If Only They Could Talk

Our regular focus on equine health. This month MJR vet NEIL MECHIE discusses flexor tendon injuries.

TENDONS are elastic, rope-like structures that attach the horse's muscles to the bones. I find they are best imagined as a bundle of elastic fibres joined together to make something like a bungee cord.

The job of the tendons is to transfer the force of muscle contraction to create movement of the skeleton. They also act as shock absorbers, lengthening under strain, most vitally in the limbs of a horse during high-speed movement. Most tendons are short and rarely damaged. However, the long tendons of the digital flexor tendons are occasionally injured in racehorses training and performing at a high athletic level.

The flexor tendons (deep digital flexor tendon, DDFT, and superficial digital flexor tendon, SDFT) run down the back of the leg from the level of the knee (or hock). The SDFT ends on the pastern, the DDFT ends on the lower surface of the pedal bone. At the back of the knee, in the region of the hock and at the level of the fetlock and upper pastern, the tendons are enveloped by a fluid-filled sheath to ease their motion round a moving joint. Several strong, short annular ligaments also help to keep the tendons in place in areas of high movement such as joints.

The tendons themselves are composed of longitudinally arranged bundles of dense connective tissue collagen fibres. Blood supply to tendons is poor compared to muscles and other tissues. Because of poor blood supply tendon structures when injured do not heal as well and take a long time to heal.

An injured tendon never heals to the extent where it returns to its previous capacity, and so can never be "as good as new". It loses elasticity, slowing the horse down, and therefore, Flat horses especially, are rarely able to return to a previous peak performance level, even if remaining sound.

Damage to flexor tendons occurs commonly during high-intensity exercise. Moderately strenuous exercise can result in tearing of fibres in horses that are not fit, have had previous tendon injuries or are being exercised on unsuitable underfoot conditions. Even in fit horses, damage to the tendons can occur during fast work, work on uneven ground, and work involving jumping at speed.

The degree of damage can range from minor, where inflammation but no grossly appreciable fibre damage can be visualised; to mild fibre damage in a limited area; to severe damage where large core areas of the tendon are affected; or, rarely, to total tendon rupture.

Ultrasound

When a tendon is injured it is common for a proportion of fibres to be affected, resulting in a zone of damaged fibres within the body of the tendon. This might form a discreet "hole" core lesion, or a surface tear where the affected fibres are on the surface of the tendon as opposed to being contained within the body of the tendon. These are visualised using ultrasound scan and can extend for variable lengths of the tendon.

A knock or sharp trauma to a tendon may result in slight superficial bruising in the soft tissues over the tendon or more severe damage, possibly even tendon rupture. Rubs from poorly fitted boots and bandages can cause inflammation in the soft tissues and skin overlying the leg giving the leg a bowed appearance without injury to the tendon itself. Wounds involving tendon sheaths are serious, as infection in these structures requires surgical flushing and intensive antibiotic therapy.

Damage to a tendon causes pain, inflammation, heat and swelling. Minor fibre damage leads to slight enlargement of the affected part which will feel warmer than the corresponding area on the other limb. Mild strains may not always cause lameness but may be painful on palpation. In severe injuries, the limb may become very painful and swollen and the horse may be severely lame.

Swollen inflamed tendons give a very characteristic bowed appearance to the back of the cannon. If the tendon is ruptured, the horse may walk with the toe tipped up. If a tendon sheath becomes infected, the horse will also be very lame and the affected area swollen and painful.

It can be difficult to assess the extent of damage to a flexor tendon by look and feel alone. Ultrasonographic examination (tendon scan) allows visualisation of the structure of the tendon and integrity of the tendon fibres, as well as allowing us to assess soft tissue swelling around the tendon. It also allows assessment of healing processes.

We commonly repeat ultrasound examinations of horses with injured tendons, allowing us to monitor the extent of the injury. Often the scan looks worse around 7-10 days after the injury because of haemorrhage at the site of injury and the body's natural response to try and break down and clean up the damaged tendon tissue. After this initial phase the tendon must start to heal and form a scar. New collagen fibres are laid down and the hole or tear is gradually filled with new tissue.

Treatment and rehabilitation of a tendon injury in the short and long term are highly important in improving the end results and overall prognosis.

