



ORTHO-NEURO ASSESSMENT

Date:

Name:

Age:

Gender:

Occupation:

Address:

IP Number: -

Dominant:

Chief

Complaint:

History:

Present History: Allowed to narrate history in detail, consisting of
Date of onset of symptoms

- Mechanism of injury
- Mode of onset
- Condition – Improved, Stationary, Deteriorated
- Transfer to Hospital
- Others

Pain History

- Duration of symptoms
- Type of pain
- Time of Pain
- Aggravating and Relieving factors
- (NPRS/VAS)
- Others

Past History

- Any history of Tuberculosis
- Bronchial Asthma
- Blood Pressure
- Diabetes
- Cardiac Problems

Enquiry made for any accidental injury

Medical History

Present medication patient is on

Family History

Hereditary?

Consanguinity.

Personal History

Education: -

Occupation: -

Working as-

Working hours-

Secondary Habit: -

Diet: -

Stress factor: -

Socio-economic History:

Family Members: -

Education Of Earning Member: -

Occupation Of Earning Member: -

Family Monthly Income: -

Socio-Economic Status: - (According to Modified Kuppuswamy Scale)

On Observation:

- Body Built: - Ecto/Meso/Endo
- Mode of ambulation: -
- Posture: -
- Wasting
- Swelling
- Mobility aids
- Any External Appliances: -
- Scars – Area, type, colour, Extent
- Attitude of the Limbs – Supine, Sitting, standing (mention every segment position)
- Deformities
- others: -

On Palpation:

Tenderness

Grading

- 1 : Patient complains of pain
- 2 : Patient complains of pain & winces
- 3 : Patient winces & withdraws
- 4 : Patient will not allow palpation of the joint

- D/F tissue tension and texture

Temperature of skin

Edema: - Pitting/ Non- Pitting.

Texture of skin – Dry or Excessive moisture

- Scar – Adherent / Non-Adherent
- Crepitus, Abnormal sound

On Examination:

- Vital Signs: - BP, HR, PR, SPO2 etc.
- HCF/HMF: -
 - LOC according to GLASCOW COMA SCALE: -
 - Appearance & Hygiene (Appropriateness of attire for age, weather, and situation (physician visit) and the purpose of accessories like glasses or a cane)
 - Behaviour/Mood (Anxious, agitated, depressed, manic, obsessive/compulsive)
 - Speech (Rate and volume, is it pressured, slow, accented, Enunciation quality, tempo and whether it is loud, quiet or impoverished)
 - Eye Contact (Maintaining or avoiding)
 - Comprehension (Is he understanding conversations/instructions, expressing feelings, difficulty finding words (anomia), misusing words, repetition of other people's words (echolalia)? Stuck in a thought/memory (perseveration), mumbling?)
 - Memory and Recall (Immediate, Recent, Remote)
 - Orientation (Person, place, time)
 - Concentration and Attention (Recite ABC backwards, Days of week in reverse, 7x reverse)
 - Judgement and Intellect (Expected outcome of a situation, their act, GK)
 - Abstraction Skills (Eg: Two different meanings for the word

‘RIGHT’)

* ** CRANIAL NERVES: -

- Olfactory - anosmia
- Optic – visual acuity, visual field
- Oculomotor
- Trochlear
- Abducens
- Trigeminal (mixed)
- Facial (mixed)
- Vestibular cochlear
- Glossopharyngeal
- Vagus(mix)
- Spinal accessory
- Hypoglossal

Table 5.8 Examination of Cranial Nerve Integrity			
Cranial Nerve	Function	Test	Possible Abnormal Findings
I Olfactory	Smell	Test sense of smell on each side (close off other nostril): use common, nonirritating odors.	Anosmia (inability to detect smells), seen with frontal lobe lesions
II Optic	Vision	Test visual acuity. Central: Snellen eye chart; test each eye separately (covering other eye); test at distance of 20 ft. Test peripheral vision (visual fields) by confrontation.	Blindness, myopia (impaired far vision), presbyopia (impaired near vision) Field defects: homonymous hemianopsia
II, III Optic and oculomotor	Pupillary reflexes	Test pupillary reactions (constriction) by shining light in eye light; if abnormal, test near reaction. Examine pupillary size/shape.	Absence of pupillary constriction Anisocoria (unequal pupils) Horner's syndrome, CN III paralysis
III, IV, VI Oculomotor, trochlear, and abducens	Extraocular movements	Test saccadic (patient is asked to look in each direction) and pursuit eye movements (patient follows moving finger).	Strabismus (eye deviates from normal conjugate position) Impaired eye movements Double vision

