

First step toward treatment for painful flat feet

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A team led by the University of East Anglia (UEA) has made an advance in understanding the causes of adult-acquired flat feet – a painful condition particularly affecting middle-aged women.

Published today in the journal *Annals of the Rheumatic Diseases*, the findings could eventually lead to new drug therapy for this and other common conditions affecting the tendons, such as Achilles tendonitis.

Adult-acquired flat foot is most common in women over 40 and often goes undiagnosed. The condition results from the gradual 'stretching out' over time of a tendon near the ankle bone – the tibialis posterior tendon - which is the main stabiliser of the foot arch.

The causes of this stretching are not fully understood though some believe wearing high heels and standing or walking for long periods may play a role. Known risk factors for the condition include obesity, hypertension and diabetes.

Working with surgeons and scientists at Addenbrooke's Hospital, Cambridge and the University of Bristol, the team showed that the structure and composition of tendon specimens had changed and found evidence of increased activity of some proteolytic enzymes. These enzymes can break down the constituents of the tibialis posterior tendon and weaken it – causing the foot arch to fall.

"Our study may have important therapeutic implications since the altered

enzyme activity could be a target for new drug therapies in the future," said lead author Arthritis Research UK senior research fellow Dr Graham Riley, of UEA's School of Biological Sciences.

"We have shown that similar changes also take place in other painful tendon conditions such as Achilles tendonitis, so this advance may ultimately result in an effective alternative to surgery for many patients."

Dr Riley stressed that new treatments could be 10-15 years away. Further research was now needed into which specific proteolytic enzymes should be targeted and whether people could be genetically predisposed to tendon injuries of this type.

The research was funded by Arthritis Research UK, Cambridge Arthritis Research Endeavour, The Rosetrees Trust, The HB Allen Trust, and the Sybil Eastwood Trust.

Prof Alan Silman, medical director of Arthritis Research UK, said: "Foot problems are an important and not sufficiently recognised cause of pain and disability in the elderly. Ageing changes to the supporting tendons contribute to these problems and this research represents a first step to successfully unraveling some of the complex biochemistry that regulates tendon disorders – knowledge that could have a major impact on developing simple but effective therapeutic choices in the not so distant future."

More information: 'Changes in matrix protein biochemistry and the expression of mRNA encoding matrix proteins and metalloproteinases in posterior tibialis tendinopathy' by A Corps (Addenbrooke's Hospital), A Robinson (Addenbrooke's Hospital), R Harrall (Addenbrooke's Hospital), N Avery (University of Bristol), V Curry (Addenbrooke's Hospital), B Hazleman (Addenbrooke's Hospital), and G Riley (UEA) is published online by the *Annals of the Rheumatic Diseases* on Thursday

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Provided by University of East Anglia

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