

DR ROGER K. W. SMITH MA VETMB PHD DEO DIPECVS MRCVS EXPLAINS A NEW TECHNIQUE FOR DEALING WITH A COMMON INJURY PROBLEM

A NEW APPROACH TO TENDONITIS

“The ultimate goal for the successful management of tendon injuries must rely on the regeneration of tendon tissue rather than repair with scar tissue which always compromises the healed tendon”



Low Bow SDFT injury

Tendon injuries are probably the most written about veterinary subject and one which every veterinary surgeon, rider and trainer has their own way of dealing with, which in most cases they believe is the correct way. So why am I writing about it? I hope to give you a different perspective both on assessing tendon damage and then how to manage the rehabilitation process on a horse that has suffered such an injury.

Firstly we need to look at the pathophysiology of tendonitis – what causes it. Any horse over the age of two would be classified as having mature tendons. It is the mature tendon that is subjected to wear and tear from riding at speed, hard ground or incorrect shoeing; this leads to what is termed as cumulative fatigue damage, which is an inevitable consequence of exercise and natural ageing. The problem with cumulative fatigue damage is that there is little ability in the adult horse to repair the microdamage or to adapt. Once the tendon has been weakened by this damage, high level load on the tendon overcomes the tendon strength and results in clinical tendonitis.

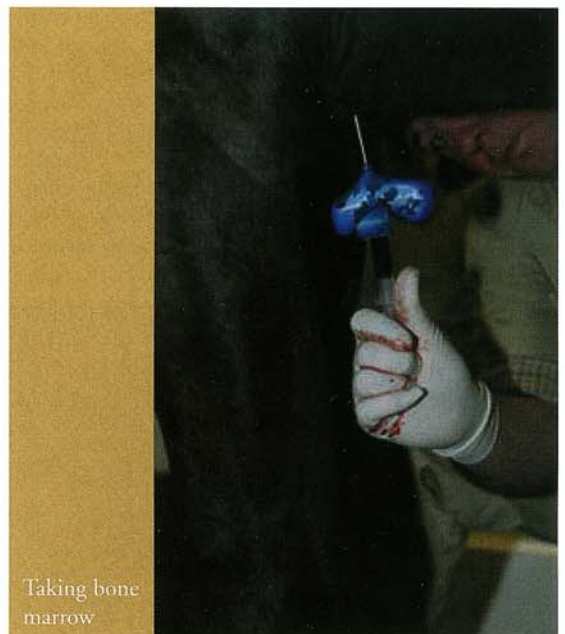
Clinical Injury and repair

Outcome most depends on the severity of the initial injury with only a relatively small contribution provided by the quality of healing, as indicated by the ultrasound appearance when returning to training. To quote a favourite saying of mine that was told to me by a senior veterinary surgeon soon after I qualified, ‘tendon injuries

require a double helping of God and time’ - most current treatment methods have little effect on prognosis. This is because tendons heal slowly by the formation of disorganised scar tissue. The large amount of scar tissue formed makes the tendon strong enough to withstand weight-bearing load but results in a structure that is stiffer than normal tendon. This increased stiffness compromises the essential function of the tendon as an elastic energy store for efficient locomotion. This results in a less able horse and one that is prone to re-injury due to increased strain in the relatively undamaged areas of the tendon. Thus ‘transition zone’ injuries, where normal and injured tendon joins, are well known clinically to be common sites for re-injury. Consequently, once significant clinical tendonitis has occurred, the tendon never returns to normal.

