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Abstract

Background: Chronic Achilles tendinopathy is a common pathology and standardized treatment strategies are lacking. The purpose of this study is to evaluate the efficacy of Platelet Rich Plasma (PRP) injections in treatment of Achilles tendinopathy.
Materials and Methods: Twenty tendons in seventeen patients were included. Mean age of participants was 52.6 years (range, 34-72 years). All patients were treated by one single PRP injection. American Orthopaedic Foot & Ankle Society (AOFAS) Hindfoot Score and pain level according to Visual Analogue Scale (VAS) were noted in all patients pre-treatment and at 2 weeks, 2 and 6 months post-treatment.
Results: The average AOFAS Hindfoot Score increased from 37.95 points (range, 33 to 52 points) pre-treatment to 90.8 (range, 83 to 97 points) post-treatment at 6 months. The average pain level according to VAS decreased from 8.65 points pre-treatment to 1.15 points post-treatment at 6 month. All patients returned to daily activities after 2 weeks and to sports activities after 1 month. Two of the patients were able to practice sports after the 3 month post PRP injection due to pain. None of the patients showed complications or adverse effects after the PRP injection.
Conclusion: Local PRP injections showed effective results in chronic Achilles tendinopathy without any complications and seems to be a good treatment alternative in this entity. Moreover it might have the ability to avoid surgical intervention.
Level of Evidence: IV.

Keywords
Achilles – Achilles tendinopathy – Platelet Rich Plasma (PRP) – AOFAS hindfoot score – VAS

L.A. Conti et al.

PRP verbessert die kurzfristigen klinischen Ergebnisse bei Tendinopathie der Achillessehne

SCHWERPUNKT / ORIGINALARBEIT/ORIGINAL PAPER

PRP improves short term clinical results in tendinopathy of Achilles tendon

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Background

The etiology of Achilles tendinopathy is most frequently associated with overload in middle-aged subjects [2]. This condition occurs due to a chronic and non-inflammatory degenerative process of the tendon related to decreased vascularization, repetitive microtrauma, and aging. Some of these changes could be associated with diabetes, obesity, hypertension and steroid use [4].
It is a well known fact that poor vascularity of tendons limited capacity for healing [24]. There are several growth factors that are implicated in tendon repair: among these are included the epidermal growth factor, transforming growth factor beta-1, interleukins 1,6 and 8, platelet derived growth factor (PDGF) [13,19], basic fibroblastic growth factor (bFGF) and vascular endothelial growth factor (VEGF) [3,6,7,18]. These factors have proven to have angiogenic properties in vitro and in vivo [16]. The literature suggests that these growth factors can be used therapeutically to accelerate the process of tendon regeneration [6]. The Platelet Rich Plasma (PRP) contains a pool of proven healing factors [5,6,12,15,17]. Previous studies in the literature suggest that PRP injections could positively change the outcome in tendon pathology both in humans and animals [8,15].
Non-surgical treatments like rest, immobilization, nonsteroidal and steroidal anti-inflammatory medication, and physical therapy for chronic Achilles tendinopathy have reported failure rates of around 25% and in an other hand surgical treatments, afforded varying clinical outcomes [20].
The aim of this study is to evaluate the clinical efficacy of PRP injection in the treatment of Achilles tendinopathy.

