Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/nwkyej17

THE EFFECTIVENESS OF *AMAL-I-KAYY* (CAUTERIZATION) IN TREATING HEEL PAIN: A CASE STUDY

Rayees Ahmad Mir[1*], Dwarakeesha Chatrappa[1], Naveen Kumar M R[2], Mohd Nayab[3], Abdul Nasir Ansari[3]

[1]Assistant professor at Glocal Unani medical college and research center, department of Ilaj Bit Tadbeer (Regimental Therapy), ORCID id : 0009-0006-6164-0927
[1]Postgraduate scholar at National Institute of Unani Medicine Banglore, Department of Ilaj Bit Tadbeer(Regimental Therapy), ORCID id: 0009-0006-8369-7879
[2]Postgraduate scholar at National Institute of Unani Medicine Banglore, Department of Ilmul jarahat (surgery), ORCID id : 0009-0001-8045-842X
[3]Associate Professor at National Institute of Unani Medicine Banglore, Department of Ilaj Bit Tadbeer (Regimental Therapy), Email: nayabdr@gmail.com, ORCID id : 0000-0003–2077-9659
[3]Professor and HOD at National Institute of Unani Medicine Banglore, Department of Ilaj Bit Tadbeer(Regimental Therapy), Email: abdulnasiransari@gmail.com

***Corresponding Author:** Rayees Ahmad Mir
*Assistant professor at Glocal Unani medical college and research center, Saharanpur, Dept. of Ilaj Bit Tadbeer (Regimental Therapy), Mobile No.+917780850051, Email: rayeesr02@gmail.com

Abstract
Plantar heel pain affects over two million individuals annually, with mechanical etiologies being the most prevalent. Among these, calcaneal spurs are common, causing significant discomfort yet often resistant to conventional treatments. This case report explores the effectiveness of the Unani medicine technique, *Amal-i-kayy* (cauterization), in alleviating heel pain associated with a calcaneal spur. We presented a case study of a 42-year-old male patient with a one-year history of right heel pain. The patient was evaluated at the National Institute of Unani Medicine Hospital in Bangalore.The patient underwent a thorough clinical examination and imaging, confirming the diagnosis of a calcaneal spur. The intervention involved three sessions of *Amal-i-kayy*, performed weekly, with follow-up assessments conducted on the 0th, 7th, 14th, 21st, and 35th days post-treatment.Baseline pain assessment (VAS score of 8) improved significantly following the intervention, with scores decreasing to 4, 2, and finally 0 by the 35th day. Tenderness grading also improved, moving from severe (grade 3) to no tenderness (grade 0). The findings suggest that *Amal-i-kayy* not only provides immediate pain relief but may also address underlying causes of heel pain, leading to long-lasting results. Given its cost-effectiveness and simplicity, this traditional treatment warrants further investigation through randomized controlled trials to better understand its mechanisms and broader applicability.

Keywords: plantar heel pain, calcaneal spur, *amal-i-kayy*, Unani medicine, cauterization, case study, pain relief.

Introduction
Each year, more than 2 million individuals experience plantar heel pain. The causes of heel pain are extensive, with mechanical etiology being the most common. Mechanical causes include plantar

fasciitis/fasciosis, heel spurs, calcaneal stress fractures (resulting in progressively worsening pain after increased activity or a change to a harder walking surface), nerve entrapment or neuroma (accompanied by burning, tingling, or numbness), heel pad syndrome (causing deep, bruise-like pain in the middle of the heel), plantar warts, and Achilles tendinopathy.[1] Calcaneal spurs originate from the calcaneal tuberosity, located on the posterior plantar surface of the calcaneus. Most calcaneal spurs arise from the medial process of the tuberosity, but they can also originate from the lateral processes and the sulcus. [2] Calcaneal spurs often present as sharp, stabbing pain in the heel, especially with the first steps in the morning or after rest. Pain may also occur when standing or walking on hard surfaces. [3,4] In some cases, swelling or redness in the heel area may also be present.[5] The diagnosis is typically made through physical examination, medical history, and X-rays or imaging tests (e.g., ultrasound, and MRI) to confirm the presence of a calcaneal spur. [6] Heel spurs are present in approximately 50% of patients with plantar fasciitis, but they do not correlate well with symptoms and can also be found in individuals without plantar fasciitis. [7]

Modern treatment of heel pain includes the use of non-steroidal anti-inflammatory drugs (NSAIDs) and opioids to reduce pain and inflammation, surgical excision of the calcaneal spur,[8] Radiation therapy and extracorporeal shockwave therapy.[9] Other conservative treatments include physiotherapy, cold therapy, and heat therapy to relieve pain and inflammation and improve blood circulation to the affected area.[10]

