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There are few situations encountered by racecourse veterinary surgeons that are more important and potentially stressful than when assessing the acutely recumbent horse; despite this, prior consideration and planning and a methodical approach greatly aid in making this difficult situation easier. Furthermore, a calm, efficient and decisive manner will generate the confidence of the inevitable spectators and reassure the public that the best possible care is being administered at this emotive time.

**PLANNING**

1. Make sure that you are familiar with the racetrack, in particular with the course itself and its accessible exits and entrances.
2. Liaise with and have radio contact with or ready access to mobile telephone numbers of:
   a. Veterinary colleagues at the course and at nearby support / referral practices
   b. Race meeting organising committee members and the Clerk of the Course
   c. Horse ambulance driver
   d. Ground staff
   e. Recovery vehicle driver
3. Check adequate supplies of sedatives and other first aid drugs, splinting materials etc.
4. Check adequate supplies for euthanasia (sound moderated weapon and ammunition / somulose).
5. Test winch and mat and check that strong ropes and a spare, strong (preferably nylon) halter/head collar are available.
6. Post mortem knife; +/- bone saw.
7. A digital camera is useful.

**ASSESSING THE RECUMBENT HORSE**

Clearly it is imperative for all concerned that you reach the scene as quickly as possible and take control of the situation. Simple and clear directions should be given to support staff or assistants on your arrival to provide help while examining the horse.

1. If the fall was observed, note the circumstances and the stage of the race.
2. Ensure the safety of others, including other jockeys, spectators and horses.
3. If necessary call for the ambulance.
4. Direct ground staff to erect screens as soon as possible.
5. If racing horses have to make another circuit, direct ground staff to ‘dolly off’ the fence.
6. IN SOME CIRCUMSTANCES IMMEDIATE EUTHANASIA WILL CLEARLY BE WARRANTED (see below).
7. Have the jockey and / or ground staff remove saddle and other tack, but leave the bridle.
8. Consider placing an additional strong head collar on the horse and attach a long lead rope to it. Give the rope to a trusted assistant.
9. In certain circumstances it may be necessary to move the horse via the drag mat immediately to a safer area.
10. Try to obtain a history, in particular prior to the fall, the nature of the fall itself and events since.
CLINICAL EXAMINATION

Perform a thorough and methodical clinical evaluation, starting from the horse’s head. Avoid feeling excessively rushed or pressured while considering the most appropriate course of action. It is common for conscious but recumbent horses to thrash their head and limbs in attempts to stand. If no injury is immediately apparent, the horse can be allowed a brief attempt to stand, however, if unsuccessful, it may then be necessary to have an assistant sit on the horse’s neck, holding the head extended. Try to work from the dorsal (rather than the limb) side most of the time. During your clinical examination it may prove necessary to sedate the horse, although avoid this if possible. Generally up to double the normal sedation dose of alpha2 agonist is required.

HEAD

1. Check that the airway is patent and evaluate the breathing and respiratory rate.
2. Determine whether the horse is conscious and evaluate demeanour.
   a. Look for evidence of voluntary movement, pain and vocalisation.
   b. If required, elicit withdrawal-type responses. e.g. pinch nostrils
3. Take and evaluate quality of pulse. Check mucous membranes and capillary refill time.
4. Examine pupils for abnormal dilation, position and evaluate blink and pupillary light reflexes.
5. Look for evidence of haemorrhage or CSF from ears, or nostrils etc.
6. Palpate the bones of the skull and manipulate the atlanto-occipital joint.

NECK, TRUNK AND LIMBS

7. Auscultate heart and thorax.
8. Examine neck and palpate the vertebrae looking for evidence of pain, crepitus or swelling.
10. Palpate / manipulate musculature, limbs and pelvis. Evaluate potential fractures in distal aspects of dependent limbs by lifting them axially.
11. Evaluate tail and anal tone and consider performing a rectal examination to examine pelvic integrity or possible internal haematoma formation.
12. If you suspect spinal cord trauma, attempt an evaluation of limb withdrawal (flexor) reflexes by eliciting a firm and acute stimulus in distal limb. (See comments below regarding examination of other reflexes).
13. At this point approximately (10-15 minutes) the horse should be turned over using ropes and assistance. Make sure that there is someone in control of the horse’s head. Frequently this procedure will result in the horse either standing up or making attempts to stand. It may reveal the presence of more proximal trauma or fracture of the previously dependent thoracic or pelvic limb.
14. At the end of the examination re-evaluate the pulse, capillary refill time and any abnormalities that were previously detected.
15. IF IN DOUBT, SEEK A SECOND OPINION.