Material and Methods

Twenty tendons in seventeen patients (13 men - 4 women) were

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Zusammenfassung

Hintergrund: Die chronische Achillessehnen-Tendinopathie ist eine häufige Pathologie. Jedoch fehlen standardisierte Behandlungsstrategien. Das Ziel dieser Studie ist es, die Wirksamkeit von Platelet-Rich-Plasma (PRP)-Injektionen in der Behandlung von Achillessehnen-Tendinopathie zu bewerten.
Material und Methoden: Zwanzig Sehnen bei siebzehn Patienten wurden in die Untersuchung einbezogen. Das Durchschnittsalter der Patienten betrug 52,6 Jahre (34-72 Jahre). Alle Patienten wurden mit einer einzelnen PRP -Injektion behandelt. Bei allen Patienten wurden der American Orthopaedic Foot & Ankle Society (AOFAS) Hindfoot Score und die Schmerzintensität gemäß einer visuellen Analogskala (VAS) vor der Behandlung und 2 Wochen sowie 2 und 6 Monate nach der Behandlung dokumentiert.
Ergebnisse: Der durchschnittliche AOFAS Rückfuß-Score stieg von 37,95 Punkten (33-52 Punkte) vor der Behandlung auf 90,8 Punkte (83-97 Punkte) nach der Behandlung nach 6 Monaten. Die durchschnittliche Schmerzintensität nach VAS sank von 8,65 vor der Behandlung auf 1,15 sechs Monate nach der Behandlung. Alle Patienten konnten ihre täglichen Aktivitäten nach 2 Wochen und sportliche Aktivitäten nach 1 Monat wieder ausführen. Zwei der Patienten waren wegen Schmerzen erst drei Monate nach der PRP-Injektion in der Lage, Sport zu treiben. Keiner der Patienten zeigte Komplikationen oder unerwünschte Nebenwirkungen nach der PRP-Injektion.
Schlussfolgerungen: Lokale PRP-Injektionen zeigen bei chronischer Achillessehnen-Tendinopathie effektive Ergebnisse ohne Komplikationen und scheinen eine gute Behandlungsalternative in dieser Entität zu sein. Darüber hinaus könnten mit PRP-Injektionen könnten die Fähigkeit haben, einen chirurgische Eingriffe vermieden werden.
Evidenzebene: IV.

Schlüsselwörter
Achillessehne – Achillessehnen-Tendinopathie – Platelet Rich Plasma (PRP) – AOFAS Rückfuß -Score – VAS

included in the study. They were treated between January 2012 and June 2013. The inclusion criteria were patients with non-insertional achilles tendinopathy with symptoms and functional treatment with physical therapy for at least 6-months without favorable clinical results. All patient included in this study have not had previous surgeries related. One injection of PRP in each tendon was performing during the study. An objective functional assessment was performed using the American Orthopedic Foot and Ankle Society (AOFAS) score for hindfoot and Visual Analogue Scale of pain (VAS). Before treatment with PRP injection, 12 of the total number of patients could not perform sportive activities and 5 patients reported pain during walking. An MRI of the ankle joint was performed in all patients. The presence of markedly decreased signal areas within the tendon, with loss of normal fibrillar pattern was recorded as intra-substance tears. After signing informed consent, patients which metall diagnostic criteria were included in the treatment group. Venous peripheral blood was withdrawn from each patient by an expert technician in the Hemotherapy Service and a platelet-rich plasma suspension was prepared according to the recommendations of the AABB [10].
Standard hematological and biochemical tests were conducted, including red/white cell and platelet count and coagulation parameters.
After aseptic precautions have been taken at the operating room, the sore area was marked previous with local anesthesia. The average volume of injected PRP was 1.5 ml, straight into the affected tendons.
Patients were advised to use a walker boot for 2 weeks and to exercise the range of motion of the ankle joint. After 2 weeks counseling was initiated in order to start regular passive elongation exercises and to return to normal activities with pain adapted weight bearing. At 2 weeks, 2 months and 6 months from baseline patients underwent repeated assessment of their feet using AOFAS and VAS Scales. The clinical signs which indicated healing were absence of pain during palpation and activity. From the imaging point of view, the healing process was considered as a size reduction or a more homogeneous tendon intensity structure as compared with previous images or appearance of a fibrillar pattern within the previously affected tendon in the MRI It was performed since 6 month after the injection of PRP. The study was conducted in conformance with ethical standards of the Bioethics commission [11,14].

Results

Average age was 52.6 (range 34-72) years. All the patients had non-insertional Achilles tendinopathy. The period of symptomatic time preceding treatment with PRP injection was 5-10 months (6.6 months on average) and each compromised tendon had an average of 29 physical therapy sessions. We obtained improvement in AOFAS and VAS scores during our observation period.
Median AOFAS score for hindfoot averaged 37.95 (range 33-52) pre-treatment and 90.8 (range 83-97) at 6 months. (Table 1)
Level of pain according to VAS was 8.65 pre-treatment and 1.15 6 months post-treatment (median).
All of the patients had no pain or minor discomfort after the 6-month period. The patients who practiced sports, returned within 1 months post injection and all of them returned to daily activities when