

Natural Pain Relievers and Natural Alternatives to NSAIDs

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Abstract

Pain from the common tendinous origin of the forearm extensor muscles on the lateral elbow, traditionally known as tennis elbow is a common location of tendon pain. The incidence rate is estimated per year with peak prevalence between 40 and above age. Most of the incidents heal within three months but about one third has a more protracted course and an estimated all cases still have symptoms after one year. The causal factor is primarily repetitive strain, and heavy manual labour increases the risk of being affected. Inflammation has been considered the causal factor with no distinction being made between the acute and the chronic stages of tennis elbow. Thus, lateral epicondylitis has been used as a synonym for tennis elbow. It has now become clear that this term should be reserved for the acute stage of tennis elbow. A preferable term for the chronic stage is lateral epicondylosis.

Keywords: Paracetamol; Tendinosis; Capillaries

Introduction

For clarity, the term chronic tennis elbow will, however, be used in the following text. Histological samples from this chronic stage show patchy degenerative findings along with increased amounts of nerves, capillaries, neural peptides and receptors similar to other locations of tendinosis. Treatments are traditionally aimed at reducing inflammation by rest, NSAIDs or local injections of steroid, or just based on empirical methods such as ultrasound, friction massage, braces, orthoses or injections of various substances. This wide variety of treatments is probably attributable to the lack of understanding of the pathophysiological mechanisms of tennis elbow [1]. More than 30 different treatments for tennis elbow have been documented in the literature. Most of these have not been adequately evaluated but are based on beliefs or empiricism only. Starting from the recognition that the acute and chronic stages of tendon pain have different mechanisms of pathology and that diagnostic terminology as well as treatment should differ between the stages, this thesis set out to: First, survey the current treatment practice of chronic tennis elbow. Second, develop a simplified protocol for graded exercise of the forearm extensor muscles and their insertions on the lateral epicondyles, which could be performed at home without involvement of costly equipment or personnel [2]. Third, examine whether there are differences in treatment effects between eccentric and concentric graded exercise and fourth, to investigate if pathologic mechanisms related to the peripheral nervous system possibly involved in chronic tennis elbow such as an up-regulation of the substance receptor system, could be visualized by positron emission tomography. The survey was carried out in Uppsala County, Sweden, located north of Stockholm and consisting of both urban and rural areas, with the city of Uppsala as the main centre. A postal questionnaire regarding therapeutic methods used in patients with chronic tennis elbow was sent to all working in primary health care centres within a radius of approximately 60 kilometres from Uppsala. No reminders were sent to non-responders. The recipients were asked to respond to the question by ticking one or more of the following five given alternatives: ergonomic counselling, stretching, acupuncture, orthotic devices or trans-cutaneous electric nerve stimulation, and a number of open-ended alternatives where any other method used could be listed. In addition, GPs were asked to indicate the use of NSAIDs, cortisone injections and prescribed sick leave. In Paper II the reference group was informed that the condition was painful but harmless, that the arm should be used in ordinary daily activities and the recommendation was to wait and see. The exercise

group received the same information except that the recommendation to wait and see was replaced with a three-month daily exercise regime performed at home, with progressively increasing load on the extensor muscles of the affected forearm [3]. Both groups received an exercise regime to be performed at home for three months with progressively increasing load on the affected forearm extensor muscles. The eccentric exercise group was instructed to lower the weight with the affected arm and to lift it back up again with the unaffected arm, while the concentric group was instructed to lift the weight with the affected arm and to lower it back again with the unaffected arm. In both papers the loading equipment consisted of a plastic water container with a handle [4]. The initial load was standardized for women and for men. The participants sat in a chair and supported the forearm on the armrest or on an adjacent table. Holding the handle of the plastic water container with a clenched fist in pronation and the container hanging freely in front of the armchair or below the table top, the load was lifted or lowered in three sets of repetitions, in total, once daily. The load was increased weekly by one hectogram. The subjects were asked to report other competing treatments and were instructed not to use pain relieving or anti-inflammatory medication other than paracetamol. Adherence to instructions and the intervention programme was monitored [5]. The same observer did all measurements. Since the observer also gave instructions about the exercise, no blinded data collection was possible. In the survey, high proportions of GPs and PTs used ergonomic counselling and stretching in the treatment of chronic tennis elbow. The majority of GPs prescribed passive anti-inflammatory measures such as sick leave and anti-inflammatory medication. Many PTs prescribed dynamic, particularly eccentric, exercise as treatment for chronic tennis elbow. Graded dynamic exercise according to a simple low-cost protocol, has better effect on chronic TE than a wait-and-see attitude. Adjusted for outcome affecting variables, eccentric graded

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exercise has quicker effect than concentric graded exercise on pain in chronic tennis elbow [6]. During PET scan with the NK1 specific radioligand, voxel volume and signal intensity of this volume was significantly higher in the affected than the unaffected arm in subjects with unilateral chronic tennis elbow. The extent to which various treatments for chronic tennis elbow were actually used in clinical practice was mainly unknown in 2004, and no report on this subject was found in a bibliographic search. Thus, the survey provided new and interesting information. The results of the survey must be interpreted with some caution considering a number of circumstances [7]. Since the survey was limited to a specific geographical area of Sweden, with a response rate among GPs and among PTs, the results should not uncritically be generalized. The questionnaire was intentionally made as simple as possible in an attempt to achieve the best possible response rate. This may have led to some under reporting of treatments other than those explicitly asked about. However, this is not likely to explain the differences observed between the two groups of health professionals. The survey gives information about the proportion of GPs and PTs who used a certain treatment, but says nothing about how often they were actually used. Neither does it tell us about the use of combination therapies, although it is likely that both GPs and PTs used combinations of treatments in individual cases. A majority of the GPs prescribed sick leave, NSAID and cortisone injections. Sick leave may allow rest for the affected tissues, which may be of value in the acute inflammatory stage of epicondylitis, but will do little good in the chronic state. In cases where work cannot be continued because of pain, great effort should be invested in activating and rehabilitating the patient [8]. As there is virtually no inflammation present in the chronic stage, the use of anti-inflammatory treatment is questionable. Dynamic exercise, particularly eccentric exercise, was used by a majority of the PTs. From 1998 until the time of the survey, graded eccentric exercise received attention as treatment for chronic Achilles tendinitis owing to promising reports by Niesen-Vertommen and Alfredson. A pilot study on a combination of therapies, including stretching, eccentric exercise and ice by Svernlöv popularized its use among Swedish PTs even for chronic tennis elbow. In fact, however, there was very little evidence to support the effects of graded eccentric exercise on chronic tennis elbow in 2004 and no study had been performed comparing graded eccentric exercise with graded concentric exercise or with combinations thereof [9]. Pain provocation measures often used to document symptoms in tennis elbow, such as pain during grip testing or pain at rest, are non-specific for the muscles affected in tennis elbow, and validity is low. Specific movements that put stress on the affected muscles, tendons and their insertions, provoke pain in tennis elbow, as in many other soft tissue pain conditions. The outcome measures for pain used in these studies were developed in cooperation with an experienced hand surgeon to be specific for the muscles affected in tennis elbow. MVC of the forearm extensor muscles puts maximum stress on the muscles involved in tennis elbow, i.e., extensor carpi radialis brevis, extensor carpi radialis longus and extensor digitorum communis, which also connect to the tendinous insertion on the lateral elbow epicondyle. MME with a three-kilogram dumbbell simulates the manoeuvre most often described by tennis elbow patients as provoking everyday pain, such as lifting a frying pan or pouring out of a pot. Complete blinding, as in drug trials, was not possible in the type of intervention. A potential bias in Paper II may be related to differences in expectations. As in all active treatment versus wait list studies, subjects given active treatment may be presumed to have higher expectations of the treatment effects than wait listed subjects, the latter perhaps having high expectations of the treatment-to-come, but not of any wait list effect. In Paper III, however, the observer monitored the adherence to the exercise procedure at baseline

and the first follow-up visit, but during the following four follow-up visits, involving 480 appointments, no group allocation data were available, and it was, in practice, more or less impossible for the observer to keep track of the group allocation. The two pain variables, which were evaluated by the subjects themselves, showed the largest differences between the groups in both studies, while differences in muscle-strength, which required observer participation, were smaller. The DASH measure was also subject-evaluated, but the difference between the groups was non-significant. The latter was unexpected, but in the context of a limited functional impairment such as tennis elbow, DASH may be a somewhat insensitive measure. In Paper II, the quality of life variables, especially self-rated health, may be more prone to expectation effects than pain or muscle strength [10]. The fact that an effect on pain but not on quality of life was found favours the view that the treatment effects is not caused by differences in expectations to any major extent. The results should be interpreted with some caution considering the small sample size and the relatively moderate differences in average pain reduction between the groups. However, irrespective of the definition of improvement on the pain VAS, the exercise group had a more favourable course than the reference group. The lack of long-term follow-up in Paper II prevents firm conclusions on long-term efficacy. It is likely that the differences between the exercise and the reference group would have evened out in a long-term follow-up just as they did in the study by Smidt but the quicker improvement of pain seen in the exercise group would still be as obvious. To gain maximum effect of the exercise, the starting weight should be individually tailored, for instance as percentage of one repetition maximum, the weight an individual can endure to lift once only.

Conclusion

To simplify clinical application, the starting weight in both studies was standardized to one kilogram for women and two for men. This may have had the effect that the load, and accordingly the stimulus, in some individuals were smaller or greater than what would be required for optimum gain. Therefore, the effects of the exercise regime may have been underestimated.

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Conflict of Interest

None

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