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How to Make the Neurological Exam Work for You: Exam Review, Focus and Tips

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Summary

- Neurologic exam
 - Mentation
 - Posture
 - Gait
 - Postural reactions
 - Spinal reflexes
 - Cranial nerves
 - Accessory tests
- Neurolocalization
- Generating the differential




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The Neurologic Examination - Mentation

What controls mentation?
ARAS

What do we mean by a "mentation change"?
Obtunded, demented, stuporous, comatose

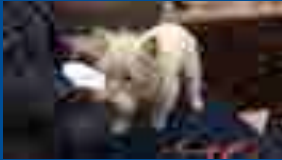
How does it help with localization?
Forebrain vs. brainstem or global forebrain

Don't forget history


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The Neurologic Examination - Posture

- Head turn/tilt
- Circling/falling
- Sway
- Tremor
- ER postures




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The Neurologic Examination - Posture

What does abnormal postures mean?

Loss of coordination
Abnormal vestibular tone
Position against gravity
Pain
Impending decline or death

- Start thinking about:
 - Vestibular disease
 - Neck pain/ changes in tone
 - Midbrain/thalamic disease
 - Cerebellar disease



Assessment Focus

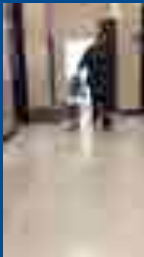
ER postures to recognize:

- Decerebrate
- Decerebellate
- Schiff-Sherrington



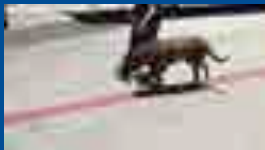
Gait – Tips for Assessment

Away from owner
Walk on a leash
Walk don't run
Normal or abnormal
Which limbs?
Lameness?



Gait – Tips for Assessment

Stride length
Which limbs?
Short or long?
Short = LMN
Long = UMN



Gait – Tips for Assessment

Weakness/ ataxia

Which limbs?

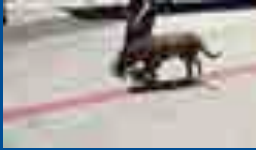
If ataxic, type:

Proprioceptive

Vestibular

Cerebellar

Severity



Ataxia



Ataxia



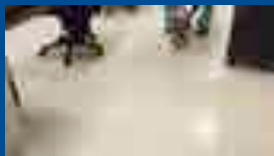
Assessing for Motor

Get some distance

Get some help

Tail walking

Slings



Postural Reactions - Tests of Proprioception

Knuckling
Hopping
Placing
Wheelbarrow
EPT



Great time to assess tone!



Awareness of Pain Sensation



Nociception

Only if NO motor
Superficial then deep
Natural position
Rapid pinch
Response
Does not = withdrawal



Spinal Reflexes and Ortho Exam

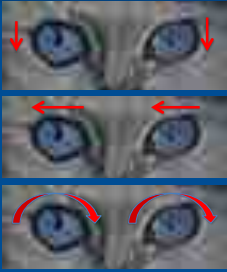


Simplifying the Cranial Nerve Exam

Test	Localization	Deficit
Menace response	CN II, VII, Cerebellum	Absent blink
PLR	CN II, III	Decreased
Pupillary size	CN II, III, symp, FB	Miosis or mydriasis
Palpebral reflex	CN V, VII	Absent blink
Ocular positioning	CN III, IV, VI	Strabismus
Oculocephalic reflex	Brainstem	Lose doll's eye
Corneal reflex	CN V, VI	No retraction
Facial Sensation	CN V	No response
Facial muscle tone	CN VII	Facial drooping (acute)



Nystagmus



Cranial Nerve Exam



Sensory review – what does it mean?

- CN V (and VII)
 - Sensory to the face and inside of pinna
 - Nasal sensation
 - FB vs. CN V



Horner's Syndrome Review

- Sympathetic pathway:
 - Hypothalamus/midbrain
 - Brainstem
 - Cervical cord
 - T1-T3
 - VST (neck)
 - Cr. cervical ganglion
 - Tympanic bulla
 - Iris



Clinical components:

- Miosis
- Ptosis
- Enophthalmos
- Elevated 3rd eyelid



Accessory testing

Palpation
Perineal &
anal sensation
Cutaneous trunci
Rectal exam



I've done my exam... now what?

- Organize you thoughts
- One lesion or multiple?
- Localization
 - Brain, spine, peripheral
 - Prioritize
 - Primary vs. secondary
- Differential
 - Vertebral column
 - Seizures
 - Pupillary disturbance
 - Vestibular disease



Spinal Cord Segmental Neurolocalization

Segment	C1-C5	C6-T2	T3-L3	L4-S3
Gait	Tetra- or hemiparesis/ plegia	Tetra- or hemiparesis/ plegia	Paraparesis/ plegia	PL weakness
Reflexes	T/PL - N to ↑	TL - ↓ to 0 PL - N to ↑	PL - N to ↑	PL - ↓/0
Nociception	Usu. present	Usu. present	present or absent	PL, tail perineum ↓/0
Misc	Ventilation	Consider BPH, paraparesis/ Udd's signs	Spinal shock, myelomalacia, Cutaneous trunci: SS	Tail tone ↓/0



Differential Diagnosis - Vertebral Column

- Trauma
- IVDH
- FCE/TE
- Neoplasia
- Degenerative
- Diskospondylitis
- Infectious/inflammatory
- Congenital malformation



Seizures - Localization and Differential

- NAL: Forebrain
- DDX:
 - Extracranial - Drug/toxin, metabolic disease (liver, kidney), endocrinopathy (insulinoma), paraneoplastic
 - Intracranial - idiopathic epilepsy, infectious/inflammatory disease, congenital malformation, neoplasia, vascular event (stroke), trauma, storage diseases



Differentials for Mydriasis and Miosis

MYDRIASIS

Iris Atrophy
Synechia
Glaucoma
Retinal detachment
PRA
Optic nerve disease
CN III PS dysfunction



MIOSIS

- Synechia
- Uveitis
- Corneal ulcers/abrasions
- Horner's syndrome
 - Entire pathway
- Forebrain disease



Vestibular Disease – Localization

Assessment	Central	Peripheral
➔ Mentation	Disoriented, demented, obtunded → coma	Usually alert, disoriented
Posture	Tilt or turn, ipsi- or contralateral	Tilt or turn, ipsilateral
Gait	Ataxia, paresis, falling, rolling, circling	Ataxia, paresis, falling, rolling, circling
➔ Postural reactions	Ipsilateral deficits	Normal
Spinal reflexes	Normal, hyperreflexive	Normal
➔ Cranial nerves	Any peripheral + V, IX, X, XI, XII (ipsilateral); variable nystagmus	CN VII, Horner's, VI, strabismus, nystagmus



Differential for Vestibular Disease

- Peripheral
 - Otitis M/I
 - Neuropathy
 - Idiopathic ("Old Dog")
 - Neoplasia
- Central
 - Drug/toxin
 - Neoplasia
 - Inflammatory disease
 - Extension of OM/I
 - Vascular





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Summary

Neurology is fun!

A solid, organized exam will make localization, generating a differential and client counseling easier

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