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# If Only They Could Talk



Our regular focus on equine health. This month vet **JOHN MARTIN** discusses the muscle disorder commonly known as 'tying-up'.

USUALLY REFERRED to simply as 'tying-up', the condition Exertional Rhabdomyolysis (ER) causes generalised muscle pain and cramp in horses following exercise. There are two forms of the disorder: Sporadic and Exertional.

Sporadic ER most commonly occurs in horses exercised beyond their level of fitness, particularly following a period of rest. An accumulation of metabolic wastes produced during exercise, such as lactic acid, causes detrimental changes in the acid-base balance of the blood, and changes in muscle pH, electrolyte balance and blood flow to the muscles. These changes cause muscle fatigue and pain. In some cases ER is seen to coincide with herpes or influenza viral infections.

Recurrent ER affects (RER) approximately 5% of thoroughbreds. It is believed to be caused by an inherited condition which affects the regulation of calcium levels within cells, resulting in episodes of tying-up of varying severity. It tends to be more frequent in fillies and horses which are 'flighty'. It can be triggered by stimuli such as high levels of dietary carbohydrates or prolonged or intense exercise.

THE most common sign of ER is firm and painful muscles over the back and rump. Horses which have tied-up also sweat excessively, have an increased heart rate and muscle tremors. In extreme cases the horse may be reluctant to move and will produce dark urine due to the release of a protein called myoglobin from the damaged muscle tissue.

A presumptive diagnosis of tying-up can be made by clinical signs, but a definitive diagnosis is based on a blood test which measures the levels of two enzymes in the blood, creatine kinase (CK) and aspartate transaminase (AST). CK and AST are released into the blood stream from damaged muscle cells within hours. Levels of CK will rise very quickly and then normalise quickly following a tie-up. AST will take longer to peak and then longer to normalise. The levels of muscle enzymes in the blood reflect the severity of the tie-up.

AS soon as a horse is suspected of having tied-up, all physical exercise must cease to avoid further muscle damage. Intravenous non-steroidal anti-inflammatories are indicated and a course can speed recovery. Severe cases of ER may require intravenous fluids and electrolytes.

ER can be managed by a balanced diet and a well-designed exercise programme which avoids sudden increases in the levels of work undertaken. Horses which are prone to RER should be given extra horse-walker exercise before routine work. Turnout in a paddock is also beneficial.

With regard to diet, increasing the levels of dietary fat and decreasing levels of carbohydrates as a source of energy is beneficial to horses prone to RER. The mechanism for this is not fully understood. It is possibly due to exclusion of dietary carbohydrates rather than specific protective effects of dietary fat. Also, given the relationship between nervousness and RER, the benefits of

increased dietary fats and decreased dietary carbohydrates may decrease predisposition to RER by making these horses calmer prior to exercise.

It is also crucial that the horse receives adequate levels of vitamins and minerals in the diet. Vitamin E and selenium are particularly important as they prevent the interaction of harmful peroxides with the cell membrane. Dietary imbalances of sodium, potassium and calcium have been connected with ER cases. It is important that the horse has access to a salt block and also to a constant supply of fresh water.

A final treatment option in cases of RER is a drug called dantrolene. Dantrolene is a skeletal muscle relaxant used to treat muscle soreness, cramping and spasticity in humans. It works by blocking channels in the cell wall preventing the release of excessive quantities of calcium into the cell. Horses prone to RER are given an initial high dose which is tapered over a two-week period.

EXERTIONAL Rhabdomyolysis is a common condition which is usually seen in mild forms and can be treated and usually managed if good practice is observed. Here at Johnston Racing we are on site at all times to treat any possible cases immediately. This is essential to limiting muscle damage.

As with all veterinary services at the yard, the cost of diagnosis and treatment is included in the daily training rate.