Cranial Nerve	Function	Test	Possible Abnormal Findings
V Trigeminal Ophthalmic, maxillary, mandibular divisions	Sensory: face Sensory: cornea Motor: muscles of mastication	Test pain, light touch sensations: forehead, cheeks, jaw (eyes closed). Test corneal reflex: touch lightly with wisp of cotton. Palpate temporal and masseter muscles. Observe spontaneous movements. Have patient clench teeth, hold against resistance.	Loss of facial sensations, numb- ness with CN V lesion Trigger area with trigeminal neuralgia Loss of corneal reflex ipsilaterally (blinking in response to corneal touch) Weakness, wasting of muscles When opened, deviation of jaw to ipsilateral side
VII Facial	Facial expression Taste to anterior two thirds of tongue	Test motor function facial muscles. Raise eyebrows, frown. Show teeth, smile. Close eyes tightly. Puff out both cheeks. Apply saline solution and sugar solution using a cotton swab.	Paralysis: Inability to close eye, Drooping corner of mouth, Difficulty with speech articulation Unilateral LMN: Bell's palsy (PNI) Bilateral LMN: Guillain-Barré Unilateral UMN: stroke Incorrectly identifies solution.
VIII Vestibulocochlear (acoustic)	Vestibular function Cochlear function	Test balance: vestibulospinal func- tion (VSR). Test eye-head coordination: vestibular ocular reflex (VOR). Test auditory acuity. Test for lateralization (Weber test): place vibrating tuning fork on top of head, mid-position; check if sound heard in one ear, or equally in both. Compare air and bone conduction (Rinne test): place vibrating tuning fork on mastoid bone, then close to ear canal; sound heard longer through air than bone.	Vertigo, dysequilibrium Gaze instability with head rota- tions, nystagmus (constant, invol- untary cyclical movement of the eyeball) Deafness, impaired hearing, tinnitus Unilateral conductive loss: sound lateralized to impaired ear Sensorineural loss: sound heard in good ear Conductive loss: sound heard through bone is equal to or longer than air Sensorineural loss: sound heard longer through air

IX Glossopharyngeal	Sensory to posterior one third of tongue, pharynx, middle ear	Apply saline solution and sugar solution. Not typically tested	Incorrectly identifies solution.
IX, X Glossopharyngeal and vagus	Phonation Swallowing Palatal, pharynx control Gag reflex	Listen to voice quality. Examine for difficulty in swallowing glass of water. Have patient say "ah"; observe motion of soft palate (elevates) and position of uvula (remains midline). Stimulate back of throat lightly on each side.	Dysphonia: hoarseness denotes vocal cord weakness; nasal quality denotes palatal weakness. Dysphagia Paralysis: palate fails to elevate (lesion of CN X); asymmetrical elevation with unilateral paralysis Absent reflex: lesion of CN IX; possibly CN X

Cranial Nerve	Function	Test	Possible Abnormal Findings
XI Spinal accessory	Motor function: Trapezius muscle Sternocleidomastoid	Examine bulk, strength. Shrug both shoulders upward against resistance. Turn head to each side against resistance.	LMN: atrophy, fasciculations, ipsilateral weakness Inability to shrug ipsilateral shoulder; shoulder droops Inability to turn head to opposite side UMN: weakness of ipsilateral sternocleidomastoid and contralateral trapezius
XII Hypoglossal	Tongue movements	Listen to patient's articulation. Examine resting position of tongue. Examine tongue movements: ask patient to protrude tongue, move side-to-side.	Dysarthria (seen with lesions of CN X or CN XII, also V, VII) Atrophy or fasciculations of tongue (LMN, ALS) Impaired movements, deviation to weak side UMN lesion: tongue deviates away from side of cortical lesion

- Sensory Assessment

Superficial Sensations

- Pain, Temperature, Light touch

Deep Sensations

- Movement sense, Position sense, Pressure, Crude touch.

