Physiotherapy interventions improve tennis elbow with superior long-term outcomes to corticosteroid injections

Synopsis


Question: What is the effect of physiotherapy compared with a wait and see approach or corticosteroid injections for tennis elbow? Design: Randomised controlled trial with concealed allocation, assessor blinding, and intention-to-treat analysis. Setting: Community setting in Australia. Participants: 198 respondents to advertisements of the trial, aged 18 to 65 years, with a clinical diagnosis of tennis elbow of a minimum six weeks’ duration, who had not received any treatment of the elbow by a health practitioner in the previous six months. Interventions: On entering the study all participants were given an information booklet outlining the disease process and providing practical advice on self management and ergonomics. Participants were randomised to physiotherapy, corticosteroid injections, or wait and see. The physiotherapy group received eight treatments of 30 minutes over six weeks, consisting of elbow manipulation (mobilisation with movement) and therapeutic exercise. They were also taught home exercises with a resistant exercise band and self manipulation. The corticosteroid injection group received an injection of 10 mg of triamcinolone acetonide in 1 mL of lidocaine, plus a repeat injection after two weeks if necessary. The wait and see group received reassurance that the condition would settle and advice to remain active without aggravating their pain. Outcomes: Global improvement (those who rated themselves as ‘completely recovered’ or ‘much improved’ were considered to be successes), grip force, and an assessor’s rating of severity measured at six and 52 weeks. Results: At six weeks follow-up 78% of the participants reported success with injections compared with 65% for physiotherapy [relative risk reduction (RRR) 0.4 (99% CI –0.2 to 0.9)] and 27% for wait and see [RRR 0.7 (99% CI 0.4 to 0.9)]. At 52 weeks, the injection group participants were significantly worse on all primary outcomes compared with the physiotherapy group [RRR for success 0.3 (99% CI 0.1 to 0.5); number needed to treat = 4] and on two out of the three measures compared with wait and see [RRR for success 0.3 (99% CI 0.04 to 0.4)]. Physiotherapy performed significantly better than wait and see at six weeks for all outcome measures; however, by 52 weeks no difference existed on any primary outcome measure, as most participants were successes. Recurrences after injection were significantly greater than in the physiotherapy [RRR 0.9 (99% CI 0.6 to 1.1)] or wait and see [RRR 0.9 (99% CI 0.6 to 1.1)] groups, which were not significantly different from each other [RRR 0.9 (99% CI 1.4 to 1.7)]. Patients who received physiotherapy also sought significantly less other treatment. Conclusion: Recurrence rates were higher and recovery delayed in the mid to long term after corticosteroid injection compared with physiotherapy or wait and see. Physiotherapy was superior to injection after 52 weeks and to wait and see at six weeks.

Commentary

This study matches the design and closely resembles another study of three different interventions for tennis elbow (Smidt 2002), appraised in a CAP in 2002 (Vasseljen 2002). It is strong evidence when two high quality studies in two of the highest ranked medical journals show very similar results. Both studies provide evidence that corticosteroid injection (CI), while favourable in the short term, has high recurrence rates and causes delayed recovery in the mid to long term, with outcomes inferior to both wait and see (WS) and physiotherapy (PT).

Although PT is favoured over WS in both studies, only Bisset et al are able to show significant effects, primarily in the short term (six weeks). This translates into a number needed to treat of three, meaning at 6 weeks every third patient will benefit from receiving PT as opposed to WS.

The PT interventions differed somewhat in the two studies, with emphasis on deep friction massage, ultrasound, and exercises in the study by Smidt, and on elbow mobilisation with movement and exercises in the current study. Interestingly, there was much less need for additional treatment in the PT group in this study compared to the Smidt study (21% vs 81%). There might thus be some support for the PT approach advocated by Bisset, however the most favourable PT treatment or treatment combination remains to be revealed. Future studies should include cost effectiveness comparisons.

When WS shows consistent and significantly better results than CI in the mid to long term the use of these injections for tennis elbow should be questioned. An issue does, however, remain: why do corticosteroid injections seem to work well up until 6 weeks? Studies of tennis elbow have shown signs of halted repair and degenerative processes consistent with tendonosis and lack of evidence of inflammation (Kraushaar 1999). Recent evidence indicates that the pathology of tennis elbow involves neovascularisation (formation of small probably non-functional blood vessels and accompanying nerves within and around the painful tendon). This is supported by the favourable response to sclerosing injections, which collapse the vessels and its nerves (Zeisig et al 2006). It can only be speculated whether CI have somewhat similar effects, but which are reversed after a few weeks. For now, there is sound evidence for physiotherapists to continue to treat tennis elbow within the scope suggested by these studies.

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References

Community physiotherapy results in effective self-management of knee pain

Synopsis


Question: Are community physiotherapy or enhanced pharmacy review interventions effective compared with standard advice in patients aged over 55 with knee pain?

