Plantar fasciopathy in runners

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Pathology

The pathology of plantar fasciopathy presents in a similar way to tendinopathy with collagen breakdown, calcification, nerve and vascular ingrowth. The term plantar fasciitis is no longer appropriate as the pathology has been found to be degenerative and not inflammatory as previously thought.

The initial stage of plantar fasciopathy is a pain dominant stage where the pain is unstable. The patient may report lots of early morning symptoms and reduced tolerance of daily activities. This is similar to a reactive tendinopathy where the enthesis is swollen and becomes sensitive to any load. The duration of the pain dominant phase is variable and difficult to predict, it may last 1-2 weeks but can last up to 6-8 weeks if the aggravating activities cannot be avoided. During this stage the main aim of treatment is to settle the pain and progress into the load dominant stage.

Between the stages there is usually a gradual transition with a reduction in irritability specifically 1st step pain and increased walking tolerance. In the load dominant stage symptoms remain stable unless the tissues are overloaded. During this stage the aim of treatment is to increase the capacity of tissues through a gradual loading program.

Prognosis

Plantar fasciopathy is a self-limiting condition and the length of symptoms will depend on the patient. Within the literature it is suggested that plantar fasciopathy should resolve within 3-6 months. However, in patients who cannot avoid aggravating the plantar fascia with prolonged periods of standing it may take up to 9 months to improve.

Imaging

Imaging may provide another piece of the diagnostic puzzle. Ultrasound is a sensitive modality for assessing the plantar fascia. It allows visualisation of the plantar fascia at the enthesis and the surrounding neural structures to identify nerve entrapments. Thickening of the plantar fascia by 60-70% at the enthesis is diagnostic for plantar fasciopathy. Van Leeuwen et al. (2016) identified the presence of plantar fascia thickening, hypoechoicity and calcaneal spurs on ultrasound imaging in patients with plantar fasciopathy. Calcaneal heel spurs may not be related to plantar fasciopathy as they are a common finding in asymptomatic patients.

MRI is sensitive and specific at ruling out other pathologies. It should be used if more detail is required after ultrasound imaging or if the patient presents with symptoms of bone stress injury or tumours.

When is imaging indicated?

If a patient is responding to treatment and their symptoms are well localised, imaging is not indicated as it will not alter management. Imaging is indicated in patients who are not responding to treatment or have other symptoms which do not fit with plantar fasciopathy. Further investigation is indicated in patients who present with symptoms of bone stress injury, signs and symptoms or nerve involvement or constant unremitting pain suggesting a tumour.

Risk factors

Within the literature there are a variety of risk factors which may contribute to the development of plantar fasciopathy. The risk factors associated with plantar fasciopathy may differ between the athletic and the sedentary populations. The most commonly identified risk factor within the literature is high body mass index (BMI) which is more prevalent in the sedentary population. Other mechanical factors such as reduced ankle dorsiflexion and great toe extension have been identified within the literature. Foot posture was previously thought to be a risk factor for the development of plantar fasciopathy however Van Leeuwen et al. (2016) found it was not associated with developing plantar fasciopathy.

In the athletic population increased training volume has been shown to be a risk factor. Nielsen et al. (2013) suggests that the development of plantar fasciopathy is linked to changes in training pace as the load on the foot and ankle complex increases with faster running speeds. In runners' plantar fascia pain may be linked to the foot strike or push off phase of running. Specifically assessing these phases of a gait may provide areas of increased plantar fascia loading. A change from a rear foot to a forefoot strike or a change in footwear may increase the load on the plantar fascia leading to the development of plantar fasciopathy.

How do we explain plantar fasciopathy to patients?

When discussing the pathology to patients we should aim to de-threaten it by explaining that as the tissues have been overloaded they have become swollen and sensitive to load. Reassure the patient that progressively loading the plantar fascia is not going to result in further damage.

Papers associated with this episode

Sullivan et al. 2015. Musculoskeletal and Activity-Related Factors Associated With Plantar Heel Pain

Nielsen et al. Predictors of Running-Related Injuries Among 930 Novice Runners.

van Leeuwen, *et al*. Higher body mass index is associated with plantar fasciopathy/'plantar fasciitis': systematic review and meta-analysis of various clinical and imaging risk factors.

Riel H, *et al* Is 'plantar heel pain' a more appropriate term than 'plantar fasciitis'? Time to move on

The running physio

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