Combined Sensations

- Stereognosis, Tactile Localization, Two Point Discrimination, Graphesthesia

GRADE	RESPONSE
0	Absent, no response
1	Decreased, delayed response
2	Increased/egg response
3	Inconsistent response
4	Intact, normal response

- Reflexes

Superficial Reflexes

- Corneal, Abdominal, Plantar, Cremasteric etc

Deep Reflexes

- Biceps, Triceps, Babinski Reflex, Knee Jerk, Ankle Jerk

Clonus

GRADE	FINDINGS
0	Absent, no response
1+	Slight reflex present but depressed, low normal
2+	Normal, typical reflex
3+	Brisk reflex, possibly but not necessarily abnormal
4+	Very brisk reflex, abnormal, clonus.

Motor Assessment

Tone: -

According to MAS: -

Range of Motion (ROM): - Every joint of UL/ LL

Active

Passive

End Feel

Normal - Bone to Bone

- Soft Tissue Approximation

- Tissue Stretch

Abnormal - Early Muscle Spasm

- Late Muscle Spasm

- Hard Capsular

- Soft Capsular

- Bone to Bone

- Empty

- Springy Block

Capsular Patterns: -

Manual Muscle Testing: -

Grading: -

Table 4.6 Manual Muscle Testing Grades					
Grades	Grade Abbreviations	0–5 Scale	0–10 Scale	Criteria	
Normal	N	5	10	Full available ROM, against gravity, strong manual resistance	
Good plus	G+	4+	9	Full available ROM, against gravity, nearly strong manual resistance	
Good	G	4	8	Full available ROM, against gravity, moderate manual resistance	
Good minus	G–	4–	7	Full available ROM, against gravity, nearly moderate manual resistance	
Fair plus	F+	3+	6	Full available ROM, against gravity, slight manual resistance	
Fair	F	3	5	Full available ROM, against gravity, no resistance	
Fair minus	F–	3–	4	At least 50% but not full ROM, against gravity, no resistance	
Poor plus	P+	2+	3	Full available ROM, gravity minimized, slight manual resistance	
Poor	P	2	2	Full available ROM, gravity minimized, no resistance	
Poor minus	P–	2–	1	At least 50% but not full ROM, gravity minimized, no resistance	
Trace plus	T+	1+		Minimal observable motion (less than 50% ROM), gravity minimized, no resistance	
Trace	T	1	T	No observable motion, palpable muscle contraction, no resistance	
Zero	0	0	0	No observable or palpable muscle contraction	

Resisted Isometrics

- On contraction causes pain and, if it does, pain's intensity & quality
- Strength of contraction
- Type of contraction causing problem (concentric, isometric, eccentric)

Limb Length Discrepancies

- Apparent Length
- True Length

Special Tests

Functional Assessment: -

- Supine to sidelying: -
- Sidelying to Sit: -
- Sidelying to prone: -
- prone on elbow: -
- Prone on elbow: -
- Prone on hands: -
- Prone on hands: -
- Quadruped: - with maximal assistance
- Quadruped to Kneeling: -
- Kneeling to Half kneeling on non-affected side
- Kneeling to half kneeling on affected side
- Supine to sit: -
- Sitting: -
- Sit to stand: -
- Standing: -
- Walking: -

Gait Assessment

ADL

Bowel and bladder:

Sensation:

Control:

Tightness/ contracture/ deformity: -

GRADE	BALANCE TEST	COMMENTS
4	Sitting in a normal comfortable position	
4	Sitting, weight shifting in all directions	
3	Sitting, MDRR	Affected side
4	Sitting, picking an object up of floor	Need assistance of unaffected hand to hold the object.
4	Standing in a normal comfortable posture	
4	Standing, feet together(narrow BOS)	
2	Standing on one foot	On affected foot
3	Standing, in tandem position	unaffected foot on front
3	Romberg test	
3	Sharpened Romberg's test	
3	Standing, MDRR	

