Neurologic Exam: The Essential Role of the Veterinary Technician

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Objectives:

- Understand how to perform a neurologic exam
- Understand the functions tested in the neurologic exam
- Demonstrate different restraint and handling techniques that will better assist with the neurologic exam

What is the purpose of the neurologic exam?

- Confirm that the patient has a neurologic condition
- Lesion Localization (i.e. neuroanatomical diagnosis)
- Form a differential diagnosis list so that diagnostics and treatment plans can be recommended

History questions for patients that have presented with seizure like activity:

- Can you describe the event you observed in detail, including behavior/mentation before the episode, during, and after?
- Did you notice anything happening on the pets face or head?
- Did one side of the body seem more affected than the other?
- Was there any urination or defecation associated with the event?
- Was the pet responsive to you or aware of you during the event?
- How long did it last?
- Is this the first time you have observed an episode like this? If no, are they getting worse? If yes, is it in severity or frequency?
- Are the events associated with anything such as feeding, stress, sleeping, or exercising?
- Have you noticed any mentation changes?
- Have any anticonvulsants, or any other medications recently been started? If so, when and at what dosages?
- Is there any possibility of accidental trauma, toxin, or drug exposure?
- Do you have a video of the episodes?

History questions for patients presenting with gait or spinal related problems:

- What do you observe the problem to be? Which limb(s) is (are) affected and what signs have you noticed?
- When did you first observe these signs?
- Did they appear quickly or slowly?
- Are they getting worse?
- Do you think the pet is painful? If so, where and why?
- Any possibility of trauma?

Equipment needed:

- Cotton Ball
- Transilluminator

- Cotton-Tip Applicator
- Reflex Hammer
- Hemostat

Exam Overview:

- Mentation
- Gait and Posture
- Cranial Nerves
- Postural Reactions
- Segmental Reflexes
- Conscious Responses

Examination Form:

- 2 = Normal, 1 = Decreased, 0 = Absent
- Exception: Segmental Reflexes also can be described as 3 = Hyper and 4 = Clonus

Onset and Duration of Clinical Signs

Onset can be defined as

- Peracute (minutes to hours)
- Acute (days to weeks)
- Chronic (more than several weeks)
- Episodic

Evolution of the condition should be recognized as:

- Progressive (getting worse)
- Static (staying the same)
- Improving (getting better)
- Waxing and Waning

Mentation: Best observed in a quiet environment with a non-slippery surface to better detect subtle deficits. Patients can best be observed in the exam room while taking a history, before handling the patient.

- Alert – Patient responds appropriately to environmental stimuli
- Obtunded – Patient is drowsy but arousable
- Demented – Alert level of consciousness, but exhibits abnormal behavior and responds inappropriately to stimuli
- Stuporous – Patient is in a sleep state but arousable with strong stimuli
- Comatose- Patient is unconscious and cannot be aroused even with painful stimuli

Posture – Technician's Role

- Patient should be allowed to stand where he/she is most comfortable
- Ground vs Examination Table (patient might be scared on the table causing a tucked tail which could give a kyphotic appearance)
- Avoid touching the patient as much as possible

Posture

- Normal
- Head Tilt (L/R) – One ear is lower than the other
- Head Turn (L/R) – Head is held level, but the nose is turned to the right or left
- Tremor – Rhythmical, oscillatory movement localized to one region (intention tremors) of the body or generalized to involve the entire body
- Falling (L/R)
- Opisthotonus – Dorsiflexion of the head and neck
- Circling (L or R, Tight or Wide)
- Kyphosis – HIGH, dorsal curvature of the spine
- Lordosis – LOW, ventral curvature of the spine
- Scoliosis – Lateral deviation of the spine
- Decerebrate- due to a brain stem lesion and is characterized by extension of all limbs and sometimes opisthotonus
- Decerebellate – due to an acute cerebellar lesion and characterized by opisthotonus, thoracic limb extension, and flexion of the hips
- Schiff-Scherrington – extension of the thoracic limbs with paralysis of the pelvic limbs. Lesion in the thoracic or lumbar spinal cord segments.

