

Heterotopic ossification of the Achilles tendon: case report

Ossificação heterotópica do tendão calcâneo: relato de caso

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ABSTRACT

The heterotopic ossification of the Achilles tendon is a rare condition that is characterized by bone formation within the tendon. It affects primarily male patients and is often associated with previous trauma or surgical intervention. We report a case of extensive heterotopic ossification of the Achilles tendon associated with plantar fasciitis and discuss its possible etiologic factors, clinical and radiologic features, symptoms, treatment options and its possible consequences for the function of the ankle and foot.

Keywords:

Ossification, heterotopic/diagnosis; Achilles tendon; Case reports

INTRODUCTION

Heterotopic ossification is a disease in which bone tissue formation occurs outside of the skeleton. There are two types of heterotopic ossification: acquired and genetic.^(1,2)

The most frequent causes of acquired ossification are open and closed musculoskeletal trauma, spinal cord trauma and central nervous system injuries.

Ossification of Achilles tendon is a rare clinical condition characterized by the presence of one or more segments of ossified mass within the tendon body.^(3,4)

RESUMO

A ossificação heterotópica do tendão calcâneo é condição rara, caracterizada pela formação de tecido ósseo dentro do corpo do tendão. Acomete preferencialmente o sexo masculino, estando, na maioria das vezes, associada à ocorrência de traumatismo prévio ou cirurgia no tendão. Neste trabalho, relatamos um caso de ossificação heterotópica extensa do tendão calcâneo associada à fascite plantar, e discutimos suas causas, características clínico-radiológicas, tratamento e possíveis consequências para a função do tornozelo e do pé.

Descritores:

Ossificação heterotópica/diagnóstico; Tendão do calcâneo; Relatos de casos

We report a case of extended heterotopic ossification of calcaneus tendon and discuss its clinical characteristics, work-up, treatment options and possible consequences for ankle and foot function.

CASE REPORT

A 66-year-old retired man sought medical assistance because of calcaneal pain of about 6 months' duration. During anamnesis, he reported sustaining direct trauma over the right calcaneal tendon due to an accident with a machete that occurred approximately 30 years ago. When the

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accident occurred, he did not seek medical care or receive any type of treatment for the injury.

The patient did not have systemic comorbidities or a personal or family history of musculoskeletal disease. During initial screening, physical examination showed thickness in the left calcaneal tendon. On palpation, the patient had moderate pain in the proximal portion of both plantar fascia and a nonpainful thickness of stony consistency throughout the entire left calcaneal tendon body. Examination of gait did not show physical effects of trauma or claudication, and the maneuver of hindfoot lifting with bipodal and unipodal support was normal; therefore, any deficit of triceps surae muscle power was ruled out (Figure 1).

A clinical diagnosis of bilateral plantar fasciitis was made. Complementary exams of magnetic resonance imaging and ankle radiography were requested to investigate possible heterotopic ossification affecting the left calcaneal tendon. Ankle radiograph showed ossification affecting the entire extension of the Achilles tendon (Figure 2).

Magnetic resonance imaging showed an Achilles tendon diffusely thickened with hypersignal in T1 and T2, indicating intratendinous calcification without areas of tissue degeneration or rupture of fibers (Figures 3 and 4).

The patient underwent conservative treatment with nonsteroidal anti-inflammatory drugs and physical rehabilitation. The physiotherapy followed a protocol of analgesia,

stretching and eccentric training for 30 days. His progress was satisfactory, and pain relief improved.



Figure 2 | Radiograph of ankle profile.



Figure 1 | Top left: orthostasis, Top right: support of bilateral forefoot. Bottom left: monopodal support of left forefoot. Bottom right: monopodal support of right forefoot.

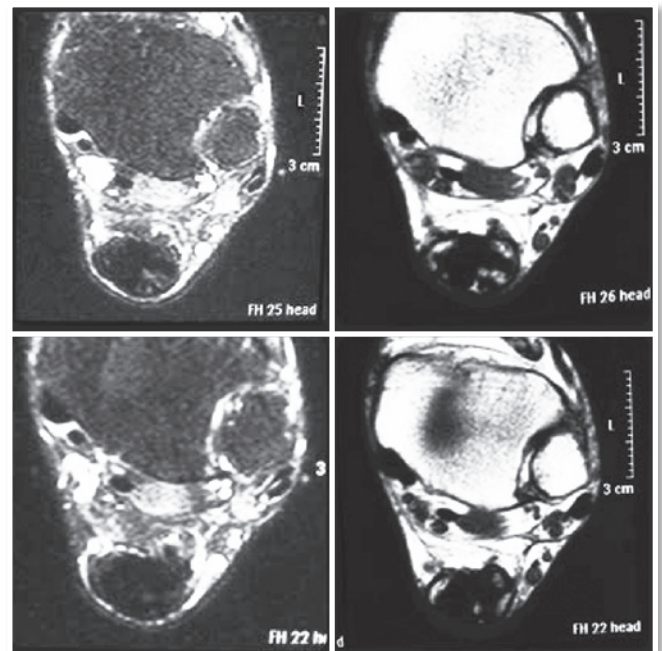


Figure 3 | Magnetic resonance image of ankle with axial slices – T1 left and T2 right.

