropractic in the Netherlands, to assess the incidence and severity of adverse effects of (chiropractic) spinal manipulation (by reviewing the literature), and to study the reliability of X-ray diagnosis by chiropractors. The response rate in the survey among chiropractors was 88%. Chiropractors primarily treat back and neck pain, mainly with specific spinal manipulation techniques in an average of eight treatment sessions. Conventional orthopedic and neurological examination, along with motion palpation, are the cornerstones of the physical examination (20).

We reviewed the relevant literature concerning adverse effects of spinal manipulation. Up to 1991, 189 complications have been described in the literature (mainly vertebrobasilar accidents). Of the 31 fatal complications, 18 were accounted to the chiropractors. The incidence of complications is estimated at 0.1–30 per 1,000,000 manipulations. In order to study the reliability of X-ray diagnosis in chiropractic practice, we will compare the assessments four blinded chiropractors make of 100 X-rays of the lumbar spine. The chiropractors will use a standardized list for the assessments. Emphasis will be on specific biomechanical aspects of X-ray interpretation. The results will be available in 1996.

**A randomized controlled trial of lumbar supports and lifting instructions for the prevention of low back pain in the workplace**

In order to study the efficacy of lumbar supports and lifting instructions by physiotherapists for the prevention of low back pain in the workplace, 300 workers from the freight department of the Royal Dutch Airlines (KLM) will be randomized over four groups: lifting instructions, lumbar support, both lifting instructions and lumbar support, and no intervention. The intervention period will last 6 months. The main outcome measures are incidence of low back pain episodes, number of lost workdays, medical consumption, functional status, abdominal strength, and costs of the intervention. Measurements will be made at baseline, every month during the intervention period, and 9 and 12 months after randomization. The study started recently.

**Diagnosis and treatment of shoulder complaints in general practice**

In this study all new cases of shoulder disorders in 18 general practices were monitored for 1 year. The general practitioners and physiotherapists, whenever involved in the treatment, recorded data on the diagnosis and treatment. Before the start of the study the general practitioners and physiotherapists were trained to use the same diagnostic protocol, which was based on the ideas of Cyriax. In 1 year 349 patients were enrolled; 30% of the participants, most of whom were diagnosed as having rotator cuff tendinitis, were immediately referred to a physiotherapist.

There was poor agreement between the diagnoses of the general practitioner and physiotherapist. In 27% of the
cases the general practitioner and physiotherapist disagreed in 22% there was partial agreement only. The results for the follow-up period will be available in 1995.

**Efficacy of corticosteroid injections and physiotherapy for capsulitis of the shoulder**

This randomized clinical trial, which started recently, will compare the effects of intra-articular corticosteroid injections and physiotherapy for the treatment of patients with adhesive capsulitis of the shoulder and will make a cost-effectiveness analysis of the treatments.

After selection by an independent observer (an experienced physiotherapist), the 120 patients will be randomly assigned to either 6 weeks of standardized physiotherapy or intra-articular triamcinolone injections. Treatment with physiotherapy consists of mobilization and exercise therapy supplemented with electrotherapy. The outcome measures are global perceived benefit, severity of the main complaint, severity of pain at night and during the day (all assessed by the patients), functional status (measured by using the Maastricht shoulder disability questionnaire), severity of shoulder complaints, and range of movement (both assessed by the blinded observer after history-taking and physical examination). Results will be available early 1997.

**Diagnosis of soft tissue lesions of the shoulder by physiotherapists**

In order to investigate the value of physical examination in identifying soft tissue lesions of the shoulder, 200 consecutive patients with shoulder complaints will be examined by two experienced physiotherapists. After history taking and a standardized physical examination, both physiotherapists will independently classify the shoulder syndromes according to Cyriax's scheme. The examination of each patient will be repeated after 2 days by the principal investigator. Agreement will be assessed on a diagnosis level and on an item level. In addition, patients will be followed for 3 months in order to assess the consistency of the various shoulder syndromes. The study is conducted in close cooperation with rheumatologists and physiotherapists of the Jan van Breemen Institute (an outpatient clinic for rheumatological disorders). The first results are expected in 1996.

**Chronic nonspecific neck pain in general practice: incidence, prevalence, course of the complaints, and medical consumption**

This study, which is conducted in close cooperation with the Department of General Practice of the University of Limburg, aims to assess the incidence and prevalence of chronic nonspecific neck pain in general practices and the management of these patients, including the referral to physiotherapists. Five hundred patients with chronic nonspecific neck pain will be sampled from 45 general practices of the Registration Network Family Practices, University of Limburg, Maastricht. The baseline use of diagnostic and therapeutic services in the preceding 12 months will be assessed by means of a questionnaire. After 6 and 12 months the general practitioners and the patients will receive questionnaires which focus on the applied diagnostic and therapeutic services during the preceding 6 months and on the current status of the patients' complaints. The study will start in spring 1995.

**Rehabilitation activities profile. The ICIDH as a framework for a problem-oriented assessment method in rehabilitation medicine**

The EMGO Institute participated in this study, which was carried out by the Department of Rehabilitation Medicine of the Free University Hospital. The project was completed recently. Its aim was to construct and validate a novel functional status assessment instrument: the Rehabilitation Activities Profile (RAP). The RAP can be used to assess the disabilities, handicaps, and perceived problems of patients in the domains communication, mobility, personal care, occupation, and relationships. The method has been proved useful for screening, monitoring progress and outcome, and goal-setting (21, 22). In this project special attention was given to the usefulness of the RAP to physiotherapists who are involved in the rehabilitation process. These results will be available in 1995.

**Plans for the future**

The research activities of the Musculoskeletal System subdivision of the EMGO Institute continue to be focused on the diagnosis and treatment of frequently occurring soft tissue lesions of the musculoskeletal system and nonspecific disorders, such as neck pain and low back pain. Special attention will be paid to the role of physiotherapy in the treatment of the above-mentioned disorders. There seem to be many physiotherapy treatment modalities whose efficacy is still unknown. Our research, therefore, is focused on the selection of potentially promising treatment modalities by carrying out well-designed randomized clinical trials. Future research projects comprise a comparison of the efficacy and costs of injection therapy versus physiotherapy (ultrasound and friction massage) for tennis elbow and a comparison of the effects of manipulative therapy, physiotherapy, and usual care by the general practitioner for chronic nonspecific neck pain. Another project is aimed at the reproducibility of the diagnosis of low back pain according to the McKenzie classification and the efficacy of the McKenzie therapy in the treatment of low back pain with sciatica. The impact of musculoskeletal disorders in occupational medicine is another area of interest. A research project is to be performed in collaboration with the Dutch Railways involving the use of a 'graded-activity' program (provided by physiotherapists) to reduce absenteeism due to low back pain among railway workers.

In addition to the above-mentioned projects the prevention of disability due to chronic rheumatological disorders among the elderly, such as osteoarthritis, will also be investigated. To date, there still seem to be serious problems in diagnosing patients with musculoskeletal disorders, both by general practitioners and physiotherapists. In addition, the systematic reviews that have been performed in-
dicate that the methodological quality of randomized clinical trials of physiotherapeutic treatment is generally poor. For this reason definite conclusions cannot be drawn about the efficacy of physiotherapy (and many other medical treatments) in the treatment of musculoskeletal disorders. Randomized clinical trials with a sufficient number of patients, appropriate follow-up periods, blinded effect measurements, and relevant, standardized effect measures are needed to enable the choice for proper treatments. The Musculoskeletal System subdivision of the EMGO Institute hopes to contribute to the advancement of effective and cost-effective care, including physiotherapy, for musculoskeletal disorders.

References


