It’s All in Your Head: Neuro Assessment for Non-Neuro Folks

Causes for Neuro Changes

Stroke Head Injury Tumors Increased ICP Drugs Anoxia

Altered Blood Glucose Toxins Alcohol Meningitis

Poor Circulation

Liver Failure\* (look for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the med list)

A Down-and-Dirty EMS Style neuro assessment includes

LOC GCS Orientation Speech Pupils

Motor Function Facial Symmetry Reflexes

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the single most important indicator of neurological state.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - sleepy, slow to respond

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - disoriented to person, place, time or situation.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - needs constant mild stimuli in order to follow a command

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - needs vigorous and continuous stimulation. Withdraws.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - unresponsive to pain, light, and sound. Lasts at least 6 hours. Might have reflexes.

Glasgow Coma Scale (GCS)

GCS is a standard way of assessing a persons mental status. When calculating a GCS on a patient, make sure and give your total and then a breakdown of how you came up with that number. (Example: pt’s GCS was 11 (3-4-4)). This shows the person reading the chart of exactly how that patient presented. He responds to voice, is confused and withdraws from painful stimuli.

Orientation

Orientation is how well the person perceives his/her surroundings. Is he/she oriented times two? Well, which two are you talking about? Be specific… Pt is oriented to person and place only. Okay, now we have something to go with. Oriented to situation is knowing what has happened and why they are there. “I remember being in a car crash and I know I am in an ambulance but I don’t know what day it is or who you are”. Losing your identity is the last thing to go.

Things to look for regarding orientation…

Short Term Memory - ability to form new memories.

Appropriate or Inappropriate responses to questions.

Do They re-orient Well?

Emotional Status

Affect “flat” (stoic) or Depressed, Angry, Frustrated or Anxious, Belligerent\* or Uncooperative

Make sure and justify why you charted that your pt was belligerent.

Speech

Slurred Stuttering Babbling Incomprehensible

“Staccato-like”, Choppy or Clipped are ways to describe someone who has a mental disorder, has MS or certain versions the Aspergers Syndrome. They.Speak.Like.This. Think of playing chopsticks on the piano. Each note is like a word that the patient.

Aphasia

Difficulty in communication. There are many different versions of aphasia. We are going to keep this simple and talk about two of the most basic versions of aphasia.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** – you cannot “express” yourself. A pt can’t speak or what words they speak aren’t clear or represent what they are thinking.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** - you can’t “receive” the message. When you are speaking to the patient but they don’t understand your words. It may sound like jibberish to them. They often have a confused look on their face and they are looking at anyone else in hopes of being able to find someone who can tell them what is going on.

Pupils

Pupils should be 2-6 mm, equal reactive and midline. If you are looking at a patient’s pupils and they appear to be looking off to the side even when you ask that they look straight ahead, then their “gaze” is off to the left or right, or upward or downward.

Disconjugate Gaze is when one eyeball points in a completely opposite direction of the other eyeball. Some people naturally have a disconjugate gaze so make sure you find out if this is a normal thing.

“Able to cross midline” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

“Follows movement with eyes”\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Motor Function

Assessing motor function tells what each part of their brain is doing. There are 12 cranial nerves after all. You aren’t expected to be able to remember which nerve controls what, but you can assess their motor function with some simple requests.

Gross vs Fine Motor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Stick your Tongue Out: When they do this, does their tongue come straight out or off to the side. “Tongue Midline” is what we want to see.

Shrug your shoulders: Do their shoulders come up equally and with strength on each side?

Pronator Drift AKA “Arm Drift” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reflexes

There are a lot of reflexes to assess but we are going to assess the basic ones to get an idea of what we are dealing with.

Pupils (we already talked about this one)

Blink/Corneal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Gag \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Posturing

Posturing Reflex indicates the brain is injured and ICP increases to the point that it is pressing on certain nerve pathways inside the head. When pressure is applied to certain parts of the brain, muscle groups will respond by flexing or extending.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ indicates deep cerebral hemispheric or upper brain stem injury. The arms will be drawn up to the chest or “core”.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ indicates cerebral herniation of the brain stem. Arms will be straightened out and to the side with the toes pointed outward and the head flexed to the side.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_occurs when the skull doesn’t expand to accommodate for swelling. The higher the ICP is, the higher the blood pressure must go in order to “push” past the pressure.

