Fluoroquinolones increase risk of tendon disorders

THE USE OF ORAL FLUOROQUINOLONES is associated with increased risk of tendinitis and tendon ruptures. This association can sometimes be missed in clinical practice.

Research has shown that these tendon disorders usually occur during the first month of treatment,[1] but may occur as early as two hours after the first dose and as late as six months after treatment has stopped.[2] A review of the literature showed that the median duration of fluoroquinolone treatment before the onset of tendon injury was eight days.[2]

The fully subsidised fluoroquinolones available in New Zealand are ciprofloxacin and norfloxacin. Moxifloxacin and gatifloxacin are also available but unsubsidised.

Mechanism of damage

The mechanism of this unusual form of toxicity is not fully understood but the sudden onset of some tendinopathies, occasionally those that occur after a single dose of a fluoroquinolone, suggests a direct toxic effect on collagen fibres.[1] Some recent research has reported fluoroquinolones causing oxidative stress and mitochondrial damage to tendon cells.[3]

Elderly people and those on steroids are at higher risk

A large general practice based case-control study published in 2002 indicated that the adverse effect of Achilles tendon disorders (both tendinitis and rupture) associated with fluoroquinolone use was definite but also relatively rare.[1]

The adjusted relative risk of Achilles tendon disorders with current fluoroquinolone use was 1.9. The relative risk with current use was 3.2 among patients aged 60 and over and 0.9 among patients aged under 60 years. Concurrent use of corticosteroids and fluoroquinolones increased the risk to 6.2.The conclusion was that patients aged over 60 years of age, and those taking corticosteroids at the same time were at substantially increased risk.

In the USA, reports to the FDA of fluoroquinolone-associated tendon disorders have been accumulating since 1994. Common injuries reported are rupture of the shoulder tendons, Achilles tendon, hand tendons, as well as other tendons. A black box warning was added to all packs of fluoroquinolones in July 2008.[4]

In addition to the risk factors of increased age and concomitant corticosteroid use, chronic kidney disease (including those on haemodialysis)[2] and previous heart, kidney or lung transplant is also known to contribute to an individual being at increased risk.

Advice to prescribers

There are limited indications for using a fluroquinolone in a general practice setting. They should only be used for the treatment or prevention of an infection that is proven, or strongly suspected, to be caused by bacteria that would justify the use of a fluoroquinolone.

Prescribers should be aware of the increased risk of fluoroquinolone-associated tendinopathy especially in elderly people, those taking corticosteroids or those with chronic renal disease or post-organ transplantation. Care should also be exercised with patients with a previous history of tendon disorder.

Prescribers should advise patients about the possibility of tendon pain, inflammation or rupture. If such pain occurs they should stop taking the fluoroquinolone and avoid exercise and use of the affected area, and promptly contact their doctor about changing to a non-fluoroquinolone drug.

It is useful to remember that tendon damage can occur during or after completion of a course of a fluoroquinolone.

References:

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3. Lowes D, Wallace C, Murphy M, et al. The mitochondria targeted antioxidant MitoQ protects against fluoroquinolone-induced oxidative stress and mitochondrial damage in human Achilles tendon cells. Free Radical Res 2009;43(4):323-8
4. US Food and Drug Adminstration. Information for Healthcare Professionals. Fluoroquinolone antimicrobial drugs 2008. Available from: www.fda.gov/cder/drug/InfoSheets/HCP/fluoroquinolonesHCP.htm (Accessed May 2009).