CAUSES OF RECUMBENCY

It is worth remembering that most severe injuries that subsequently result in the horse’s death or that require euthanasia are unlikely to be affected by the nature of your examination or heroic attempts at treatment. Crucially though, it is in reaching a decision for euthanasia where most problems will be encountered, especially if the cause of the recumbency is not immediately apparent.

The Winded horse

The majority of horses that remain recumbent following a fall, particularly if it has occurred towards the end of the race, are ‘winded’. Although overstimulation of pulmonary stretch receptors has been implicated in this syndrome it may simply be evidence of exhaustion. Generally these animals remain still with
strong, sometimes laboured breathing. The capillary refill time will be rapid and the pulse strong and regular. Musculoskeletal and neurologic abnormalities will not be detected. Often given time, the horse will stand without assistance however if not, and after 15 minutes or when the respiratory rate has declined to approximately 30 breaths per minute, turn the horse to fully evaluate the dependent limbs. If no injury is detected roll the horse into sternal recumbency and straighten the forelimbs out in front of the horse. Generally winded horses will stand at this point, particularly if encouraged and aided with support at the tail. When standing and walking, these animals may subsequently appear weak and uncoordinated so they need checking later to confirm that ataxia is not a consistent or primary problem.

**Cardiovascular collapse**

With cardiovascular collapse, often the recumbency is preceded by the horse pulling up, staggering and collapsing especially if acute cardiac failure, large vessel rupture or dissecting aneurysm is the cause. Death often ensues rapidly, however rupture of an internal artery (e.g. following pelvic fracture), may result in deterioration over time. Although sometimes difficult to assess in the tachycardic animal, cardiac auscultation may be abnormal as will pulse quality and capillary refill time.

More gradual cardiovascular compromise can occur following injury and haemorrhage from internal organ trauma, sometimes following rib fracture. Most horses with simple rib fractures (though painful) will stand and so if the animal remains or becomes recumbent, suspect other internal injuries, and the possibility of internal haemorrhage.

**Musculoskeletal injury**

Distal limb fractures are generally easily detected; more proximal fractures and luxations may only become apparent after turning the horse or when it attempts or has been able to stand. These latter injuries are sometimes accompanied by a rapidly developing haematoma and swelling within the proximal musculature and correspondingly, cardiovascular compromise. Pelvic fractures may be difficult to diagnose, even by rectal examination, especially those of the ileal wing: repeated evaluation may be necessary.

**Central Nervous System trauma**

*Spinal Cord:* Vertebral trauma and corresponding spinal cord damage is relatively common, especially in National hunt (particularly steeplechases) and point-to-point races. Vertebral fracture or subluxation may cause acute transection of the spinal cord, but more often the immediate damage is associated with concussive-type injury and haemorrhage. Worsening neurologic status over several hours is likely to be associated with cord oedema formation. Atlanto-occipital and caudal cervical sites are most common, particularly in horses that have somersaulted or fallen with the neck in extreme flexion. Severe proximal and mid cervical lesions may cause rapid death. Thoracic or lumbosacral injuries are less common and are generally associated with a horse landing on its back following a fall.

Examining the neurologic status of a recumbent horse that has fallen during racing can be difficult: responses and reflexes that are normally easily elicited may be absent in an animal under extreme sympathetic stimulation. Assessment of attempts to rise can provide a clue to the site of the injury. For instance, a horse with voluntary movement of the neck or head, but not the limbs, probably has a cervical injury; if the head alone can be moved then the injury is likely to be in more cranial spinal cervical segments. A horse that dog sits, with good strength in the thoracic limbs likely has an injury caudal to T2.

