ASSOCIATION BETWEEN THE PLANTAR FASCIITIS AND ISOLATED CONTRACTURE OF GASTROCNEMIUS IN LAHORE

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ORIGINAL ARTICLE

ABSTRACT

Background: Plantar fasciitis, reportedly the most common cause of pain in the inferior heel, is estimated to account for 11 to 15 percent of all foot symptoms requiring professional care among adults. **Objective:** The objective is to determine the Association between the plantar Fasciitis and Isolated Contracture of Gastrocnemius. **Methods:** It was the cross-sectional study; convenient sampling technique was used to collect data. Study was completed within four months after the approval of synopsis. Sample size was 168. Participants was selected based on inclusion and exclusion criteria. Self-made questionnaire used for this study. Silfverskiold test was used for isolated contractures of gastrocnemius. Data was analyzed by SPSS. **Results:** The mean age of the respondents was 39.4 years with SD value of 3.74. In this study, there was 32.1% was male and 67.9% were female respondents which showed that planter fasciitis is more common among female that males. The p value less than 0.05 indicate that there is a positive association between the limitation of range of ankle dorsiflexion and duration or planter fasciitis (acute or chronic). 41.1% of the participants with acute planter fasciitis and 58.9 with chronic planter fasciitis. **Conclusion:** Limitation in the dorsiflexion of ankle is mostly linked with the planter fasciitis. In current study, it was concluded that more than half of the patients with planter fasciitis had isolate gastrocnemius contracture. The findings of current work can be applied to develop and further refine non-operative and operative treatment strategies for those with recalcitrant plantar fasciitis.

INTRODUCTION

Plantar fasciitis, purportedly the most well-known reason for agony in the mediocre impact point, is evaluated to represent 11 to 15 percent of all foot manifestations requiring proficient consideration among grown-ups.[1,2] Solid populace occurrence information missing, albeit plantar fasciitis has been accounted for to represent around 10 percent of wounds that happen regarding running[3-5] common in military personnel.[6] The occurrence apparently crests individuals between the ages of 40 and 60 years in the all inclusive community and more youthful individuals among runners.[7-9] The prevalence of the condition as indicated by sex fluctuates from one investigation to another. The condition is two-sided in up to third of cases.[6-8, 10] "Plantar fasciitis" is quite often used to depict an agonizing heel with aggravation of the plantar sash at its cause, rather than agony starting along the course of the fascia. For model, Hicks[11] noticed that the dreary unnecessary

burdens that happen with long-separation running may instigate a fiery procedure, prompting fibrosis or degeneration, and Sewel [12] expressed that the torment of plantar aggravation may at times be auxiliary to periosteal irritation of the oscalcis. By definition, aggravation portrayed in intense stage by the great clinical indications of torment, heat, redness, swelling, and loss of capacity, histo-logically by leukocyte gathering. In constant stage, aggravation is portrayed histologically by penetration with macrophages, lymphocytes, plasma cells; tissue demolition; fix including new vessel expansion and fibrosis.[13] The disorder is seen generally every now and again in physically dynamic people [14] and military personnel[6] yet in addition is determined in people to have stationary ways of life[15,16] Analysts have assessed that the condition happens in around 2,000,000 Americans for each year [2] what's more, effects as much as 10% of the populace over a mind-blowing span [17] . It was accounted for roughly 5% of patients were determined to have plantar fasciitis experience medical procedure.[15,18]

A few causes have been guessed, with the most well-known being abuse because of drawn out weight-bearing, corpulence, not used to strolling or running, and restricted dorsiflexion of the lower leg joint.[19, 20] Patients normally present with mediocre heel torment on weight bearing, and the agony frequently endures for a considerable length of time or even years. Agony related with plantar fasciitis might throb, burning, or penetrating, particularly with the initial couple of ventures in the first part of the day or after times of inertia. The inconvenience frequently improves after further ambulation however compounds with proceeded with movement, regularly restricting day by day exercises. Strolling shoeless, on toes, or up stairs may worsen the agony[21]. The patient for the most part has delicacy around the average calcaneal tuberosity at the plantar aponeurosis. Various different conditions cause heel torment; the vast majority of these can be recognized from plantar fasciitis by a history and physical examination[2, 22].According to several small case-control studies[23, 24] that contrasted patients and without plantar fasciitis, thicker heel apon-eurosis, recognized by ultrasonography, is related with plantar fasciitis.[25] The current study was planned to determine the Association between the plantar Fasciitis and Isolated Contracture of Gastrocnemius.

MATERIALS AND METHODS

Study design: It was the cross-sectional study

Sampling: Convenient sampling technique

Duration: Study was completed within four months after the approval of synopsis.

Sample size: Sample size was 168.

SAMPLE SELECTION CRITERIA

Inclusion criteria:

Data was collected from students of different universities of Lahore. Peoples with diagnosed case of planter fasciitis with age between 25-45 and girls who wearing high heels were included in this study.

Exclusion criteria

Persons with psychological problems, diabetes, smoking and patients with red flag signs were excluded from this study.

Data collection procedure

In this study the Self-made questionnaire was used for the symptoms of planter fasciitis and Silfverskiold test was used for isolated contractures of gastrocnemius. In Silfverskiold test the range of ankle dorsiflexion was measured with knee extension. The data was analyzed by using SPSS version. The results were shown in table and graphs. Where needed, statistical tool was applied.

