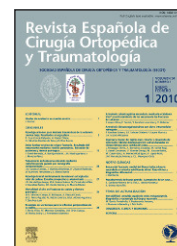


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CASE REPORT

Bilateral achilles tendon rupture secondary to levofloxacin

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KEYWORDS

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PALABRAS CLAVE

Aquiles;
Fluoroquinolonas;
Tendinopatías

Abstract

Introduction: Fluoroquinolones possess several side effects including phototoxicity, skin alterations and tendinopathies. The latter are more frequent in tendons subjected to heavy stresses such as the Achilles tendon. However, bilateral involvement is rare.

Clinical case: We present the case of an 83-year-old patient who, 2 days after beginning treatment with levofloxacin developed pain in both Achilles tendons. A clinical-radiological assessment one month after the onset of symptoms revealed rupture of both tendons, making surgical treatment necessary. Tenorrhaphy was performed with gastrocnemius fascial flaps. The patient's evolution was satisfactory.

Conclusions: A literature review was performed.

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Rotura bilateral del tendón Aquiles secundario a levofloxacino

Resumen

Introducción: Las fluoroquinolonas presentan una variedad de efectos secundarios que incluyen la fototoxicidad, las alteraciones dermatológicas y las tendinopatías. Estas últimas son más frecuentes en tendones que han tenido gran estrés, como el Aquiles, pero su afección bilateral es muy infrecuente.

Caso: Presentamos el caso de una paciente de 83 años que al segundo día de tratamiento con levofloxacino comienza con dolor en ambos tendones de Aquiles, que en la valoración clínica y radiológica al mes de iniciados los síntomas se aprecia rotura de ambos tendones, y requiere de tratamiento quirúrgico mediante tenorrafia y colgajos de fascia de gemelos con buena evolución posterior.

Conclusiones: Se realiza una revisión de la bibliografía.

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Introduction

Since the arrival of ciprofloxacin on the market, in the 1980s, the family of fluoroquinolones has been one of the most prolific within the field of anti-bacterial agents. By searching for new active substances, the goal was to increase their activity against Gram-negative bacteria, acquire effectiveness against Gram-positive bacteria and improve their pharmacokinetic characteristics, particularly bioavailability and its elimination half-life. Nonetheless, several of the molecules created, the fruit of the manipulation of the fluoroquinolone structure, have never been brought to market or have been withdrawn after their release due to severe adverse effects, as in the case of sparfloxacin (phototoxicity or prolongation of QT on the electrocardiogram) and grepafloxacin (prolongation of QT); or else their use, in those countries where they are still available, is restricted, as happens with trovafloxacin (hepatotoxicity). Most of the fluoroquinolones marketed in Spain (ciprofloxacin, levofloxacin and moxifloxacin) are indicated for the treatment of infections in the airways and urinary tract. In specific cases, its indications also extend to infections of the bones and joints, the skin and soft tissues, and to sexually transmitted diseases. The most common adverse effects produced by fluoroquinolones are gastrointestinal (nausea, vomiting and diarrhoea, from 1 to 5%), dermatological alterations, skin rashes or maculopapular reactions, photosensitivity (<2.5%) and neurological effects, such as cephalgia and dizziness (from 1 to 2%). Tendinous alterations secondary to fluoroquinolones are more frequent in elderly and male patients.¹ Symptoms habitually begin between 2 and 42 days after the start of treatment and, in two thirds of cases, resolve spontaneously within one or two months after withdrawal of the treatment.^{1,2} The tendons most commonly affected are those under great stress, such as the Achilles tendon,³⁻⁹ but rarely bilateral.

The case reported below involves complete bilateral rupture of the Achilles tendon secondary to the use of levofloxacin.

