University of Basra College of nursing Adult nursing department

Nursing assessment guide

(1)The history

Identity (biographical data) : name , age , sex , nationality, religion , marital status , occupation , address , blood group & Rh

next of kin (informant):the nearest person to the patient

date of admission: to identify the progression in the patient health

chief complaint & its duration: a brief statement(the patient' s own ward) of the main problem that brought the patient to the hospital & duration of the compliant

history of present illness: the patient compliant from the beginning & in details . it include the followings

*analysis of the chief compliant in the form of pt wards

* analysis of the associated symptoms

*basic investigations

* progression of the health status

*in surgical cases mention the pt condition postoperatively in the form of fluid intake , medications , passing of flatus , &movement of the pt . note: day zero :the day of operation ,day one is the day after operation

* don't use any medical terms

* don’t record any name of doctors

*don’t record any diagnosis unless the pt is a known case of that disease

Review of other system

ANY SYSTEM ANALYSED IN THE HISTORY OF PRESENT ILLNESS SHOULD NOT BE MENTIONED IN REVIEWING OF OTHER SYSTEM

General : weight change , appetite change , night sweats , weakness , fatigue , fever ,

Skin : rash , color change , dryness , nail change , pruritus , any masses , hair changes
Head : headache , dizziness
Eyes : vision , glasses , diplopia , blurring , pain, itching , infection , photophobia
Ear : hearing , pain , infection , cerumen, hygiene , tinnitus , vertigo .
Nose & sinuses : discharge , allergies , obstruction, epistaxis ,
Mouth& Throat : sore throat , difficulty swallowing
, taste , gums , dentition , dentures , hoarseness , lesions (lips ,tongue , mucosa) , hygiene .
Neck : stiffness , swelling , pain ,limited motion , swollen gland , thyroid disease .
Breast : pain , swelling , nipple discharge , dimpling , self- exam. Practices
Respiratory: cough , shortness of breath (SOB), hemoptysis , wheezing , sputum(color, quantity) asthma , recurrent respiratory tract infection(URI).
Cardiovascular(CVS) : SOB , dyspnea on exertion(DOE) , orthopnea , chest pain , palpitation ,paroxysmal nocturnal dyspnea (PND) , phlebitis , coldness or numbness of extremities , edema , varicosities , claudication .
Gastrointestinal (GIT) : anorexia , nausea , vomiting , indigestion, diarrhea , pain , constipation , hemematemeses , melena , jaundice , food intolerance , change in bowel pattern , hemorrhoid .
Genitourinary (GUT): nocturia , incontinence, urgency , dysuria , dribbling , frequency , hematuria , infection .
Genitor-reproductive :
Female : menses(menarche, cycle , duration , amount , cramps , intermittent bleeding , last menstrual period(LMP)) . number of pregnancies , live births , abortion(Gravity-Parity-Abortion) ,vaginal discharge , dyspareunia, contraception, pruritus , venereal disease
if menopausal : age of menses cessation , symptoms of menopause , postmenopausal bleeding .
Male : pain , discharge , swelling , sores , venereal disease ,
Musculoskeletal: muscular pain or cramps , joint : pain , swelling or redness , back pain injury , limitation of movement
Endocrine : heat or cold intolerance , excessive sweating , excessive thirst , hunger ,or urination
Hematologic : blood transfusion , anemia , easy bruising or bleeding .

Neurological : syncope, fit , paralysis, weakness , dizziness , vertigo , numbness , abnormal speech , abnormal gait , tremor , memory loss , loss of sensation

past medical history :

1- Childhood diseases : measles , mumps , rubella, whooping cough , diphtheria , tetanus , polio , chickenpox , scarlet fever , rheumatic fever
2- Adulthood diseases : diabetes mellitus , hypertension , ischemic heart diseases , rheumatic disease , bronchial asthma , epilepsy , parkinsonism , peptic ulcer , blood diseases (SCD ,G6PD Def. Thalassemia) , cancer and chronic renal failure
3- Psychiatric illness : Depression , HYS , Schizophrenia ,psychopath
4- Injuries& accidents : burn , fracture , head injuries
5- Hospitalization & operations (cause , type& time)
6- Current medications
7- Allergies(dugs , food , others)
8- Immunization & vaccination
9- Blood transfusion

Family history

Father : health , age , age at time of death &cause of death
Mother : health , age , age at time of death &cause of death
Brothers & sisters : any illness
Diseases in the family : cancer , hypertension , heart disease, diabetes , epilepsy , mental illness ,Tuberculosis , kidney disease , arthritis , allergies , asthma , alcoholism , obesity , sickle disease & thalasemia .