Design: Pragmatic randomised controlled trial. Setting: Primary care (15 medical practices in North Staffordshire, UK). Participants: 325 adults aged 55 years or more (mean age 68 years) consulting their primary care practitioner with knee pain, stiffness, or both. Interventions: All participants received information leaflets on osteoarthritis. Participants were then randomly allocated to one of three groups: community physiotherapy, enhanced pharmacy review, or control. The community physiotherapy group received education about activity and pacing and 3 to 6 sessions of individualised aerobic, strengthening and stretching exercises, designed and progressed by a community physiotherapist. The enhanced pharmacy review group received pharmacological management according to an algorithm. The control group received one monitoring telephone call. Outcomes: Primary outcomes were the pain and physical function subscale scores of the Western Ontario and McMaster Universities Osteoarthritis index (WOMAC) at 3, 6, and 12 months. Secondary outcome measures included use of co-interventions (self-reported consultations with health practitioners and drug use). Participant global assessment of change (five point ordinal scale) and participant perceptions about the usefulness of treatment (simple categorical data) were also recorded at each time point. Results: The mean difference in change scores for physiotherapy compared with controls at 3 months was 1.15 (95% CI 0.2 to 2.1) for pain, and 3.99 (95% CI 1.2 to 6.8) for function; for pharmacy it was 1.18 (95% CI 0.3 to 2.1) for pain, and 1.80 (95% CI -0.8 to 4.5) for function. These differences were not sustained at 6 or 12 month follow-up. Participants in the physiotherapy group, but not the pharmacy group, reported significantly fewer consultations with their general practitioner for knee pain (15% reduction 95% CI 5 to 25). Use of non-steroidal anti-inflammatory drugs (NSAIDs) was lower in both the physiotherapy (16%) and pharmacy (15%) groups, compared with the control group at six months. Both interventions were associated with high patient satisfaction. Conclusion: Both community physiotherapy and enhanced pharmacy review were effective interventions for patients aged over 55 years with knee pain for short-term pain reduction as well as reduced use of NSAIDs and high patient satisfaction. The physiotherapy intervention produced additional benefits of improved physical function and fewer general practitioner consultations.

Commentary 1

This randomised trial conducted in the UK is of particular interest because it could potentially justify improved access to an existing physiotherapy management strategy. This is important given the current climate of increasingly scarce allied health care resources within the public system and a rapidly aging population.

The statistically significant mean reduction in pain of 1.15 units and improvement in function of 3.99 units for physiotherapy over the control group at 3 months is difficult to interpret clinically. However, the results were also provided in terms of treatment responders, ie, participants demonstrating clinically significant improvements in pain and/or physical function (Pham 2004). At 3 months, 40% allocated to community physiotherapy were treatment responders compared to 19% of the control group. Treatment response in the control group could be due to uptake of advice in the education leaflets or simply to the typically fluctuating symptoms of early osteoarthritis. This large significant effect in a self-report outcome should be viewed with some reservation, with participants being aware of their active treatment status. However, community physiotherapy did result in 8% fewer participants accessing NSAIDs at 6 months, compared with a 10% increase in the control group.

There are some methodological issues with this paper. It cannot be assumed that osteoarthritis was the cause of the knee pain for all participants. The results of the planned ‘intention to treat’ analysis were not reported. Also there was no allowance for the multiple comparisons conducted (increasing likelihood of chance positive findings).

The main message of this study is that even limited exposure to community physiotherapy (median 80 minutes or 4 visits) is able to provide clinical benefits for a substantial proportion of people with knee pain. However, this clinical benefit is not sustained after access to community physiotherapy ceases. Unfortunately from a health care resources perspective, it would appear that most patients require some form of monitoring or regular access to physiotherapy or exercise supervision for ongoing benefit.

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Reference

The rationale for treatment of knee pain and osteoarthritis is to relieve symptoms (such as pain and stiffness) and to improve joint function. Treatments involve the use of both pharmacological (eg, analgesics) and non-pharmacological (eg, physiotherapy) interventions. Direct evidence of the relative efficacy of pharmacological and non-pharmacological treatments for people with knee pain and osteoarthritis is lacking to inform optimal clinical management.

This randomised controlled trial recruited people (over 55 years) with knee pain. People were allocated to receive usual care (with information about self-management) or received an ‘enhanced pharmacy review’ or ‘community physiotherapy’. The enhanced pharmacy review provided optimal pain management (using an evidence-based protocol) giving paracetamol initially and step-up analgesia using combinations and NSAIDs. Key health messages were reinforced by the experienced community pharmacist delivering this intervention. The community physiotherapy intervention, delivered by experienced physiotherapists, promoted knee pain management through education about the role of exercise, pacing, pain relief, and coping strategies. Patients were given an individualised exercise plan.