Gait – Technician's Role

- Walk the patient in as straight of a line as possible
- If your patient has or potentially has cervical pain, use a harness or loop one thoracic limb through the slip leash
- Always walk on the side opposite of the person viewing the gait
- If your patient has a tendency to circle, letting them off leash in an enclosed area can be helpful
- Be mindful of the use of different surfaces

Gait

- Normal
- Ambulatory – can take 10 steps or more unassisted
- Non-Ambulatory
    - Paraparesis – weakness in pelvic limbs
    - Tetraparesis – weakness in all four limbs
    - Monoparesis – weakness in one limb
    - Hemiparesis (L/R) – weakness of limbs on the same side of the body
    - Paraplegia – paralysis of the pelvic limbs
    - Tetraplegia – paralysis in all limbs
    - Monoplegia – paralysis in one limb

- Ataxia – inability to perform normal, coordinated motor activity
    - Proprioceptive – Characterized by clumsiness and incoordination resulting in wide-base stance and a swaying gait.

    - Vestibular – Leaning and falling to one side. Bilateral vestibular patients will often be seen with a crouched position, reluctant to move, and a side to side head movement.
    - Cerebellar – Inability to regulate the rate and range of movement. Characterized by hypermetria.

Cranial Nerves

- Vision - can be tested three ways
    - Menace
    - Cotton Ball Test
    - Obstacle Course
- Menace Response
- Pupillary Light Response
- Palpebral
- Physiologic Nystagmus
    - Small patients with cervical pain can be tested by picking patient up and moving side to side.
- Corneal Reflex
- Facial Sensation
    - Maxilla
    - Mandible
    - Pinna
    - Nasal Sensation (Response)
- Swallow/Gag and Tongue Movement

Cranial Nerve Observations

- Muscles of Mastication
- Spontaneous Nystagmus
- Strabismus
- Pupil Size
- Facial Symmetry

Postural Reactions

- Knuckling – Paw should be turned over so that the dorsal surface is in contact with the ground. Patient has one beat to return to normal. Most patients with orthopedic disease will have normal knuckling.
- Hopping – Hold the patient so that the patient's weight is supported by one limb and push the patient laterally
- Placing (awesome for cats!) – Nonvisual is performed first. Animal is moved toward table or other object. Once the paw touches the table, the animal should immediately place the paw on the surface. With visual, the normal response is for the paw to be placed as it approaches the surface.
- Hemiwalking – Hold up the limbs on one side of the body and move the patient laterally
- Wheelbarrow – Support the patient under the abdomen so that the pelvic limbs do not touch the ground and move the patient forward

- Extensor Postural Thrust – Lift the patient by the thorax and lowering the pelvic limbs to reach the floor, move pelvic limbs caudally

Segmental Reflexes

Thoracic Limb

- Biceps
- Triceps
- Extensor Carpi
- Flexor Withdrawal – IMPORTANT

Pelvic Limb

- Patellar - IMPORTANT
- Cranial Tibial
- Gastrocnemius
- Flexor Withdrawal – IMPORTANT

Other Observations

- Perineal
- Able to Urinate
- Cutaneous Trunci (Panniculus) – An obvious cutoff point suggest a spinal cord lesion 1-4 segments cranial to the level of the cutoff
- Crossed Extensor – Abnormal in a recumbent animal, typically seen with chronic myelopathies
- Tail Tone
- Anal Tone
- Muscle Atrophy
- Muscle Tone

Palpation (Hyperesthesia) – Head, Cervical, Spinal, and Tail Jack

Hyperesthesia – Technician's Role

- Do not restrain the patient during head and cervical palpation (bite risk)
- While restraining during spinal palpation, pay close attention to any changes in the patient (panting, stops panting, growl, whimper)

Nociception – Superficial and Deep Pain

- ONLY IF PATIENT HAS NO MOTOR!