Social history & patient profile

The identity plus the followings
Children , level of education , interests , financial status , life style (habits & pattern= smoking , drinking , exercise , nutrition), environment (physical hazard , general awareness , cultural background , interpersonal relationships) , past development(from birth till now) , living arrangement , any domestic animal , water supply , sewage disposal ,travel history .

(2)**Vital signs**:

(a)Blood pressure
* smoothly apply the cuff with the lower border 2.5 cm from cubital fossa
*palpate the brachial pulse before applying the stethoscope

*support the arm at the heart level
*inflate the cuff until the radial pulse impalpable
Deflate slowly until 1st sound is heard which is normally in adult 100-140 mmHg & the radial pulse become palpable . As the pressure of the cuff continues to fall sound will be disappeared , the correspond to the diastolic pressure (60-90)
(b)temperature
Normal body temperature :36.6- 37.2 degree centigrade
Methods of measurement
1-oral
2-axillary(0.5 degree lower than oral)
3-rectal (0.5 degree higher than oral)
To convert the centigrade to Fahrenheit : X C *9l5+32 =y F

(c) Respiratory rate
Normally : 14-18 breaths (cycle) per minute

(d) Radial pulse rate
Obtain from radial artery which is felt with tip of the index finger , middle ,& forefinger compressing the vessel against the lower end of the radius . the pt forearm should be slightly pronated & the wrist slightly flexed . The rate normally 60-90 beat per minute .

(3)General examination :
Student use the sentence : ASL-DTT –PAB- Jaccola to summarize the general examination
A= age
S= sex
L= level of consciousness and orientation
D= dyspnea
T= tachypnea
T= tremor (flapping)
P= the position of the pt in the bed
A= abnormalities like blindness, deafness, paralysis , amputation
B= body built, the weight(normal, obese , wasting) and the height
J=jaundice
A= anemia

C= clubbing
C= cyanosis
O=oedema
L=lymphadenopathy
A=accessories like cannula, oxygen mask ,blood unit

(4)Systemic examination
A-Cardiovascular examination
**pulse
1-radial pulse: place a 3 fingers at wrist lateral to the muscle tendon
2-brachial pulse :place thumb medial to biceps tendon
3-carotid pulse : thumb placed between larynx and sternomastoid muscle (use left thumb for right carotid and vice versa)
4-femoral pulse : place to 2 fingers at mid-inguinal point
5-popliteal pulse
6-posterior tibial: place 2 fingers(index and middle) ,2 cm below & 2 cm behind medial malleolus
7-dorsalis pedis :place 3 fingers lateral to hallcis muscle tendon

**Heart
1-Inspection : apex , pulsation , deformities
2-Palpation : apex , parasternal heave , thrill
3-Auscultation
a)mitral area (M) : 5^{th} intercostal space (ICS) at mid-clavicular line (apex)
b)tricuspid area (T) : 5^{th} ICS at left parasternal edge
c)aortic area (A) : 2^{nd} ICS at right parasternal edge
d)pulmonary area (P) 2^{nd} ICS at left parasternal edge

Position:
1)the patient lie flat , examine M,T,A,P
2)at apex examine S1 , S2 while feeling carotid pulse ,S1 precedes carotid pulse , S2 follows it .
3)roll patient onto left to detect MS murmur by bell at apex
4)sit patient up , leaning forward with breath held on expiration to
5) auscultate carotid & axilla

Heart sounds : S1 & S2
Added sounds :
1)pericardial friction rub
2)Murmurs : systolic , diastolic , continuous , innocent (benign) .
**Mitral valve : MS produce diastolic murmur , MI produce systolic murmur The same story for tricuspid valve . For aortic and pulmonary valve it is vice versa .

B)Respiratory examination
**breathing : abdominal in men & thoracic women
**examine the front in lying 45 degree ,& back in sitting position
1)Inspection
a)shape : barrel , pigeon , funnel
b)symmetry : bilateral symmetrical(normally), bulging , retraction
2)Palpation
a)position of trachea : normally central
b)chest expansion
1-wrap a tape measure below nipple , take deep breath , normally 5-7.5 cm
2-bilateral method
c)vocal fremitus :place both hands on either side of chest , say:99(44 in Arabic)
1-reduced in :bronchial obstruction , pleural effusion ,lung collapse , pneumothorax & obesity
2-increased in :consolidation & Cavitation
3)Percussion
a)compare between both side of chest
b)percuss clavicle directly
c)fix finger in ICS
d)percuss : anteriorly , laterally , & posteriorly
examination points :3 anterior , 3 lateral ,6 posterior
e)percussion notes:
1-resonant---normal
2-hyperresonant ----pneumothorax , emphysema
3-tympanitic ----hollow viscus
4-dull---- consolidation(pneumonia) ,lung collapse & fibrosis
5-stony dull ----pleural effusion