RESULTS

The mean age of the respondents was 39.4 years with SD value of 3.74. In this study, there were 32.1% male and 67.9% were female respondents which showed that planter fasciitis is more common among female that males. The p value less than 0.05 indicate that there is a positive association between the limitation of range of ankle dorsiflexion and duration or planter fasciitis

(acute or chronic). 41.1% of the participants with acute planter fasciitis and 58.9 with chronic planter fasciitis. No significant association was found between the ranges of ankle dorsiflexion and Visual Analog Scale, p-value > 0.05

Table-1: Duration of planter fasciitis

Duration of planter fasciitis	Frequency	Percent
Less than 9 months (Acute Planter fasciitis)	69	41.1
More than 9 months (Chronic Planter fasciitis)	99	58.9
Total	**168**	**100.0**
Range of ankle dorsiflexion	**Frequency**	**Percent**
Less than 5 degree with knee extension	90	53.6
Less than 10 degree with knee extension	55	32.7
Less than 15 degree with knee extension	23	13.7
Total	**168**	**100.0**

Table-4: Comparison of range of ankle dorsiflexion versus visual Analog Scale

The ranges of ankle dorsiflexion	Visual Analog Scale			Total
	Mild (1-3)	Moderate (4-6)	Severe (7-10)	
Less than 5 degree with knee extension	22	26	42	90
Less than 10 degree with knee extension	17	22	16	55
Less than 15 degree with knee extension	84	5	10	23
Total	**7**	**53**	**68**	**168**

Chi-square test: 5.76, p-value 0.217, i.e. >0.05 this shows no association was found

DISCUSSION

Plantar fasciitis, purportedly the most widely recognized reason for torment in the inferior heel point, is evaluated to represent 11 to 15 percent of all foot manifestations requiring proficient consideration among grown-ups. In the study of Ashish Patel and his colleague on planter fasciitis association with gastrocnemius contraction. In his study it was concluded that 83% had limited ankle ROM which supporting the results of current study in which limited ankle range of motion was 53.6% (less than 5 degree with knee extension) and 32.7% had under 10 degree of lower leg dorsiflexion with knee extension[26]. In my present study, the mean age of the respondents was 39.4 years with SD value of 3.74. in this study, there was 32.1% was male and 67.9% were female which showed that planter fasciitis is more common among female that males. This results of current study also supported by the study of Toumi and his coworkers on Changes in prevalence of planter fasciitis in men & women. Their results showed that the prevalence was significantly higher in women than in men[27].

The p value less than 0.05 indicate that there is a positive association between the limitation of range of ankle dorsiflexion and duration or planter fasciitis (acute or chronic). 41.1% of the participants with acute planter fasciitis and 58.9 with chronic planter fasciitis. On VAS intensity of pain 28.6% was of mild state, 45.2% had moderate pain and 26.2% sever foot pain. Pain in ball of the foot complained by 16.1%, in mid of the sole by 32.7%, and in the bottom of the heel complained by 38.1% and in hind foot complained by 13.1% of the population.

McPoil and his subordinates published their results on heel pain and planter fasciitis, there was a positive co relation between heel pain and planter fasciitis (p<0.00). the results of current study also supported by this evidence that in planter fasciitis patients the heel pain was 38.1% which is more that any other region of the foot. [28]

In this study it was demonstrated that the danger of happening plantar fasciitis relies upon decline in the scope of lower leg dorsiflexion because of gastrocnemius contracture. The consequences of present examination bolstered by crafted by Riddle and Daniel in which it was reasoned that as the rang of lower leg dorsiflexion diminishes the danger of grower fasciitis increments. People who burn through most their workday on their feet and those whose weight list is >30 kg/m are likewise at expanded hazard for the advancement of plantar fasciitis.

Diminished lower leg dorsiflexion, heftiness, and business related weight-bearing give off an impression of being autonomous hazard factors for plantar fasciitis. Decreased lower leg dorsiflexion gives off an impression of being the most significant hazard factor of plantar fasciitis[16]. In a study of Bolívar it was proved that by the stretching of posterior leg muscles there was a relieve of planter fasciitis and there was a positive association between calf muscle tightness and planter fasciitis , which was similar to the results of current studies.[29] Plantar fasciitis is very common in primary health care settings. Obesity, sedentary lifestyle, wearing inappropriate shoes, frequent running and long standing were shown to be risk factors.in a work of Reda A Goweda it was shown that planter fasciitis is associated with heel pain due to long standing. In present study planter fasciitis is also associated with heel pain the percentage of heel pain was 38.1%. [30]

In a work of Hesham on Effectiveness of Achilles tendon stretching for the treatment of perpetual plantar fasciitis it was proved that stretching of tendoachillis the planter fasciitis was recovered. In results it was showed that significant improvement for is results also supported the 22 (91%) patients who practiced the Achilles tendon-stretching exercises regularly. In current study it was also proved that the limitation in ankle dorsiflexion due to isolated contracture in gastrocnemius is associated with planter fasciitis. [31]

CONCLUSION

Limitation in the dorsiflexion of ankle is mostly linked with the planter fasciitis. In current study, it was concluded that more than half of the patients with planter fasciitis had isolate gastrocnemius contracture. The findings of current work can be applied to develop and further refine non-operative and operative treatment strategies for those with recalcitrant plantar fasciitis.

LIMITATION

This work should be done on larger scale. The sample size was small. There was a limited time to complete this study.

RECOMMENDATION

It should be performed with larger sample size. Other factors of planter fasciitis should also be considered.

AUTHORS CONTRIBUTION

WJ: Main Idea, **IA:** Data collection, **AAA:** Data collection, **AI:** Write Up, **UF:** Write Up, **MF:** Write Up,**TA:** Data Analysis, **DA:** Write Up, **MA:** Data Collection, **MS:** Data Collection

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