The study found that after 3 months pain and function improved in people receiving physiotherapy and pain improved in those receiving the enhanced pharmacy review compared to control. A disappointing aspect of the study was that the benefits were not sustained over 12 months. This study confirms the importance of education and the use of paracetamol as effective first line options in knee pain. A feature of both intervention arms was the reduced use of NSAIDs avoiding the risk of potentially serious gastrointestinal, cardiovascular, and renal effects which are especially prevalent in older patients.

Overall, this study indicates that education combined with either the rational use of simple analgesics (with a step-up to NSAIDs) or physiotherapy has a valuable role in knee pain management. The possible combined benefits of the ‘joint’ use of optimised analgesic treatment and physiotherapy, and the relative cost-effectiveness of these interventions in knee pain management now needs to be evaluated.

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Hydrotherapy improves pain, knee strength, and quality of life in women with fibromyalgia

Synopsis


Question: For women with fibromyalgia, does a hydrotherapy exercise program produce improvements in muscle strength, quality of life, and pain? Design: Randomised controlled trial. Setting: Participants were recruited from a fibromyalgia association in Spain. Participants: Women with fibromyalgia confirmed according to American College of Rheumatology criteria. Women who attended other psychological or physical therapies, who exercised regularly, who were pregnant, or who had significant co-morbidities were excluded. Nine eligible patients refused to participate. The remaining 35 were randomised to hydrotherapy (n = 18) or a control group (n = 17). Interventions: The hydrotherapy group trained in waist-high warm water, three times per week for 12 weeks. Each one-hour session included slow walking and mobility exercises, aerobic exercise at 65–75% of maximal heart rate, and overall mobility and lower-limb strength exercises. At the end of the 12-week training period, the group was instructed to avoid physical exercise training until their next evaluation. The control group was instructed to follow normal daily activities, which did not include any form of regular physical exercise. Outcomes: Maximal torque of the knee flexors and extensors was recorded with an isokinetic dynamometer during fast and slow concentric and slow eccentric contractions. Maximal torque of the shoulder abductors and adductors was recorded during slow concentric contractions. Quality of life was assessed using the overall EuroQol-5D score and its five domains: mobility, self care, daily activities, pain, and anxiety/depression. Subjects also reported a visual analogue score (VAS) from 0 (no pain) to 100 (worst possible pain). All outcomes were assessed at baseline, immediately after the 12-week training period, and 12 weeks later. Results: In the hydrotherapy group, slow concentric knee extensor torque improved significantly more than in the control group, by 0.2 Nm/kg (95% CI 0.15 to 0.25). Similarly, slow concentric knee flexor torque improved significantly more than in the control group, by 0.1 Nm/kg (95% CI 0.05 to 0.15). No other muscle torques differed significantly between groups. Improvement in overall quality of life was significantly greater in the hydrotherapy group, by 29% (95% CI 24 to 34). All subdomains also showed significant benefits due to hydrotherapy, except daily activities. Improvement in the pain VAS was significantly better in the hydrotherapy group, by 19 mm (95% CI 15 to 23). Most of these between-group differences were no longer significant 12 weeks later, apart from the self care and anxiety/depression domains. Conclusion: For women with fibromyalgia, a 12-week hydrotherapy exercise program improves knee strength, quality of life, and pain, although few of these changes are maintained 12 weeks later.

[Between-group effect sizes calculated by the CAP Coordinator, with those for muscle torque based on averages of right and left knee data.]

Commentary

Although there are now close to 40 published, randomised trials examining the effects of exercise training for individuals with fibromyalgia, this is the first to compare the effects of an exercise-only water-based training intervention to an untreated control group. These results are consistent with results of other randomised clinical trials that explore the effects of water-based exercise combined with education (Gowans 1999, Mannerkorpi 2000).

Unfortunately inadequate description of exercise protocols is pandemic in the body of research examining the effects of exercise on individuals with fibromyalgia. Similarly, in this study there is a problem related to poor quantification and optimisation of the intervention. Due to the physical effect of buoyancy, it is difficult to quantify the strength training stimulus of the knee flexion and extension exercise used to achieve strength gains. Other than the knee flexion and extension exercise, the researchers do not provide any other exercise designed exclusively for strength training. While the aerobic component of the program may provide a strength training stimulus, at least to the lower extremities due to the resistive effect of water turbulence, again the strength training stimulus is difficult to quantify. Furthermore, the researchers do not seem to address the need for progression in this exercise program. Because it is probable that the participants were deconditioned on entering the study, one would expect initial outcomes consistent with adaptation due to overload. However, unless the researchers progressed the exercise program in the 12 weeks, one would expect to see a plateau in the adaptation and less than optimal gains overall.

Although most threats to internal validity appear to be well controlled, we do not know if assessors were blinded, and a possible increase in the probability of type one errors due to alpha inflation is a concern. Nevertheless, this research provides limited evidence that a mix of aerobic, strength, and mobility exercise performed three times a week in waist-high warm water for 12 weeks may result in important benefits for women with fibromyalgia.

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References