The Arabic term "*kayy*" means to cauterize. It derives from the Unani term Kaiein, which means to burn. *Amal-i-Kayy* is a process in which *Kāvvi Mādda* (Caustice Matter), a red-hot metal rod, electricity, fire, etc. are used to burn a particular portion of the body to dry the surplus fluid, halt bleeding, remove the putrid tissue, etc.[11] In the Unani system of medicine cauterization is done for various musculoskeletal disorders. [12] Despite various modern conservative treatments, the heel pain is not relieved satisfactorily. Thus, we present a case of calcaneal spur heel pain that is relieved satisfactorily with age-old modality of the Unani system of medicine i,e *Amal-i-kayy* (cauterization).

Case report

A 42-year-old male patient visited the National Institute of Unani Medicine Hospital Bangalore on 11th June 2024. The patient had a history of right heel pain since one years before the visit. The patient experienced localized and intermittent pain, which increased with physical activities such as walking or running. The patient informed that the pain was unbearable in the morning during the initial steps of walking. The patient denied any history of trauma to either of the feet but stated that pain decreased during rest. The patient had no chronic medical illness, and he was not involved in any competitive sports activity.

Clinical findings

Clinical examination showed no external foot deformity in foot. However, there was swelling and tenderness at the site of pain upon deep palpation.

General examination

When the patient came to OPD, he was thoroughly examined, and complete history was taken. The patient was supportive and oriented to time and place.

Vitals –

Temperature – 96.2, Pulse – 86 / min, Respiratory rate - 18 / min, Blood pressure – 126/80 mm Hg.

Diagnosis

A lateral X-ray revealed a large, well-defined bony projection at the base of calcaneus in the right-heel i,e calcaneal spur (Fig. 1). A calcaneal spur is a bony projection from the undersurface of calcaneal tuberosity due to ossification of plantar fascia.

Figure 1. - calcaneal spur on x-ray (right foot)

Assessment scales

The assessment was done using the VAS score for pain[13] (figure 2) And grading for tenderness.

Grading of tenderness:[14]

Grade 0: No tenderness

Grade 1: Mild tenderness

Grade 2: Moderate tenderness

Grade 3: Severe tenderness

Grade 4: Extreme tenderness

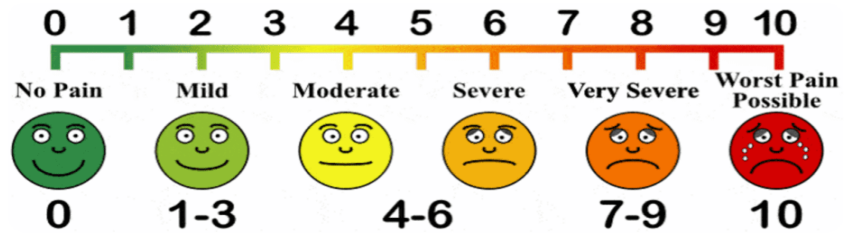

Figure 2. VAS scale

Therapeutic intervention

Amal-i-kayy (cauterization) was advised to the patient. Written consent was taken from the patient for the procedure. Then, a complete procedure was introduced to the patient. A research scholar in the hospital did the given procedure.

Procedure

The right Heel was completely cleaned with betadine solution and spirit. After properly marking the tender points on the heel, an iron lancet was heated on the portable gas burner until it became red hot, and then touched the different heel points, as shown in Figure 3. This procedure was repeated every week for three consecutive weeks. After the procedure, Aloe vera was applied over the heel, and the patient was advised to rest.

Figure 3. Showing heating and procedure of *Amal-e-kaiyy* (cauterisation)

Follow-up and outcomes

Outcome assessment was done on the 0th day,7th day,14th day, 21st day, and 35th day, as shown in Table 1 and Figure 4.

The patient came to OPD with VAS score 8. After *Amal-i-kayy* (cauterization), the pain was reduced to 4 on the first follow-up. On the second follow-up, it was 2. On the third follow-up, VAS score was 0 and pain was completely reduced. Tenderness was also reduced from 3 to 2 on Ist follow-up, on 2nd follow up it was 2, and on 3rd follow, tenderness was completely gone.

Table 1: Assessment of VAS score and tenderness

Assessement scale	0th day	7th day/ Ist follow up	14th day/ 2nd follow up	35th day/ 3rd follow up
VAS Score	8	4	2	0
Tenderness grading	3	2	1	0

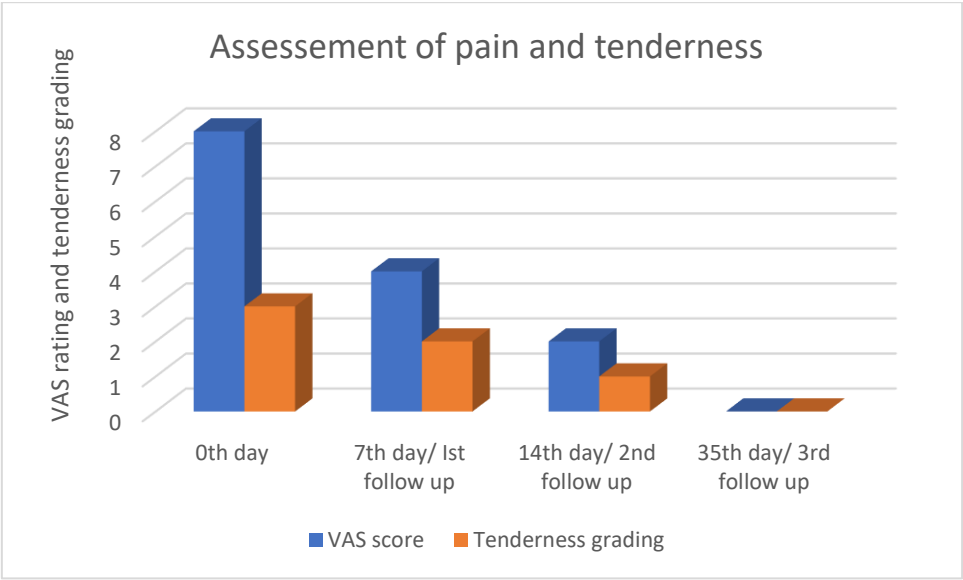

Figure 4: Assessment of pain and tenderness

Discussion

In this case report, a 42-year-old male with a right calcaneal spur along with acute heel pain experienced complete relief from pain after three sittings of *Amal-i-kayy* procedures. Nevertheless, the patient experienced no pain even after the calcaneal spur. One of the first mentions of *Amal-i-kayy*

can be found in the writings of Hippocrates (460– 377 BC), who promoted its usage for a number of ailments. He recommended the use of *Amal-i-kayy* for the treatment of hemorrhoids, trachoma, and other conditions. *Amal-i-Kayy* was employed in a wide range of diseases from head to toe and practiced by most renowned scholars of Greco-Arabian medicine like Ibn Sina (Avicenna, 980-1035 AD), Ibn Rushd (Averroes, died 1198), Razi (Rhazes, 865- 925 AD), Ibn al-Qaf Masiḥi (1233-1286 AD), Abul Qasim Al-Zahrawi (Abulcasis, 936-1013 AD) and many more.[11] Unani scholars have recommended *Amal-i-kayy* in various conditions, including muskuloskeltal disorders.[12] According to unani system medicine, most musculoskeletal disorders are due *sue mizaJ madii balghami* (abnormal phlegmatic temperament).[15] According to the Unani system of medicine, the reduced pain may be explained by the raised local temperature of the heel, which forces accumulated morbid phlegmatic matter to move out to the respective channels, thereby reducing the pain caused by the morbid accumulation of phlegmatic matter.[11] Furthermore, when applied to the local or affected area, heat therapy increases local blood circulation through vasodilatation, speeds up local metabolic processes, excretes waste products, reduces edema, accelerates repair, and decreases pain intensity. [16] Another possible mechanism is that heat can activate the lateral spinothalamic tract (SST), which in turn activates the descending pain inhibitory fibers (DPI). The DPI stimulates the release of endogenous opioid peptides, which bind to opioid receptors in the substantia gelatinosa rolandic and inhibit the release of P-substance (pre-synaptic inhibition), thus preventing the transmission of pain signals.[17]
It is clear from the results that the patient did not experience any heel pain even after 2 weeks following the completion of treatment. This suggests that conditions treated with *Amal-i-kayy* do not recur after the final treatment. It can be inferred that *Amal-i-kayy* addresses the underlying root causes, rather than just providing temporary pain relief, resulting in long-term pain relief. This study was a short-duration single case study; therefore, randomized controlled trials with a larger sample size are necessary to support the findings. Additionally, further research is needed to understand the mechanism of action of *Amal-i-kayy* at the cellular level. Furthermore, *Amal-i-kayy* treatment was a cost-effective, simple, and quick pain relief procedure without the need for hospitalization or surgeries compared to modern medicine treatments.

Conclusion

The case report presents compelling evidence for the effectiveness of a traditional Unani medicine technique called *Amal-i-kayy* in relieving heel pain caused by calcaneal spurs. This method provides significant and long-lasting relief, indicating that it could be a viable alternative to conventional treatments such as physical therapy or surgery. The report emphasizes the need for further research, including randomized controlled trials, to verify the efficacy of *Amal-i-kayy* and to understand how it works. Exploring its broader applicability could also help in managing similar musculoskeletal conditions. The report advocates for the integration of traditional practices with modern science to improve patient outcomes.

Conflict of Interest

None declared.

Acknowledgments

We would like to thank our supervisors, Prof. Abdul Nasir Ansari and Dr Mohd Nayab, for their guidance, support, and encouragement. We would also like to extend our heartfelt appreciation to the participant in our study, who generously shared their time, experiences, and insights with us.

References:

1. Tu P, Bytomski JR. Diagnosis of heel pain. Am Fam Physician. 2011;84(8):909-916.
2. Tanz SS (1963) Heel pain. Clin Orthop 28, 169–178.
3. Velagala V R, Velagala N R, Kumar T, et al. (August 28, 2022) Calcaneal Spurs: A Potentially Debilitating Disorder. Cureus 14(8): e28497. doi:10.7759/cureus.28497

4. Vyce SD, Addis-Thomas E, Mathews EE, Perez SL. Painful prominences of the heel. Clin Podiatr Med Surg. 2010 Jul;27(3):443-62. doi: 10.1016/j.cpm.2010.04.005. PMID: 20691376.
5. Menz HB, Thomas MJ, Marshall M, Rathod-Mistry T, Hall A, Chesterton LS, et al. Coexistence of plantar calcaneal spurs and plantar fascial thickening in individuals with plantar heel pain. Rheumatology. 2019 Feb 1;58(2):237–45.
6. Agyekum EK, Ma K. Heel pain: A systematic review. Chin J Traumatol 2015;18:164–9.
7. Goff JD, Crawford R. Diagnosis and treatment of plantar fasciitis. Am Fam Physician. 2011;84(6):676-682.
8. Jarde O, Diebold P, Havet E, Boulu G, Vernois J. Degenerative lesions of the plantar fascia: Surgical treatment by fasciectomy and excision of the heel spur: A report on 38 cases. Acta Orthop Belg 2003; 69:267–74.
9. Mucke R, Schonekaes K, Micke O, Seegenschmiedt MH, Berning D, Heyder R. Low-dose radiotherapy for painful heel spur: Retrospective study of 117 patients. Strahlenther Onkol 2003;179: 774–8.
10. Alatassi R, Alajlan A, Almalki T. Bizarre calcaneal spur: A case report. Int J Surg Case Rep 2018;49:37–9.
11. Mir R A, Shah N A. Cauterization An Age-Old Therapeutic Modality in Unani (Greek-O-Arab) System of Medicine. International Journal of Science and Healthcare Research [Internet]. 2023 [cited 2024 Sep 12];8(4). Available from: https://ijshr.com/IJSHR_Vol.8_Issue.4_Oct2023/IJSHR-Abstract26.html
12. Sultana A and Ansari S. Medical and Scientific Basis of Cauterization (Kai). International Journal of Current Research, 2016; 8(5): 31942-31944.
13. Hawker GA, Mian S, Kendzerska T, French M. Measures of adult pain: visual analog scale for pain (vas pain), a numeric rating scale for pain (nrs pain), mcgill pain questionnaire (mpq), short-form mcgill pain questionnaire (sf-mpq), chronic pain grade scale (cpgs), short form-36 bodily pain scale (sf-36 bps), and measure of intermittent and constant osteoarthritis pain (icoap). Arthritis Care Res. 2011;63;Suppl 11:S240-52. doi 10.1002/acre.20543, PMID 22588748.
14. Divya Jadhav,Mayuri Amol Deshpande,Amol Madhav Deshpande and Minakshi Urkude , Management of Parshnishool (Heel Pain) Due to Vatakantaka (Calcaneal Spur) With Agnikarma (Therapeutic Burn). – A Case Report..(2023).Int. J. Life Sci. Pharma Res.13(5), L358-L363 http://dx.doi.org/10.22376/ijlpr.2023.13.5.L358-L363.
15. Ibn Sina. Al-Qanoon fit-Tibb Vol. II (Urdu translation by Kantoori GH). New Delhi: Ejaz Publishing House, 2010;
16. Dr. Vinodkumar K. Bhorale, Dr.M. R. Hungundi. A Clinical Evaluation of Agnikarma in the management of Greeva Sandhigata Vata w.s.r. to Cervical Spondylosis. JAIM Sci, 2019; 4:65-70.
17. Malanga GA, Yan N, Stark J. Mechanisms and efficacy of heat and cold therapies for musculoskeletal injury. Postgrad Med. 2015 Jan;127(1):57–65.