- Understand the aetiology and epidemiology of status epilepticus in dogs and cats
- Learn how to stabilize patients with status epilepticus and the range of first-line treatments available to stop seizures effectively

MULTIPLE CHOICE QUESTIONS

1. How can status epilepticus be defined?

- (A) Continuous seizure activity, greater than 5 minutes in duration, or more than one discrete seizure without regaining a normal level of consciousness between seizures
- (B) Two or more seizures in a 24-hour period
- (C) Continuous seizure activity, greater than 2 minutes in duration, or more than one discrete seizure without regaining a normal level of consciousness between seizures
- (D) Hypersynchronous neuronal electrical activity in the cerebral cortex

2. Which of the following can occur during the compensatory response to status epilepticus?

- (A) Decreased cerebral blood flow, hypotension and hypoglycaemia
- (B) Increased cerebral blood flow, systemic hypertension and tachycardia
- (C) Increased cerebral blood flow, systemic hypotension and tachycardia
- (D) Decreased cerebral blood flow, hypertension and hyperglycaemia

3. Which of the following are key drugs used in the emergency stabilization of status epilepticus?

- (A) Benzodiazepines, levetiracetam, potassium bromide
- (B) Benzodiazepines, levetiracetam, phenobarbital
- (C) Ketamine, levetiracetam, phenobarbital
- (D) Ketamine, levetiracetam, potassium bromide

Spinal emergencies: when to refer and when not to

Patrick Kenny

Referral from general to specialist practice is generally required for advanced imaging and surgical treatments. The decision to refer is going to be based on the initial presumptive diagnosis, the tentative prognosis based on the presumptive diagnosis and severity of neurological signs, as well as owner factors (financial limitations, geographic location and ability to transport to a referral centre).

Patients that have been witnessed to have an external trauma are usually not a diagnostic challenge. If no trauma was observed or evidenced on examination, other causes of acute myelopathy (such as intervertebral disc herniation, ischaemic myelopathy, meningomyelitis or spinal neoplasia) should be considered. A combination of patient data (signalment), historical data (onset and progression of clinical signs) and examination data (neurolocalization, degree of symmetry of neurological signs and the presence or absence of spinal pain) are helpful in formulating and ranking a list of differential diagnoses. Patients that have suffered an external trauma, or if there is a possibility or suspicion of a spinal fracture or luxation, should be immobilized on a spinal board immediately.

Prognosis after an acute spinal cord injury is going to be determined by the cause and the severity of

neurological signs prior to institution of (appropriate) therapy. For most causes of acute spinal cord injury (spinal fracture/location, intervertebral disc herniation, ischaemic myelopathy), the presence or absence of deep pain perception (DPP) is the most important predictor of recovery. As such it must be properly tested — using an unequivocally noxious stimulus (forceps on periosteum) and looking for a behavioural response that this has been perceived by the animal as pain. It should be tested prior to administering any analgesic medications that may blunt this response and result in the clinician giving the patient an inappropriately poor prognosis.

The majority of dogs with intact DPP will return to ambulation if their acute spinal cord injury is non-compressive or is rapidly surgically decompressed. Approximately 50% of DPP-negative dogs with intervertebral disc herniation that have surgery within the first 24 hours will return to ambulation, with prognosis diminishing rapidly as time progresses. Very few patients that were DPP negative after acute spinal fracture luxation have reportedly regained ambulation, urinary and faecal continence even after spinal stabilization. Owners should be informed of these prognoses before transport.

KEY LEARNING OBJECTIVES

- Understand that any rapidly progressing or non-ambulatory patient should be considered an emergency
- Recognize that prognosis may be time dependent so make your plan early — don't wait to offer referral if necessary
- Understand that patients with polytrauma and/or systemic abnormalities such as shock may need stabilization before transport

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MULTIPLE CHOICE QUESTIONS

1. You have just examined a 10-year-old German Shepherd Dog who, in the last few days has become progressively more ataxic and paraparetic. It has absent proprioceptive paw placing in its pelvic limbs and has brisk pelvic limb spinal reflexes. It is focally painful over its cranial lumbar spine. What is the most likely diagnosis?
 - (A) Intervertebral disc herniation
 - (B) Degenerative myelopathy
 - (C) Ischaemic myelopathy
 - (D) Spinal arachnoid diverticulum
2. You have just examined a 4-year-old Border Collie who became suddenly paraparetic after chasing a tennis ball at the park. It has very good voluntary movement in its right pelvic limb and very little voluntary movement in its left pelvic limb. It has absent proprioceptive paw placing in both pelvic limbs, good patellar

reflexes in both pelvic limbs, but a poor withdrawal reflex on the left pelvic limb compared to the right. It is not apparently painful on palpation of its limbs or spine. What is the most likely diagnosis?

- (A) Type I intervertebral disc extrusion
 - (B) Acute non-compressive nucleus pulposus extrusion
 - (C) Spinal fracture/luxation
 - (D) Granulomatous meningomyelitis
3. You have just examined a 1-year-old Labrador Retriever that has been reluctant to exercise and yelping when touched for the last few days. Its physical and neurological examinations are unremarkable except marked neck pain and a temperature of 40.1°C. What is the most likely diagnosis?
 - (A) Granulomatous meningomyelitis
 - (B) Steroid-responsive meningitis–arthritis
 - (C) Intervertebral disc herniation
 - (D) Spinal arachnoid diverticulum

Caring for non-ambulatory patients: ethical considerations and more

Patrick Kenny

Veterinary surgeons are commonly presented with paralysed pet animals because of spinal cord injury (SCI), spinal neoplasia, degenerative myelopathy or other cause. The treatment of these animals, particularly their maintenance as pets if prognosis for functional recovery is poor, can give rise to ethical dilemmas and induce a degree of 'moral distress' in the owner and/or veterinary staff. However, some pets under certain circumstances appear to tolerate paralysis and can have a good quality of life (QOL).

Clinicians are accustomed to using structured approaches to solve clinical problems. A rigorous structured approach to defining the ethical issues at hand, consideration of ethical concepts alongside patient and owner factors, and application of practical strategies to minimize the impact of the decision may greatly assist the clinician in resolving ethical dilemmas and formulating acceptable treatment plans.

A sound understanding of clinical ethics can help clinicians identify, understand and resolve ethical issues in practice. Most ethical issues can be resolved satisfactorily; competing goods are not usually problematic, competing harms or losses are more challenging, where

the best choice may be the 'least bad option'. The latter case may be considered a true 'dilemma' — not just a difficult choice, but a choice between two or more undesirable alternatives. A framework for solving ethical problems may distinguish ethical dilemmas from more unremarkable ethical issues.

Many practical approaches to resolving ethical dilemmas have been developed. Recurring components include:

- Establishing the medical facts: diagnosis, prognosis and co-morbidities. A frequently cited maxim amongst clinical ethicists asserts 'good ethics relies on good facts'
- Establishing what the ethical issues are, and their relative importance
- Establishing the concerns, values and preferences of the patient (or surrogate, or owner), shared decision making and obtaining valid consent
- Establishing what practical considerations must be addressed to minimize the impact of the decision.

The welfare of the animal should be the core consideration in resolving clinical–ethical dilemmas in veterinary medicine, taking primacy over all other concerns.

There are many factors that may impact the QOL of an animal (and owner of an animal) with paralysis, including: size, age, breed, species, temperament, underlying disease process, location of lesion (para- or tetraparesis), severity of paresis/paralysis, sensory deficits, urinary and faecal continence, co-morbidities, resultant change in lifestyle and ability to perform normal behaviours, and level and quality of rehabilitation and nursing care.

Strategies must be implemented to mitigate the physical and psychological impact of paralysis. Adequately caring for a paralysed pet requires considerable medical and nursing support. Urinary tract infections are

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