In the acute phase immediately after tendon injury there is marked

Horse with a bowed tendon

inflammation at the sight of injury and this is detrimental to the healing process, adding to the damage in the tendon fibres. The inflammation is controlled using anti-inflammatory drugs Flunixin or Phenylbutasone and Dexamethasone, initially given intravenously for 3-4 days followed by an oral course of Phenylbutasone for 14 days.

Bandages are applied to the affected leg to try to reduce any swelling that occurs. Iced bubble boots are used to bubble cold water around the injury, decreasing inflammation and filling. Exercise is restricted to swimming and box rest until all the inflammation has settled and some filling of the lesion is visible on ultrasound scan. This usually takes around 4-6 weeks.

At this stage, if ultrasound scans suggest healing is starting to progress, the aim moves from anti –inflammatory treatment to rehabilitation in trying to stimulate the best possible repair to the injury. The avascular nature of the tendons limits the quality of the healing process. The aim from this stage forward is to provide a tendon that functions as close to its previous capacity as possible. This requires a gradually increasing degree of loading of the limb.

If movement is completely restricted for a protracted period of time the scar that forms as the tendon heals is not as elastic as required for exercise, as it has experienced only minimal forces of weight-bearing.

For this reason horses are started on the walker after swimming for a period of 6-8 weeks, allowing the tendon to start healing with a small degree of loading to gain elastic function in the scar.

Depending on the progression of healing visualised on ultrasound scans at this stage the horse can return to ridden trotting exercise on a sound surface as well as swimming. The period of this exercise massively varies depending on the severity of injury, but as a guide is 6-12 weeks.

Performance

Once this trotting rehabilitation has been completed the owner and trainer have a decision to make. The best prognosis for the return of a horse to the track and successful performance without re-injury is if there is at least a year between the date of injury and a return to racing.

Published statistics state that 80-90% of horses with tendon injuries which return to the track within a year re-injure the previously affected tendon, as opposed to 60-70% of horses which return to racing a year or more after the date of injury. For this reason it is often decided to turn the horse out in a field, allowing the tendon to continue to heal while being mildly put under pressure as the horse moves around the field and has the occasional canter, free of tack and a jockey. A graduated canter exercise regime on a sound surface is advised once the horse is fit to resume training.

AS highlighted above, the re-injury rates for flexor tendon injuries are significantly high and of severe concern to trainers and vets. For this reason we act immediately to treat any suspicious injuries where heat, pain and filling in the flexor tendons are found.

Such injuries are relatively rare in Flat racehorses and are more commonly found in National Hunt racehorses where longer race distances, variable ground conditions and the increased age of horses in training increase the risks of these injuries occurring.

- **Here at Mark Johnston Racing we have, as well as our experienced full-time vets, an ultrasound scanner on site, so any suspicious injuries are immediately scanned and monitored on a regular basis -- daily if necessary -- to assess the injury and then its treatment. All such expensive costs are covered in the MJR all-inclusive daily training rate.** ■

The MJR veterinary team

Neil Mechie

At Mark Johnston Racing, the peace of mind of our owners is a priority. This is why we have included the vet fees in our inclusive daily rate for horses in training.

Neil Mechie did his veterinary degree at the University of London. He then worked for 14 months as an intern at the Minster Equine Hospital, York, where his duties included surgical and colic work. After a spell at the specialist equine practice of vet Simon Stirk, near Ripon, Neil worked for six months at Clevedale Veterinary Practice at Guisborough.

Neil's keen interest in racing is heightened by the fact that he has a point-to-pointer, and when not kept busy with work by Mark, Neil spends time looking after his border collie.

John Martin

John Martin is from the town of Stradbally in County Laois in Ireland's Midlands. He was raised on a farm and from a young age had ambitions to be a vet.

He trained at University College in Dublin and it was there that he first took an interest in horse racing, which nurtured an ambition to eventually specialise in working with horses as a vet.

After graduating he took up a post at a veterinary hospital in Navan, County Meath, before moving to England to join a practice in Louth, Lincolnshire.

He joined MJR at the start of 2010, staying for more than two years before returning to Ireland for a brief spell and then resuming his position at the yard in April 2013.