As ICP increases…

Blood flow to the brain decreases

Tissue ischemia develops

Cerebral hypoxia occurs

Acidosis develops

Acidosis leads to vasodilation

Blood pressure drops and blood flow decreases

Signs and Symptoms of increased ICP

Headache, pt complaining of pressure behind eyeballs

Nausea/Vomiting

Decreasing LOC => Coma

Pupil Changes, Gaze Changes

“Sunsetting” Eyes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cushing’s Reflex is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Cushing’s Response occurs when the pressure in the head is so high that there is no place for the brain to go but out the back end of the skull there the foramen magnum is located.

Cushing’s Response Signs and Symptoms

Increased Systolic blood pressure

Widening Pulse Pressure

Bradycardia

Bradypnea or “Cheyne-Stokes”

Unequal Pupils

By the time you see these signs, it is usually too late. But hyperventilating them is an approved way to try and buy some time until you get to the hospital.

Non-invasive ways to lower an ICP

Keep HOB elevated slightly

Keep head midline

Maintain systolic blood pressure 110-120

Avoid gag reflex, coughing, straining, etc….

Maintain ETC02 35-40

Keep them cool. Maybe even Cold\*\*\* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NO hypotonic fluids, NO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!!!

Avoid a hypotensive episode. Even one episode of hypotension will increase the patients mortality rate.

Special Considerations

CVA/TIA Specific Exam

Time of Onset\*

Slurred Speech\*

Facial Asymmetry\*

Pronator Drift

Aphasia

Neglect

* these three things together are over 85% accurate in field diagnosing a CVA.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs when one side of the brain is affected, usually by a stroke, and fails to recognize the other half of the body as existing.

Todd’s Paralysis CVA

Occurs after a seizure CVA

Usually just 1 limb affected Hemiplegia

Confusion Not Confused

Vision, hearing or speech affected Vision, hearing or speech affected

Very Sleepy Not sleepy

Lasts 1-36 hours Doesn’t go away.

Concussion

The patient “got their bell rung”

Repetitive Questioning

Inability to form new short term memories

No recall of events

Can last several hours to days

Some memory will come back but usually not all.

Doesn’t require a positive LOC for a diagnosis

Doesn’t require a direct contact with the head for a diagnosis

Can last for hours or days

Contusion

Requires actual contact between brain and skull

Requires a CT for a diagnosis

Localized to specific areas of the brain

Should be symptom-free within 3 weeks.

Hospital Admission is usual

Close observation

Frequent Neuro Checks

Basilar Skull Fractures

Racoon eyes” and “Battle’s Sign” are textbook signs but usually show up after at least 6 hours. Some textbooks say it takes up to 3 days to show up in some cases.

No NPA’s or NG tubes ! No coughing, straining, or blowing nose.

Racoons eyes associated with a head injury that are bilateral have an 85% positive predictor rate for basilar skull fracture.

Halo Sign isn’t 100% accurate or reliable but is cool to see.

Bell’s Palsy affects the \_\_\_\_\_\_\_\_\_\_\_\_ cranial nerve. Unilateral facial flaccidity is the presenting symptom. It can be caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or just \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Treatment includes steroids and usually resolves in 3 months.

Bell’s Palsy or CVA ?

One sided facial flaccidity One sided facial flaccidity

Unable to close affected eye No problem closing eye

Facial Pain No facial Pain

Watering Eye No watering eye

Drooling from affected side Drooling unlikely

Hypersensitivity to sound No sound sensitivity

Impaired Taste Impaired Taste

Headaches

Most are benign

If vital signs are stable and neuro exam is negative, transport in the position of comfort.

*Rule Out Carbon Monoxide exposure*

*ALWAYS check their Blood Glucose*

*Don’t aggressively treat hypertension.*

Migraines

Pulsatile and pounding. Gets worse with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Triggered by stress, fatigue, illness and certain foods.

Many chronic migraine sufferers experience an aura. Nausea, light and sound sensitivity are common.

Commonly accepted treatment includes large bore IV with 1000 mL of normal saline wide open with Torodol 30 mg, Benadryl 25-50 mg and 25-50 mg of Phenergan.

Most migraine sufferers report narcotics don’t help at all or actually make it worse.

Tension H/A versus Cluster H/A

Primarily female Primarily Male

Pericranial muscle tenderness/constricting Unilateral pain near eye

Onset at anytime Onset common at night

Lasts minutes to days 15-180 minutes, 1-8 times per day

No worse with exertion Precipitated by alcohol

No nausea or light sensitivity Go months w/o h/a and then have a “cluster”

Danger Signs in headaches

Sudden Onset (thunderclap), double vision

“worse headache” --🡪 subarachnoid bleed

Headache that begins with exertion

New onset headache after age 50

Altered Mental status

Fever, Rash and Nuchal rigidity 🡪 Suspect Meningitis