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Technical Report

A service evaluation and improvement project: a three year systematic audit cycle of the physiotherapy treatment for Lateral Epicondylalgia

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Abstract

Objectives To improve outcomes of physiotherapy treatment for patients with Lateral Epicondylalgia.
Design A systematic audit and quality improvement project over three phases, each of one year duration.
Setting Salford Royal NHS Foundation Trust Teaching Hospital Musculoskeletal Physiotherapy out-patients department.
Participants $n = 182$.
Interventions Phase one — individual discretion; Phase two — strengthening as a core treatment however individual discretion regarding prescription and implementation; Phase three — standardised protocol using high load isometric exercise, progressing on to slow combined concentric & eccentric strengthening.
Main outcome measures Global Rating of Change Scale, Pain-free grip strength, Patient Rated Tennis Elbow Evaluation, Tampa Scale of Kinesophobia-11.
Results Phase three demonstrated a reduction in the average number of treatments by 42% whilst improving the number of responders to treatment by 8% compared to phase one. Complete cessation of non-evidence based treatments was also observed by phase three.
Conclusions Strengthening should be a core treatment for LE. Load setting needs to be sufficient. In phase three of the audit a standardised tendon loading programme using patient specific high load isometric exercises into discomfort/pain demonstrated a higher percentage of responders compared to previous phases.

Keywords: Tennis elbow; Physiotherapy; Tendinopathy; Strengthening; Isometric exercise

Introduction

Lateral Epicondylalgia (LE), more commonly known as tennis elbow, is a tendinopathy of the wrist extensors at the lateral epicondyle. LE is the most common chronic musculoskeletal pain condition affecting the elbow [1], and has a prevalence of 1–3% [2]. In the UK, the incidence of lateral elbow pain in general practice is 4.23/1000 people a year [3]. The burden of LE can be significant, accounting for up to 219 workdays, with direct costs of US$8099 per person [4,5], the greatest burden being amongst manual workers [1].

The pathoaetiology of tendinopathy is not fully understood, there being a complex interplay between structure, pain and function [6]. Notable advances have been made relating to both the understanding and treatment of tendinopathies in the last couple of decades. The tendon continuum [7] brought together three of the previously proposed stages of tendon pathology, which has been recently updated [6]. However, despite these advances, LE still remains a challenge to treat.

An audit cycle was initiated, clinical audit being an essential element of professional quality practice and supporting

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continuous improvement in patient care and service delivery within the Health Service [8,9]. It was perceived that, within the physiotherapy service, outcomes for LE patients were sub-optimal. Which factors contribute to a sub-optimal outcome in LE is an area of much debate. Various theories have been suggested including central pain mechanisms [10,11], self efficacy [12], psychosocial factors [13–17], metabolic factors [18–20] and sub-optimal loading [21]. Recent work in patellofemoral pain have focused on sub grouping and targeted intervention and have shown greater improvement short term [22].

Methods

A three phase audit cycle of physiotherapy treatment for LE was conducted in 2012 (Phase 1), 2014 (Phase 2) and 2015 (Phase 3) with each cycle reviewing the previous years' data (supplementary Fig. A). The location was the musculoskeletal outpatient department across four sites within Salford Royal NHS Foundation Trust, a large teaching hospital NHS Trust in the northwest of England. Within the department clinical diagnosis is commonly based on clinical history combined with positive clinical tests of pain reproduction with resisted wrist extension, resisted middle finger extension and pain on palpation of the common extensor origin at the lateral epicondyle.

Phase one

Records of patients attending for initial physiotherapy assessment between 1st January and 31st December 2011, with a diagnosis of LE were audited. Data extracted included the variety and number of treatments, outcome measures used and the outcomes of treatment. Improvement was measured using the VAS and a form of the Global Rating of Change Scale (GRCS), where patients were asked on a scale of 1–10 how much better they were.

Following the audit a literature review of the evidence base for the treatment of LE was undertaken. This highlighted that a number of non-evidence based treatments were being used. Across the Trust a team consensus was subsequently developed so that the primary focus of treatment for all LE patients would be on strengthening exercises [1] and that non-evidence based treatments would be discontinued. It was agreed that the type of strengthening exercises and the specific muscle groups targeted would be determined by the treating physiotherapist. Accompanying this change, a more comprehensive set of outcome measures were implemented for LE patients across the physiotherapy service [23–26].

Phase two

The second audit took place between 1st May 2013–30th April 2014. The data extraction was expanded to include risk factors, chronicity, occupation and patient anthropometrics. In addition to the data collected in the Phase one audit, process evaluation was also conducted to seek feedback from the physiotherapy team regarding what they felt worked well, what could be improved and to discuss any problems encountered, or any challenges hindering therapist fidelity with the new treatment approach. One of the key themes to emerge from the process evaluation was the variety of approaches to load setting adopted when prescribing exercises. Feedback was then given on the Phase two audit, discussing areas highlighted both from the audit and the process evaluation, including compliance with the use of outcome measures. Based on staff feedback, a training session on pathophysiology of tendinopathy was delivered which included teaching on different ways to explain tendinopathy to patients. At this training session the tendon continuum [7], potential mechanical pathoaetiological mechanisms contributing to the development of tendinopathy including stretch-shorten cycles [27,28] and compression theories [29–34], and the conflicting approaches of pain provocation [35] or pain avoidance [36] with loading programmes were discussed. A range of recognised loading programmes for tendinopathy were reviewed, including isometric exercises, combined concentric and eccentric exercise, heavy slow resistance (HSR) training, and eccentric exercises. Following the completion of the Phase two audit, an evidence based standardised treatment protocol (supplementary Table A) was implemented for the Phase three audit, based on the current literature available at that time. This commenced with moderate to high load isometric loading in a standardised position (supplementary Fig. Ba and b), progressing to a combined slow concentric and eccentric exercise, which was then further progressed by increasing load (supplementary Table A). An area identified during the process evaluation with the physiotherapists was the use of very light weights for eccentric exercise, and it was highlighted that finding suitable weights without cost to the patient was problematic. An adjustable elbow crutch was used to increase the lever arm, once extended to the full length it could be shortened and a small weight of 250 g or 500 g attached securely to the end of the crutch so that slow progressive lengthening of the crutch could recommence. An illustrated exercise instruction leaflet sheet was devised for the initial isometric phase (supplementary Fig. Ba and b) and issued to patients along with a table to record their exercises and to monitor progress. The audit revealed that the use of outcome measures was inconsistent with high physiotherapist fidelity at initial assessment but low fidelity at discharge. The importance of routine outcome measurement on discharge was reinforced.

Phase three

The third audit took place between 1st October 2014–30th September 2015. Data extraction remained the same as for Phase two.