What's Afoot

Stubborn Plantar Fasciitis or Neural?

by Alessandro Rosatelli

Stubborn plantar fasciitis or neural that is the question. A patient presenting with persistent plantar fasciitis is not an uncommon occurrence in today's busy orthopeadic practice. In some cases where a patient fails to respond to conventional treatments, the physical therapist, podiatrist or other health care professional may start to question the accuracy of the original diagnosis.

The importance of making an accurate diagnosis depends on strong clinical reasoning abilities and cannot be overemphasized. Without a sound hypothesis to test, the clinician will more often then not be ineffective in treating the client particular condition. An elaborate concoction of various modalities, stretches, mobilization, and so forth are prescribed in the hopes that at least one of the therapies will help. This may do little more than waning out the natural history of the disorder. Under the worst-case scenario the patient wastes precious time and resources while their condition remains unchanged or worse, deteriorates even further.

A common error made in the clinical reasoning process, which may lead to misdiagnosis, occurs when a clinician only considers those elements of a patient's history and objective examination which is congruent to their "favorite hypotheses". The therapist must be aware of other possible conditions, which may mimic plantar fasciitis. These can include, stress fractures of the calcaneous, calcaneal periostitis, heel spur, fat pad syndrome, a 1st

sacral radiculopathy, tarsal tunnel syndrome, as well as systemic conditions (e.g. ankylosing sponditlitis, rheumaoid arthritis, gout and Reiter's syndrome).

A discussion of the differential diagnosis of the above conditions is beyond the scope of this article and will not be outlined here. What I would like to discuss is the role of the nervous system in producing plantar fascia like pain and its structural differentiation.

Abnormal or increased sensitivity of neural tissue, specifically the tibial nerve can mimic many of the signs and symptoms of plantar fasciitis and must be considered during the clinical reasoning process. Within the tarsal tunnel, the tibial nerve bifurcates into medial and lateral plantar nerves. These nerves may become injured or compressed at any point along their distribution. Through careful examination and structural differentiation it is possible to determine whether or not these nerves are affected and at what point.

Areas of hyperalgesia (increased sensitivity to painful stimuli) or parathesia (altered sensation) should be mapped out carefully as this will help to differentiate a peripheral nerve lesion from one primarily involving the nerve root. The distribution and exact location of symptoms as well as how these symptoms change with the addition of sensitizing maneuvers will further
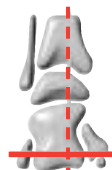
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help to differentiate which is the primary structure at fault. Aggravating and easing factors, including the presence of associated signs and symptoms should also be determined.

For example, plantar fasciitis is usually characterized by the slow insidious inset of medial heel pain or arch pain which is most noticeable during toe off phase of gait (I.e. when the plantar fascia is under the most tensile strain). The pain is usually localized under the medial tubercle of the calcaneous (the proximal insertion of the plantar fascia) and is usually worse on initial weight bearing upon rising in the morning.

In contrast, pain of neurogenic origin, particularly when the tibial nerve is implicated, may elicit pain locally in the tarsal tunnel as well as refer symptoms distally or proximally along the nerves distribution with palpation. Careful palpation of the medial and lateral aspects of the foot may elicit associated neural symptoms such as parathesia or sharp/shooting pain or lines of pain. To further differentiate plantar fasciitis from adverse mechanosensitivity of the tibial nerve the following sensitizing manoeuvre may be performed.

1. In supine lying, Dorsiflex and evert the foot to bias the tibial nerve *(see figure 1)* and make note of any symptoms reported by the patient. If symptoms are present this can be due to nerve, muscle or joint structures.
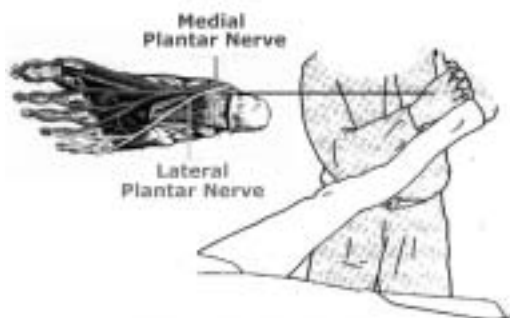

Fig. 1 - Dorsiflexion and eversion of the foot to stress the tibial nerve

2. Now elevate the affected limb slowly as you would during a traditional straight leg raise test (SLR). *(Important note: You should always test the opposite side 1st for means of comparison).*

3. Monitor the patients' response with the SLR. If symptoms are increased or reproduced with hip flexion and there is a decrease in range of motion compared with the other side which is relevant to the client's problem, this would support a diagnosis of tibial nerve involvement vs plantarfasciitis.

4. Adding neck flexion, hip adduction and/or medial rotation can further help bias the nervous system and hence strengthen your hypothesis of altered neural tissue dynamics.

In both cases described above, that is, plantar fasciitis and increased sensitivity of the tibial nerve, orthotics may be an important component in the overall management of a client. Orthotics can help to stabilize the rearfoot minimizing the degree of subtalar joint pronation. This will help to decrease symptoms by reducing the tensile load on the inflamed and irritable tissues. One word of caution is in order. Orthotics is but one component of the overall management of a client presenting for treatment and hence should never be the sole form of treatment offered. The clinician, now armed with an accurate diagnosis through a astute clinical reasoning is better able to implement adjunctive techniques to achieve normal function and return the client to the desired level of activity. #

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