Achilles Tendinopathy - Evaluation and Treatment

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Göteborg, Sweden, 2006

Abstract.

Background: Achilles tendinopathy is considered to be one of the most common overuse injuries in elite and recreational athletes. There are, however, only a few randomized studies of treatment and there is a need for standardized outcome measures for the patients' symptoms and function.

Purpose: The overall purpose of this thesis was to develop and evaluate outcome measures and treatment protocols for patients with Achilles tendinopathy.

Material, Methods and Results: Initially, a method was developed to evaluate both symptoms and function in Studies I and II. The method was shown to have good reliability in 10 patients with acute Achilles tendon injuries and in 32 patients with chronic Achilles tendinopathy. We questioned, however, the validity of the methods since only small changes were detected while symptoms improved. At that time there was no standardized symptom questionnaire for the assessment of patients with Achilles tendinopathy. A questionnaire of this kind became available in 2001 in English. In Study III this questionnaire, the Victorian Institute of Sports Assessment – Achilles questionnaire (VISA-A), was cross-culturally adapted and evaluated for reliability, validity and structure on 15 healthy subjects and 51 patients. The Swedish version of the VISA-A questionnaire (VISA-A-S), which measured two factors, *pain/symptoms* and *physical activity*, was shown to have good reliability and to be a valid instrument, fully comparable to the original version. The VISA-A-S can be used in both research and clinical settings.

A test battery for lower leg muscle/tendon function, including jump and strength tests, was developed and evaluated on 42 patients in Study IV. The purpose of the test battery was to evaluate, in more detail than had previously been possible, whether Achilles tendinopathy caused functional deficits on the injured side compared with the non-injured side. The test battery was found to be reliable and able to detect clinically relevant differences in lower leg function between the injured or "most symptomatic" and non-injured or "least symptomatic" sides in patients with Achilles tendinopathy. The test battery imposed more rigorous demands on patient function compared with each individual test.

Treatment comprising iontophoresis using dexamethazone combined with exercise for patients with *acute* Achilles tendinopathy was evaluated on 25 patients in a randomized, double-blind design in Study II. Positive effects on symptoms were found from using iontophoresis with dexamethazone, compared with a control group in patients with *acute* Achilles tendon pain.

Achilles tendon and calf muscle strengthening exercises (intensity modified with the use of a pain-monitoring model) as treatment for patients with chronic (symptoms for more than 2-3 months) Achilles tendinopathy was evaluated in 40 patients in Study I and in 38 patients in Study V. Furthermore, the effect of continued running and jumping on treatment outcome was evaluated in Study V. A treatment protocol which includes Achilles tendon and calf muscle exercises resulted in significant improvements in patients with chronic Achilles tendinopathy. When the pain-monitoring model was used, no negative effects could be demonstrated from continuing Achilles tendon loading activity (such as running and jumping) during treatment.

Conclusion: The VISA-A-S questionnaire can be used to evaluate the clinical severity of patients with Achilles tendinopathy and it is useful in both research and clinical settings. Patients with Achilles tendinopathy reports not only pain, but also demonstrate deficits in lower leg function. In the acute phase, the use of iontophoresis with dexamethazone could potentially be beneficial. For patients with both acute and chronic Achilles tendinopathy, the performance of Achilles tendon and calf muscle strengthening exercises with the use of a pain-monitoring model for 6 months can be recommended. A training regimen of continued, pain monitored, Achilles tendon loading physical activity, such as running and jumping, might represent a valuable option for patients with Achilles tendinopathy.

Key words: Achilles tendinopathy, Achilles tendon, Victorian Institute of Sports Assessment – Achilles questionnaire (VISA-A), VISA-A-S, functional evaluation, treatment protocol, strengthening exercise, pain monitoring model, test battery, iontophoresis, prospective, randomized

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ISBN 91-628-6764-4

Achilles Tendinopathy
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Akademisk avhandling

som för avläggande av medicine doktorsexamen
vid Sahlgrenska akademin vid Göteborgs universitet
kommer att offentligen försvaras i Aulan,
Sahlgrenska universitetssjukhuset/Sahlgrenska
fredagen den 19 maj, 2006, kl 09.00

av
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leg. sjukgymnast

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Avhandlingen baseras på följande delarbeten:

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Accepted for publication in Knee Surgery, Sports Traumatology, Arthroscopy 2006

V. Grävare Silbernagel K, Thomeé R, Eriksson BI, Karlsson J. Continued sports activity, using a pain monitoring model, during rehabilitation in patients Achilles tendinopathy - a randomized controlled study.
Manuscript

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vid Göteborgs universitet