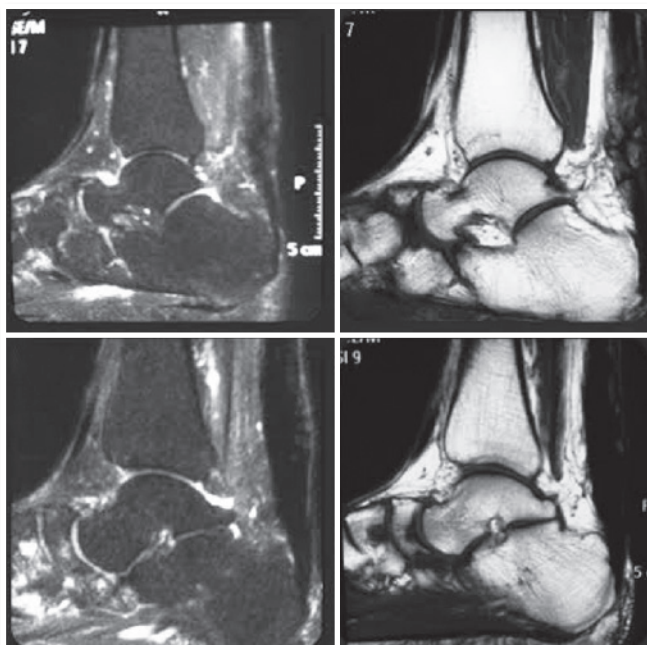


Figure 4 | Magnetic resonance of ankle with sagittal slices – T2 to left and T1 to right.

DISCUSSION

Heterotopic ossification of calcaneal tendon was first described by Horing⁽⁵⁾ in 1908. Its real incidence is unknown,^(6,7) but it is twice as frequent in men; incidence does not differ at specific age ranges.⁽⁸⁾

Physiopathology of calcaneal tendon ossification has been discussed since 1938. The most accepted theory is the existence of tissue metaplasia induced by local hypotension. It might result from hypoxia, transformation of tendon in fibrocartilage, and chondrocytes mediating deposition of calcium of the affected regions.⁽⁸⁾ Ghormley observed that in more than 50% of cases there was a history of previous trauma or surgical intervention in the tendon.⁽⁹⁾

Other possible causes that lead to tendon ossification are neoplasia, chronic infections (syphilis, abscesses, or regional osteomyelitis), kidney disease, Reiter's syndrome, Wilson's disease, spondyloarthropathies and deposit arthropathies.^(6,9)

Two different patterns of ossification can be seen. The first pattern, similar to the one reported in this case, involved one or more extensive segments of the tendon with formation of mature, well-organized trabecular and distinct cortical bone.

The second pattern entails the formation of a variety of ossification areas, tiny and diffused, within tendon subs-

tance. This is the most common pattern found in cases of pseudogout and hemochromatosis.^(6,9)

Although heterotopic ossification is most commonly seen in tendon body, it may occur in the insertional portion of the Achilles tendon. In some cases, radiographic findings are similar to calcific insertional Achilles tendinopathy.

On the basis of radiographic findings of ossification of the Achilles tendon, Morris⁽¹⁰⁾ classified the disease into 3 types: type 1, ossification found in tendon insertion or the superior pole of the calcaneus; type 2, injuries in the zone from 1 to 3 cm to the insertion; and type 3, proximal calcification in the insertion zone of the tendon up to 12 cm of the tendon. Type 3 is subdivided into 3A (partial ossification of the tendon) and 3B (total ossification of the tendon).

Upon physical examination, ossification of the Achilles tendon is often seen as a firm mass; in most cases, it is painless. In other cases, however, it can cause discomfort, movement restriction and disability in terms of daily life activities. When painful, heterotopic ossification responds poorly to conservative treatment.

In this region, fractures of the calcified portion or tendon ruptures can also be seen. In cases of complete rupture or disabling pain, surgery is indicated. Simple excisions of calcified masses usually leave great deficits in the body of the tendon. Therefore, when indicated, surgical treatment usually requires reconstruction of the tendon using grafts or tendon transposition.^(10,11)

CONCLUSION

Heterotopic ossification of the Achilles tendon is a rare condition with multifactorial etiology. The case we report was incidentally diagnosed because of the associated plantar fasciitis. The triggering factor was an Achilles tendon injury caused by a cold weapon 30 years before the date of the medical consultation. Although the entire tendon body showed thick consistency and was inelastic, its changed condition did not interfere in the progress of conventional physical therapy treatment or in the cure of plantar fasciitis. In our case, heterotopic ossification did not harm ankle and foot function.

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