DEGENERATIVE SUSPENSORY LIGAMENT DESMITIS

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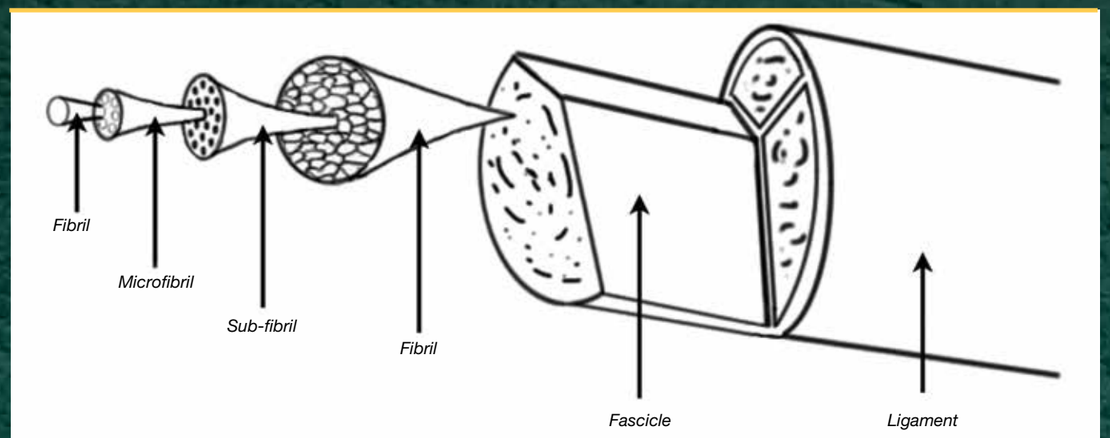
DEGENERATIVE SUSPENSORY LIGAMENT DESMITIS (DSLD) IS A RELATIVELY RARE AND LARGELY UNKNOWN DEBILITATING SYNDROME. IT WAS DISCOVERED RELATIVELY RECENTLY IN 1993 BY DR. JAN YOUNG. IT AFFECTS MULTIPLE LIMBS AND IS CHARACTERISED BY A WIDESPREAD, PROGRESSIVE DEGENERATION OF THE COLLAGEN OF THE SUSPENSORY LIGAMENT AND SUBSEQUENT ENLARGEMENT OF THE SUSPENSORY TISSUE LEADING TO PAIN AND SEVERE LAMENESS. UNFORTUNATELY DSLD FREQUENTLY CAUSES A PERSISTENT LAMENESS WHICH IS OFTEN INCURABLE AND ULTIMATELY RESULTS IN THE AFFECTED HORSE HAVING TO BE EUTHANISED.



THE SUSPENSORY LIGAMENT AND ITS COMPOSITION:

The suspensory ligaments are extremely important structures in the horse, their principle function being to prevent hyperextension of the fetlock. A ligament is fibrous band which connects two bones together. Both tendons and ligaments have a similar hierarchical structure; the ligament is divided into multiple fascicles which, in turn are composed of progressively smaller sub-units, as shown in the diagram below. Please note that this is a schematic diagram and does not accurately represent the true anatomy of a ligament.

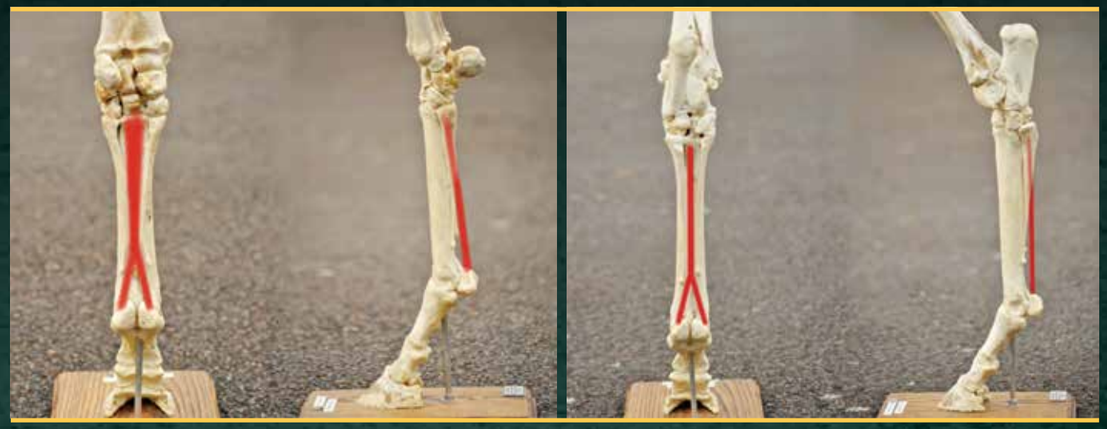
Fibrils are the smallest sub-unit and are composed of a structural protein called collagen, which is the most abundant protein in mammals making up 25-35% of whole-body protein.

In the hindlimb the suspensory ligament (SL) originates principally from third metatarsal, or cannon bone. In the forelimb it originates from the third metacarpal, or cannon bone and also a ligament at the back of the “knee”, or carpus. In both the forelimb and hindlimb it then courses downwards along the back of the cannon between the two splint bones. When the ligament reaches the mid-cannon region it divides into two branches which continue distally to insert on either of the proximal sesamoid bones at the back of the fetlock, thus supporting the fetlock joints and limiting hyperextension. The picture at the top of the following page shows the course of the main part of the ligament and shows how the ligament performs it’s function of supporting the fetlocks.

CLINICAL SIGNS:

DSLD can occur in most breeds of horses but has a higher prevalence in certain breeds. These breeds include the Peruvian Pasos and Peruvian Paso crosses, Arabians, American Saddlebreds and American Quarter Horses.

In Peruvian Pasos and their crosses, lameness is usually gradual in



This picture on the left shows the bones of the distal forelimb with the suspensory ligament represented by the red line. The picture on the right shows the same but with the hindlimb

onset with no history of trauma or performance related injury. In breeds other than Pasos typically develops in horses that have intense workloads or have sustained a prior suspensory desmitis.

Lameness is often bi- or quadrilateral, meaning it affects two or all four limbs, with the degree of lameness ranging from stiffness to overt. Mild to severe pain can be elicited on palpation of the ligament. In Pasos, the disease tends to be limited to the branches of the ligament after it has divided and not the more proximal part, or body of the ligament.

Other clinical signs of DSLD include effusion (swelling) and hyperextension (dropping) of the fetlock joints (both at rest and when the horse is moving). This hyperextension occurs because the diseased ligament becomes unable to support the fetlocks in the normal position.

There are also anecdotal reports of horses with clinically diagnosed DSLD dying suddenly, without any other precipitating cause.

DIAGNOSIS:

An ultrasound examination of the suspensory ligaments is often the most useful diagnostic tool in reaching a presumptive diagnosis of DSLD. However, its value is limited by both the quality of the ultrasound machine and the experience of the clinician performing the scan.

Ultrasonography of affected ligaments is characterised by a diffuse loss of echogenicity and an irregular fibre pattern. Progressive diffuse enlargement of the affected ligaments despite exercise restrictions is a distinctive feature of DSLD. It is often useful to scan the suspensory ligaments of all four limbs, even if the disease is thought to only be bilateral. Repeated ultrasound examinations are useful for monitoring the progression of the disease, especially in cases that initially have only mildly enlarged ligaments.

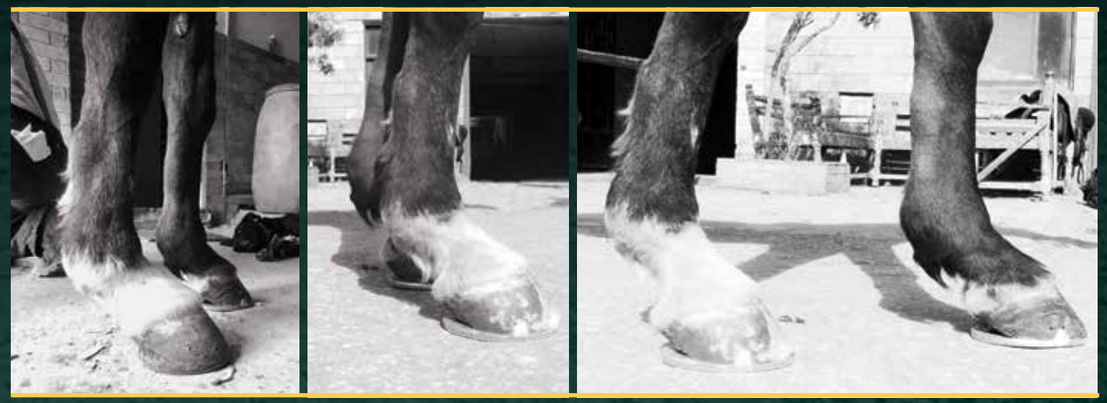
A presumptive diagnosis can be made with a combination of signalment, history, clinical examination and ultrasonographic findings. Unfortunately at present, a definitive diagnosis can only be made after the horse has been euthanised, when tissue samples can be taken and prepared for histology (the microscopic examination of tissues).

PATHOGENESIS:

The cause of DSLD is currently unknown, but it is thought to be multifactorial. The pathogenesis (how the disease develops) of DSLD has also not been fully determined but defective ligament healing by abnormal fibroblasts is thought by some to play a role. Normally fibroblasts in ligaments produce collagen in response to micro-damage as part of the healing mechanism. In DSLD however, the abnormal fibroblasts seem to produce fibrocartilage instead and as more micro-damage occurs, more fibrocartilage is laid down. This progressive alteration in the normal healing mechanism leads to a failure in the collagen fibres that constitute the ligament. This results in loss in the tensile strength of the ligament. As the disease progresses the ligament gradually loses its structure and becomes unable to perform its function of supporting the fetlocks.

DSLD is thought to follow familial lines and whilst this has still to be scientifically proven, the disease does show some similarities to several hereditary diseases afflicting connective and musculoskeletal tissues in people. For this reason many believe that this genetic link may be established in the future. It is therefore not recommended to breed from any individuals that are thought to have had the condition or that are closely related to affected horses.

Historically the syndrome has thought to be limited to the suspensory ligaments of the distal limbs of horses. However one scientific study has reported that



The effects of DSLD, photos taken by an expert vet in Cairo

DSLD is a systemic condition affecting organs and tissues with a significant connective tissue component. Affected tissues documented included the deep and superficial digital flexor tendons, patellar ligaments, aorta, coronary arteries and nuchal ligaments. Conversely, another study which tried to repeat the findings did not find changes in any tissues other than the SL and flexor tendons.

TREATMENT:

Unfortunately at present there are no known effective therapies to prevent, inhibit or reverse the disease. Treatments are therefore empirical and supportive and do not alter the progression of the disease. These include anti-inflammatory drugs, such as bute, in an attempt to alleviate the pain. Suggested management and treatment of affected horses include box rest (stall confinement), which may improve the level of comfort. However a recent study found that exercise did not worsen and, furthermore, may improve the clinical signs of DSLD in mildly to moderately affected Paso Finos and Peruvian Pasos. Results from this study suggest that exercise may have a positive effect on some of the signs associated with early DSLD and may have the potential to improve the healing capacity of the damaged ligament. However this study had several limiting factors and further work is needed to confirm these findings, both in horses with similar and more severe signs. With current knowledge lacking we feel that it is extremely dangerous to recommend exercise as a management or treatment strategy.

SUMMARY:

We still have a lot to learn about DSLD. A definitive antemortem diagnostic test and an effective treatment and/or management strategy are both lacking and vital for successful outcome of cases. More research into the pathogenesis and histopathology of the condition is required so that we can develop a better understanding of how the disease develops and in which tissues. It is likely that the genetics will play a key role in helping us reach these goals.

If you suspect your horse is suffering from the condition the horse should be box rested (stall confinement) until a veterinary surgeon can examine the horses and will be able to arrange for an ultrasound examination to be undertaken.

About the author: Matthew T Swarbrick BVSc MRCVS is an Assistant in Diagnostic Imaging at Rossdales Equine Diagnostic Centre. He graduated in 2010 from the Liverpool University Veterinary School and subsequently undertook a two-year internship at a large equine practice in Newmarket. This was followed by a short period as locum in mixed practice in Cheshire, where he undertook mainly equine work before joining Rossdales in March 2013. His particular areas of interest are imaging and lameness.

DSLD FACTS:

The cause of this devastating and mysterious disease is unknown; however, it is likely genetic.

Its chief symptoms include periodic and unexplained lameness, swelling, and dropped fetlocks, but can include skin sensitivity and tripping/falling without cause.

Found mainly in Paso Finos, Arabians, American Saddlebreds, Quarters, and Thoroughbreds.

It is thought to be incurable but there are pharmaceutical and natural pain reduction treatments available.

Serious research is being undertaken to study this disease, including Dr. Eleanor Kellon's nutritional support study at http://www.drkellon.com/aboutdrkellon.html

For more information regarding this disease, its symptoms, and possible palliatives, this DSLD Group is very supportive and helpful: groups.yahoo.com/group/DSLD-equine