

Neurological assessment of veterinary patients recovering from severe thoraco-lumbar spinal injuries

Dir Sir,

Patients with moderate to severe lesions of the thoracolumbar spine often have a protracted recovery time in the hospital before they can be discharged. This situation is often seen with herniation of degenerated discs in chondrodystrophic breeds or in patients with spinal trauma. The long-term care of these patients is often delegated to veterinary technicians or to the nursing staff of the hospital. It is important to determine the neurological status of the patient on a daily basis in order to monitor improvement of the patient and to determine if any deterioration has taken place. The parameters that are important in the recovery of severely affected patients are the return of deep pain perception (DPP), voluntary motor activities and voluntary micturition. The author has developed an assessment system for paralyzed patients (Table 1), that was found simpler to use and more appropriate than the standard classification system.

The original classification system that is used to determine the status of a patient presenting with clinical signs of degenerative disc

disease of the thoracolumbar spine uses the presence of back pain, the presence or absence of proprioception, the presence or absence of motor control, and the presence or absence of deep pain perception (1).

The classification, as used by Scott to determine the neurological status of patients that had surgery for disc herniation, is similar to the pre-operative classification, but includes some bladder dysfunctions (2).

Although the presence of deep pain perception is a positive sign, the absence thereof in the immediate post-operative period is not necessarily a reason for a poor prognosis (2). The interpretation thereof may be difficult, and thus the author prefers to do the evaluation himself, but a trained nurse could also do it. The author is not in favour of daily pinching of the toes of patients that have regained voluntary muscle function as they will have DPP or will regain deep pain. These patients need not be assessed for DPP unless deterioration occurs. Proprioception may take months to recover properly and is often permanently diminished. It is therefore not a valid parameter for assessment of the paralysed patient. The only clinical parameter that was found useful in predicting the time to ambulation was the presence of voluntary motor control immediately after the surgery (3), but this is not really useful for patients without motor control. Motor control can recover slowly and in different muscle groups. The standard assessment does not recognize different levels of motor control and can fail in identifying subtle deterioration.

Most patients with reversible damage to the spinal cord will show some sign of neuro-

logical recovery in the first two to four weeks (2, 4). Once the first signs of recovery are noted, there will usually be a progressive return of function, unless there is something hindering the recovery, such as remaining or new pressure on the spinal cord, infection, or permanent partial damage to the cord. In the experience of the author, the return of these functions will not always be in the same order, especially voluntary micturition, mainly due to the fact that males suffer more from upper motor neuron spasms causing dysuria. It is however important to monitor the progression in each individual. It is also very important to identify any deterioration of a patient, especially in chondrodystrophic breeds with disc herniation, as further herniation is a well known complication after surgical decompression (4, 5).

Because of the protracted recovery of many patients, it helps if one of the nursing staff can do the daily assessment. If different clinicians are involved, it is also helpful if there is an easy scoring system to follow the progress of each patient.

Based on observations of over 320 cases, the author has developed an easy scoring system, whereby a member of the nursing staff can do an evaluation and assign a score to each patient. It then becomes easy to follow the progress of each patient and to identify any problems that may arise. The scoring system is based on the following events:

- Unprovoked painfulness or the presence of pain perception over the back,
- The presence of deep pain perception
- Appropriate voluntary movement of the tail,
- Voluntary assisted weight bearing, i.e. motor function,

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Table 1 The table that is used on the hospital chart.

NEUROLOGICAL ASSESMENT								
Scores are given as negative = 0 or positive = 1					Pain is scored as -1		Previous Score	
Painfulness over back	Deep pain perception	Voluntary tail movement	Voluntary weight support	Unassisted weight support > 5 seconds	Voluntary micturition	Intentional movement of legs	Getting up by itself	Total

- Voluntary unassisted weight bearing for more than 5 seconds (when the patient has been placed on its legs),
- Voluntary micturition as confirmed visually or by palpation of an empty bladder,
- Intentional movement of the back legs,
- Getting up by itself.

The presence of painfulness is noted as -1, as this is a negative symptom and needs attention by a clinician. Each of the other events is assigned as either absent = 0, or present = 1. The total score is noted daily on the hospital charts and compared to the previous score. Any score above zero means that there is some form of neurological function present. Once any voluntary motor function is present and DPP has been shown, the author accepts that deep pain will be present and will be marked as such. The score can easily be monitored by the clinician to monitor the progress of the patient. This system was found to be very helpful in identifying any deterioration of a patient. It is also a handy tool to show owners the progress of their animals.

This is not necessarily an alternative to the standard classification, but rather an easy monitoring method that can be used by the nursing staff for specific patients, during their long term recovery.

The presence or absence of painfulness when handling the animal can alternatively be noted separately on the hospital chart. The presence of painfulness may indicate post operative pain, infection or pressure on the nerve roots due to the inadequate decompression or subsequent herniation and should always receive attention by the clinician. The absence of painfulness does however not always mean anything positive relating to the neurological status and may even be as a result of severe cord damage with desensitization.

If the clinician notes that there is no progress of the patient, that painfulness has been noted, or that there is a deterioration of the score, a full physical and neurological examination should be performed and the treatment should be reassessed.

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Peri-operative care afforded to research animals

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Dear Sir,

Recently, I was criticised by a colleague, for not providing an appropriate description of the peri-operative care afforded to my research animals (Vet Comp Orthop Traumatol, 2009; 2: 87–95). I wholeheartedly concur with his com-

ments and write to the journal to 'set the record straight'!

All of my research animals receive pre-emptive antimicrobial, anti-inflammatory and analgesic agents. These are in the form of first generation Cephalosporins (22 mg/kg I/V) administered before and during the surgical procedure; thereafter they are discontinued. Meloxicam is administered in the same manner at an appropriate level. Analgesia is provided pre-emptively with xylazine (known to be a good species-specific drug for analgesia in the sheep). Xylazine is continued for three days minimum post-operatively via an indwelling jugular catheter (0.5 – 1.0 mg total dose per hour). Continuous infusion is achieved using a backpack-mounted syringe driver system.

Should I be performing cruciate ligament reconstructive surgery, lidocaine is instilled into the joint during the skin preparation. Mepivacaine is instilled at the time of joint closure. It is well documented (particularly in humans), that the pre-emptive blockade of the sensory perception of pain, prior to surgical intervention, decreases the reliance on post-operative analgesia.

I apologise to the journal and to its' readers for this oversight. It is only through keeping our readership informed that we can make true progress on optimising the care afforded not only to research animals, but in clinical cases as well.

Yours sincerely,
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