Prevention a better strategy than treatment

Recently, a number of strategies for preventing tendon injury have been suggested. These have centred around improving the quality of the tendon during development so that it is more able to withstand the rigours of subsequent athleticism, reducing tendon degeneration in the adult, avoiding risk factors associated with tendonitis, and early detection. Practically, this involves avoiding training aimed at ‘hardening’ the tendon and paying attention to correct shoeing – it is important to have your horse re-shod every 4 – 5 weeks regardless of wear and tear on the shoe. In the future blood markers of tendon disease may be available but at present the best techniques for the early detection of tendon disease involves a combination of careful examination of the limb and the judicious use of ultrasound. Ultrasound evaluation at early signs of tendon injury will prevent



Taking bone marrow



lesions going unnoticed and therefore subsequently progressing to a costly and lengthy case of tendonitis.

Principles of treatment of tendon injuries

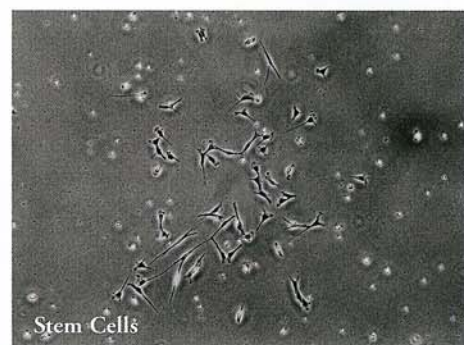
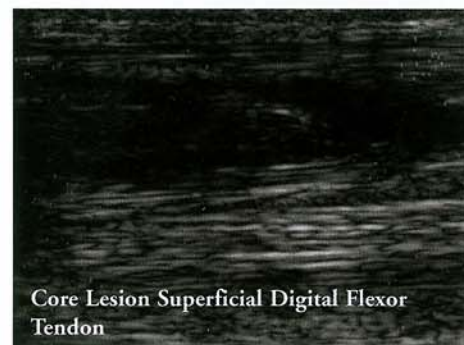
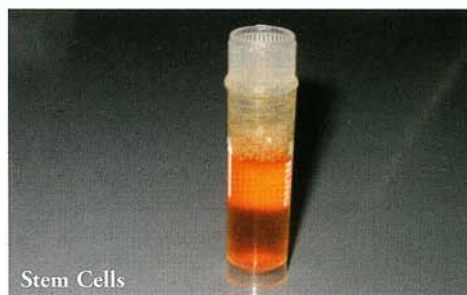
Although prevention is ideal, once a tendon injury occurs, a rational approach to its management, targeted at the stage of the disease process, is recommended. The aim of treatment at the acute stage is to minimise inflammation. Rest, application of cold (cold hosing) and compression bandages require simple and effective ways of achieving this goal. Remember to treat both legs as inevitably in many cases of tendonitis the other leg is also affected but often unnoticed. At this stage it is vital that your horse is examined by your veterinary surgeon. In most cases the veterinary surgeon will assess the situation using ultrasound and then possibly add other medication in the form of a short-acting steroid and some form of analgesia. After the inflammation has abated, treatment is directed at promoting the formation, and optimal organisation, of scar tissue. This is primarily based on a graded exercise programme, tailored to how the condition is progressing, which is greatly assisted by regular ultrasonographic monitoring. A common mistake is to assume the tendon is 'normal' and begin training again too early, resulting in a re-injury.

Recent developments

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with scar tissue which always compromises the healed tendon. A company called VetCell, working with the Royal Veterinary College, have recently pioneered the potential of stem cells. These are cells that are capable of differentiating into many different tissues. There are two types of stem cells, those derived from embryos and those derived from adult skeletal tissue. The latter concerns us here. These cells can differentiate into a spectrum of tissues, i.e. they could potentially become bone, make cartilage or in this case make tendon tissue. While all tissues in the body contain a small number of stem cells, these special cells are particularly abundant and easier to recover in bone marrow. The new technique, which currently is still undergoing clinical trials at the Royal Veterinary College, involves the recovery of stem cells from the horses' bone marrow, multiplying them up in the lab and subsequently injecting them into the damaged tendon of the same horse. Early results have shown that the technique is feasible and for the first time offers the prospect of a fully functional tendon rather than one compromised by the presence of scar tissue.

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