Case report

Female, 83 years old, without any relevant history of illness presented a cold-like condition lasting for a month; in view

of the lack of response to treatment with anti-flu medication, she was prescribed levofloxacin at a dose of 500 mg every 12 h. The patient reported that she started to feel pain in both Achilles tendons after the 4th tablet, together with a loss of strength and difficulty walking, so she stopped taking the medication. In addition, she referred to oedema in her legs and associated pain in multiple joints. She consulted with a specialist one month later in view of the persistence of difficulty walking. On physical examination, she presented signs of a gap in both Achilles tendons (fig. 1). An ultrasound scan was carried out and revealed degeneration and rupture of both Achilles tendons, between 80 and 90% in the right leg and 100% in the left leg; furthermore, the ultrasound image revealed intra-tendinous myxoid degeneration, so surgical treatment was required. During surgery, both Achilles tendons were seen to be ruptured as described in the ultrasound image (fig. 2). Tenorrhaphy was performed with Kessler points and reinforcement with gastrocnemius fascial flaps on the left tendon (Lindholm's procedure)¹⁰ (fig. 3) and good closure of the defect was achieved in both tendons. The patient was subsequently kept immobilized for 6 weeks with her feet angled and later started with rehabilitation.

The patient's evolution was satisfactory.

Discussion

The Achilles tendon is the longest and thickest tendon in the human body, defined by the aponeurosis of the gastrocnemius and soleus, and inserted in the middle third of the posterior surface of the calcaneus. Ruptures of the Achilles tendon are more frequent in the 4th and 5th decades of life and occur during physical activity in a greater proportion among persons engaging in recreational sports rather than elite athletes. Spontaneous ruptures present a lower incidence and can be observed in older patients with very degenerated tendons, mainly associated with iatrogenic factors, such as treatment with local or systemic corticosteroids, immunosuppressed patients, rheumatological diseases and those associated with the use of quinolones.¹¹

Bilateral spontaneous ruptures are uncommon, with fewer than 15 cases published (as of the review of the medical literature). In general, most cases show an



Figure 1 Gap in the tendon.

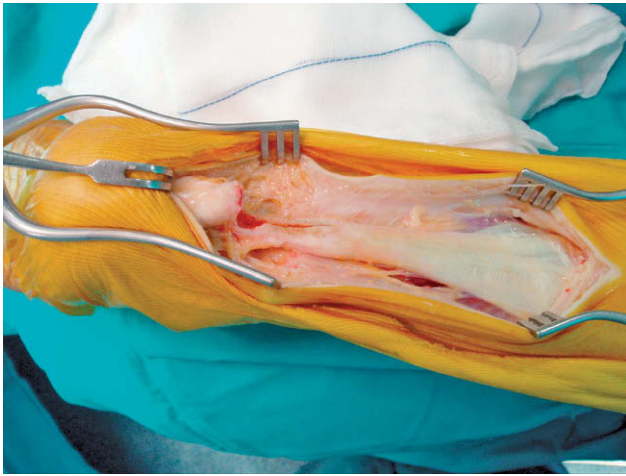


Figure 2 Right Achilles tendon.



Figure 3 Repair.

association with corticosteroids, quinolones and some other underlying rheumatic or vascular disease unlike the case reported here where the only associated risk factor was the use of levofloxacin. In addition, the extremely abrupt onset of the symptoms in the case reported here is very unusual and is described in very few cases within the first 48 h.⁷

Tendinopathy secondary to treatment with fluoroquinolones has an incidence of 15 to 20 cases per 100,000 treatments with these antibiotics⁹ and it has even been postulated that from 2 to 6% of Achilles tendon ruptures in persons over the age of 60 may be attributed to the use of fluoroquinolones.

The mechanism for the production of these tendinopathies has not yet been clarified, but it might be through direct toxicity by the antibiotic on the tendinous tissue,¹² chelation (deposits of multivalent cations such as calcium and

magnesium),¹³ and also due to changes in the synthesis of proteoglycans or oxidative damage to tendinous fibres.⁷

In these cases, it is common for the diagnosis to be late. The diagnosis provided by the ultrasound analyst in this case correlated correctly with the intra-operative findings, allowing good surgical planning. The treatment carried out agrees with that effected by Lühje in a previous case report and good results were obtained.

Conclusions

It is to be expected that the disproportionate use of some fluoroquinolones may lead to an increased in the number of cases of tendon ruptures secondary to their use, and the Achilles tendon is the one presenting the greatest probability of being affected, although other locations cannot be ruled out. Therefore, vigilance is required in those patients who have been prescribed these in order to avoid ruptures by treating any tendinopathies as early as possible.

If compatible symptoms appear, the replacement of the antibiotic is the best indication to avoid progression of disease and ensure treatment of the tendinitis.

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