Co-ordination: -

- Finger to finger-
- Finger to nose-
- Finger to therapist finger-
- Heel to shin: -
- Alternate heel to knee-
- Others: -

Balance: -

GRADE	BALANCE TESTS
2	Walking, placing feet on floor markers
3	Walk sideways
2	Walk backward
2	Walk cross stepping
2	Walk in a circle, alternate directions
0	Walk on heels
0	Walk on toes
1	March in place
3	Walk with horizontal & vertical head turns
2	Step over or around obstacles
3	Stair climbing with hand railc
2	Stairclimbing without hand rail
3	Stair climbing one step at a time
GRADE	BALANCE TESTS
2	Walking, placing feet on floor markers
3	Walk sideways
2	Walk backward
2	Walk cross stepping
2	Walk in a circle, alternate directions
0	Walk on heels
0	Walk on toes
1	March in place
3	Walk with horizontal & vertical head turns
2	Step over or around obstacles
3	Stair climbing with hand railc
2	Stairclimbing without hand rail
3	Stair climbing one step at a time

GRADINGS: - **Tone**

Grade	Finding
0	Flaccid
1+	Hypotonia
2+	Normal response
3+	Mild to moderate hypertonia
4+	Severe hypertonia

MAS:

Table 5.4 Modified Ashworth Scale for Grading Spasticity

Grade	Description
0	No increase in muscle tone.
1	Slight increase in muscle tone, manifested by a catch and release or by minimal resistance at the end of the ROM when the affected part(s) is moved in flexion or extension.
1+	Slight increase in muscle tone, manifested by a catch, followed by minimal resistance throughout the remainder (less than half) of the ROM.
2	More marked increase in muscle tone through most of the ROM, but affected part(s) easily moved.
3	Considerable increase in muscle tone, passive movement difficult.
4	Affected part(s) rigid in flexion or extension.

From Bohannon and Smith,^{20, p. 207} with permission.

Voluntary Motor Control: -

Grading	Interpretation
0	No contraction
1	Flicker of contraction present or initiation of movement
2	Half range of motion in synergy pattern
3	Full range of motion in synergy
4	Initial half range performed in isolation and rest in pattern
5	Full range of motion in isolation but goes in pattern when resistance is applied
6	Full range in isolation against resistance

❖ Balance gradings:

Table 6.6	Functional Balance Grades
4 Normal	Patient able to maintain steady balance without handhold support (static). Patient accepts maximal challenge and can shift weight easily within full range in all directions (dynamic).
3 Good	Patient able to maintain balance without handhold support, limited postural sway (static). Patient accepts moderate challenge; able to maintain balance while picking up object off floor (dynamic).
2 Fair	Patient able to maintain balance with handhold support; may require occasional minimal assistance (static). Patient accepts minimal challenge; able to maintain balance while turning head/trunk (dynamic).
1 Poor	Patient requires handhold support and moderate to maximal assistance to maintain position (static). Patient unable to accept challenge or move without loss of balance (dynamic).
0 Absent	Patient unable to maintain balance

❖ **Coordination gradings:**

Part I: Nonequilibrium Coordination Tests

Key to Grading

- 4 *Normal Performance*
- 3 *Minimal Impairment:* Able to accomplish activity; slightly less than normal control, speed, and steadiness
- 2 *Moderate Impairment:* Able to accomplish activity, movements are slow, awkward, and unsteady
- 1 *Severe Impairment:* Able only to initiate activity without completion; movements are slow with significant unsteadiness, oscillations, and/or extraneous movements
- 0 *Activity Impossible*

Investigations:

Clinical Impression:

Differential Diagnosis:

**Findings to make Final
Impression: Diagnosis:**

Problem list: -

Goals:

Short Terms

Long Term

Treatment Plan:

Home Programme:

