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RESEARCH ARTICLE

COMPARISON OF IONTOPHORESIS AND AGNIKARMA FOR THE MANAGEMENT OF PLANTAR FASCIITIS: TWO CASE REPORTS

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ABSTRACT

Plantar fasciitis represents the fourth most common orthopaedic complain which requires professional care. The typical presentation of Plantar Fasciitis is sharp pain localized at the heel and plantar surface of the foot. As per the textual references the features of *Pada-kantak* can be accurately correlated with Plantar Fasciitis. *Acharyas* has mentioned *Agnikarma*as a treatment modality for *Pada-kantak.* Iontophoresis is also considered as one of the treatment modalities for Plantar Fasciitis now a days. Although these two techniques are vastly different, there is a lack of evidence to determine which one is better. Two cases of Plantar Fasciitis are presented here to illustrate the contrasting techniques and their results. Both the cases were treated with different modalities, one with Iontophoresis with 0.4% Dexamethas one and other by *Agnikarma* with *Panchdhatu Lauha Shalaka*. They were followed up for 2 months to assess their outcomes. The case studies revealed that *Agnikarma* produces a better outcome than Iontophoresis as reoccurrence was noticed in the later method.

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INTRODUCTION

The typical presentation of Plantar fasciitis is sharp pain localized at the heel and plantar surface of the foot and can interfere considerably with daily activities. It is the pain caused by degenerative irritation at the insertion of the plantar fascia on the medial process of the calcaneal tuberosity. The pain usually manifests during the first steps after arising, or after periods of rest. The cause of Plantar Fasciitis is often unclear and may be multifactorial. Because of the highincidence in runners, it is best postulated to be caused by repetitive micro trauma. Possible riskfactors include obesity, occupations requiring prolonged standing and weight-bearing.Plantar fasciitis represents the fourth most common orthopaedic complain (Ambrosius and Kondracki, 1992). Initial conservative treatment of Plantar Fasciitis include a spectrum of modalities such as oraland local administration of NSAIDs, Orthoses, Stretching, Extracorporeal Shock Wave Therapy, Laser Therapy and Transcutaneuos electric nerve stimulation. When conservative treatment fails, treatment often progress to local infiltration of the plantar fascia by corticosteroids which bear the risk of plantar fascia rupture & if no relief is afforded then surgical release of plantar fascia is the option.

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However, these treatments can cause serious side-effects, thus there is a need for study into alternative therapies. As per the textual references the features of *Pada-kantak* (*Sushruta Samhita*, 2007 edition) can be accurately correlated with Plantar Fasciitis. Various *Acharyas* has mentioned *Agnikarma* (*Yogratnakar*, 2013 edition) as a treatment modality for *Pada-kantak. Agnikarma* is one of the primeval and most popular parasurgical procedures. Its effects against pain have been confirmed in a great number of studies, including those focusing on Plantar Fasciitis.

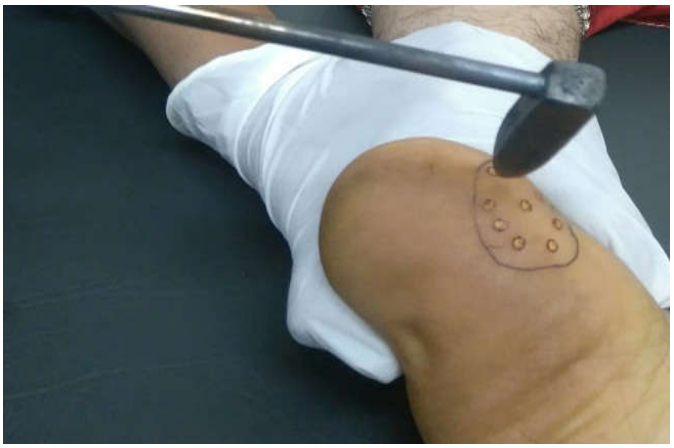
However, Iontophoresis of corticosteroids is a new technique in the treatment of Plantar Fasciitis which is practiced today. It is a process in which ions in the therapeutic solution is transferred through the intact skin via electrical potential using bipolar electrodes. It drives a charged substance usually a medication or bioactive agent, trans-dermally by electromotive force, through the skin. It may be described as non-invasive procedure. The purpose of this study was to compare the efficacy of Iontophoresis of Dexamethasone with para-surgical procedure *Agnikarma* mentioned in classical texts. Hence, both the cases were treated with different modalities, one with Iontophoresis with 0.4% Dexamethasone and other by *Agnikarma* with *PanchdhatuLauhaShalaka*.

MATERIALS AND METHODS

Case 1: A52 years old female patient visited to OPD of *Shalya Tantra* Department with complaint of severe painand early

morning stiffness at right heel since 6 months. Due to pain she was facing difficulty in walking and performing her daily activities. There was previous treatment history for plantar fasciitis under private orthopedic surgeon 4 months back. The history suggested that she had received analgesics and anti-inflammatory drugs, but without any significant and satisfactory relief. Hence, Routine investigations and X-ray examination of Right heel was done, all investigations were normal. After proper assessment and examination patient was diagnosed with nonspecific chronic plantar fasciitis and was decided to be treated with *AgnikarmaChikitsa* at an interval of seven days for1 month.

Procedure of *Agnikarma*



After taking inform written consent the affected part was cleaned with *TriphalaKwath*. It was then wiped with dry sterilized cotton gauze. *PanchdhatuShalaka* was heated on direct flame till it became red hot then it was used for making *BinduDahan*and 10-15*SamyakDagdhVrana* were made at proper distance on the right heel at the point of maximum tenderness. The *KumariSwarasa* was applied immediately on *DagdhVrana* to get relief from burning sensation. After wiping of *KumariSwarasa* dusting of *Yashtimadhu Churna* was done on the *DagdhVrana*. Above procedure was repeated 4 times at the interval of 7 days and patient was advised to not wet the *DagdhVrana* for 2 days.

Case 2: A45 year's old female patient visited to OPD of *Shalya Tantra* Department with complaint of severe pain and early morning stiffness at Left heel since 4 months. Due to pain she was unable to perform her daily activities. There was no previous treatment history. Routine investigations and X-ray examination of Left heel was done, all investigations were found normal. After proper assessment and examination patient was diagnosed with nonspecific chronic plantar fasciitis and was decided to be treated with Iontophoresis of 0.4% Dexamethasone. Sitting of 20 minutes thrice a week was given for 1 month.

Procedure of Iontophoresis

After taking inform written consent, the dorsum of the target foot was cleaned with Betadiene. It was then wiped with dry sterilized cotton gauze. They received 0.4% dexamethasone, using the Iontophoresis Drug Delivery System.The 0.4% Dexamethasone solution was poured into a small plastic tub. Electrodes were fixed and patient was asked to keep her affected foot in the plastic tub with Dexamethasone solution.Current was applied up to 4 mA, and a total dose of 40 m A was delivered over a period of time. The 12 treatment sittings were delivered on alternating 2 days over a period of 1 month. At each treatment session, the Dexamethasone solution was renewed.During the treatment phase, patients received iontophoresis to the site of maximum tenderness on the plantar aspect of the left foot.

RESULTS

Case 1: Patient got marked relief from pain and mild relief in morning stiffness after completion of first sitting. After the completion of 3rd sitting patient got relief from early morning stiffness whereas tenderness and restricted movement were completely relieved after the completion of 4th sitting without any adverse effects being observed throughout the entire sittings.

Follow up: Patient was followed upto 2 months but no recurrence observed.

Case 2: After 3 sittings in first week of Iontophoresis patient felt mild relief in heel pain but there was no relief in morning stiffness of heel. After completion of 6 sittings there was marked improvement in pain and she was able to perform daily activities but no relief was gained in morning stiffness. After 9 sittings marked improvement was noticed in morning stiffness and pain. After completion of 12 sittings patient was completely relieved.

Follow up: Patient was followed upto 2 months no recurrence observed within first month of follow up but during 2nd month of follow up she felt some discomfort during walking, but there was no intense pain; furthermore, she had little morning stiffness than before.

DISCUSSION

Pada-kantak is primarily recognized as *Vatavyadhi*. There is nopain without vitiation of *vata*. *AcharyaShushruta* has also mentioned *Agnikarma*in severe painful conditions of *Twak, Mamsa, Sira, Snayu, Sandhi, Asthi*due to vitiated *Vata* (SushrutaSamhita, 2007). In *ShalyaTantra* different modalities of treatments are described such as *Bheshajakarma, Ksharakarma, Agnikarma, Raktamokshana* and *Shastrakarma.* Among them *Agnikarma* is said to be the superior most asit cures the disease completely with no recurrence (*Sushruta Samhita*, 2007 edition). It's *Ushna, Tikshna, Aashu* properties help in relieving vitiated *Vata* and hence pain. Stimulation of superficial nerve endings can also cause are flex dilation of the arterioles. As a result of vasodilatation there is an increased blood flow though area with supply of oxygen and nutrients. Waste products are removed from this affected area.

Benefits of *Agnikarma*: Quick relief from pain. It is a simple, safe and outdoor procedure. The diseases treated by *Agnikarma* do not recur.

Through Iontophoresis, Dexamethasone was delivered through skin to the affected plantar fascia, this procedure can be considered as injection without needle. As long as the drug remains in the affected part relief is achieved but during follow up when no Iontophoresis of Dexamethasone was done, symptoms reoccurred. The relief here is totally dependent on drug delivery. Moreover, this procedure is more time consuming than *Agnikarma.* The results of case 2 suggest that the procedure of iontophoresis provides initial short term reduction of both pain and stiffness symptoms. In terms of the ability to maintain the results after 2 months of no intervention, it is clear that this effect was maintained in case 1 whereas, return of both pain and stiffness symptoms in mild form occurred in the case 2.

Conclusion

From the above case reports, it is clear that *Agnikarma* in plantar fasciitis proves to be a better treatment modality than Iontophoresis in terms of maintaining the achieved results.

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