Involuntary limb withdrawal reflexes caudal to the site of the injury are likely to be exaggerated or hyperactive. Without experience, patella reflexes can be difficult to assess, however if a brisk, exaggerated and reproducible reflex is detected, this is likely to be significant, suggesting injury cranial to the L4 spinal segment. Injuries at the thoracic (C6-T2) or pelvic (L5-S3) spinal cord segments are generally associated with reduced or absent withdrawal reflexes in the affected limbs. Reduced patella reflexes are difficult to evaluate.
Head: Trauma to the head is relatively rare, although it can occur following a horse collapsing for another reason. In this case, the history is especially pertinent. These injuries are often associated with coma, or a progressive decline in mental status as haemorrhage and / or cerebral oedema develops. Cranial trauma may be associated with seizuring. Note however that a conscious horse that is struggling to right itself, often displays paddling movements.

One particular head injury often occurs when a horse flips over backwards, striking the poll. This is frequently associated with basisphenoid fracture, longus capitis muscle rupture and haemorrhage, acute vestibular (sometimes bilateral) signs with corresponding nystagmus and progressive, severe ataxia and weakness.

Neurologic signs are associated with damage to the overlying brainstem, cranial nerve roots and inner ear(s). Mild haemorrhage emanating from one or both guttural pouches may be apparent at the nostrils. It is not uncommon for these animals to have unilateral or bilateral sudden onset of blindness with an absent menace reflex and dilated, fixed pupil(s) following optic nerve avulsion.

TREATMENT OR EUTHANASIA

These decisions generally require a considerable degree of pragmatism: they are influenced primarily by welfare concerns for the horse, the prognosis and the owner’s wishes, but also the insurance status and the horse’s value, especially if it has breeding potential. The following treatments during the immediate post recumbency period may be of benefit and will be reassuring to spectators:

1. Nasal insufflation of oxygen to a recumbent horse in respiratory distress or with cardiovascular compromise. If necessary via nasotracheal intubation.
2. High dose (60-100mg) dexamethasone IV to a horse with suspected CNS trauma.
3. Intravenous analgesia (NSAID and/or butorphanol).
4. Diazepam (IV) 20-100mg to effect for seizures.
5. Other emergency treatments as determined by physical examination, such as sedation, wound cleaning, splinting, antibiotic administration and IV fluid support.

Immediate euthanasia is indicated if your clinical assessment indicates a hopeless prognosis particularly in easily identified severe vertebral trauma cases and many catastrophic limb fractures. If in doubt however, do not rush your decision and seek a second opinion if possible.

Written or witnessed owner permission for humane destruction is advisable, although not an absolute requirement under the Rules of Racing. If an insurance claim is likely to be sought, post mortem evidence is generally required, and photographs taken with a digital camera can be helpful.

In general, if a conscious horse has made no attempt to rise by 1 hour then humane destruction is in most cases warranted. In horses displaying significant neurological compromise, euthanasia is probably indicated if signs remain without improvement for 1 to 4 hours, or before if signs are especially severe or deteriorate despite your treatment. Note however that the use of sedatives may delay successful attempts to stand.

In a comatose or semicomatose animal and if circumstances allow, a more prolonged assessment may be indicated: many horses that regain consciousness will do so within a few hours. More aggressive treatment to limit the development of central nervous system oedema (e.g. 20% mannitol, 0.5-1 g/kg IV) is warranted during this time as is systemic fluid therapy. Persistent dilation and fixation of the pupils however carries a poor prognosis and suggests the probable need for euthanasia. In rare and extenuating circumstances, (if attempted), a more prolonged recovery (days) is possible; however management in such cases carries a number of additional problems and should only be contemplated following particularly careful consultation with owners, insurance companies and referral veterinary practices.
MOVING A RECUMBENT HORSE

On occasion it may be deemed necessary or appropriate to move a recumbent horse. For short distances this can be performed via the drag mat in the conscious sedated animal with appropriate restraint. Rarely, longer distance transportation in the horse ambulance may be better and more safely accomplished with the animal anaesthetised. A combination of ketamine (2.2 mg/kg) and diazepam (0.1 mg/kg) via an indwelling catheter for induction of anaesthesia in the already sedated animal is appropriate. Maintenance of anaesthesia can be accomplished with ‘triple drip’ (guaifenesin 100 mg/ml; ketamine 2 mg/ml and xylazine 1 mg/ml in 5% dextrose) at 1-2 ml/kg/hour.

REFERENCES