4) Auscultation
**Ask the patient to take deep breath with his mouth open
**Breath sound
a)vesicular : soft rustling ,normally
b)bronchial :blowing , heard on trachea
c)added sound
1-Wheeze (Rhonchi)---bronchial asthma & chronic bronchitis
2-Crackles (Crepitation) :(fine or coarse)----pneumonia , bronchiolitis ,pulmonary edema
3-pleural friction rub ---- pleurisy
4-others ---stridor , hoarseness of voice
**vocal resonance : place the stethoscope on the chest & ask the patient to say:99 (44 in Arabic)

C)ABDOMINAL EXAMINATION

For descriptive purposes , the abdomen is divided into nine regions by
1- Two horizontal planes
a- transpyloric : lies at the level of first lumbar vertebra
b- lower horizontal : passes through the upper border of iliac fossa
2- two sagittal planes
Two lines drawn from the mid inguinal points toward the mid clavicular points

Inspection

exposure area : from the nipples up to the mid-thigh or up to the knee
1- pattern of movement : at the right side of the pt see the pattern of movement . the normal pattern is a gentle rise in the abdominal wall during inspiration fall during expiration
in male and children : abdominothoracic movement i. e. mainly abdominal
in female : thoracoabdominal movement i.e, mainly thoracic
2- contour of abdomen
normally convex , with slightly retracted inverted umbilicus
a-Distension of 2 types
generalized , symmetrical with divercation of skin 5 F

fetus ,feces , flatus , fluid and fat
localized asymmetrical : liver enlargement , spleen enlargement , ovarian enlargement , SI Obstruction
b- scaphoid retracted abdomen : starvation , malignancy
c- umbilicus normal equidistance between xyphysternum symphysis pubis and is inverted , averted in ascites and pregnancy
3- texture of the abdomen
normally the skin is shiny and smooth .
abnormalities
a- primary and secondary skin lesion
b- cauterization
c- tattoo can be a source for hepatitis B&C
d- spidar naevi --- liver cirrhosis
e- incision and scar
f- striae atrophica --- pregnancy and ascites
g- purple stria ---cushings syndrome
h- hair distribution
j- prominent superficial veins

Palpation

Before starting palpation , we should do the following
1- ask for any tenderness
2- Warm the hand
3- Relaxed abdominal muscles
A - Superficial(light) palpation : (to detect superficial mass or tenderness)
ask the patient to take deep breath from mouth , start from left iliac fossa , away from the site of pain , in an anticlockwise direction . Place your hand flat on the LIF with wrist and forearm in the same horizontal plane then gentle with firm pressure with your fingers , making an anticlockwise direction ending in suprapubic region . (your eyes is on the patient's face)
B - Deep palpation : (to detect deep mass or tenderness)
Tenderness analyses
1- mild
2- moderate
3- Gardening : voluntary muscle contraction
4- Rigidity : involuntary muscle contraction

5- Rebound tenderness : the sudden withdrawal of manual pressure causes sharp exacerbation of pain .
The palpation include : liver , spleen, kidneys, abdominal aorta, LN

Organic Palpation

1- liver palpation : normal liver span 14+ - 2

place your right hand transversely upon the RIF ask the patient to take deep breath with inspiration , press your fingers firmly inwards upwards and move your hand parallel up until the costal margin . if the liver enlarged try to make out characters of the liver surface , edge and consistency

Start in the right iliac fossa and move gently up towards the right hypochondrium. The examining hand should be flat on the abdomen and the fingers should be pointing upwards so that the fingertips are on a line parallel to the expected liver edge. Palpation should be gentle but deep if there is no pain.

You should press inwards and upwards and hold this position while asking the patient to take a deep breath in through their mouth. At the patient's maximal inspiration, release your inward pressure but maintain your upward pressure. Your fingertips should then move over any palpable liver edge.

Examination of the gallbladder

Murphy's sign can be elicited by placing your examining fingers(thumb) over the gallbladder area and then asking the patient to take a deep breath. If Murphy's sign is positive, there will be sudden accentuation of the pain on inspiration and inspiration will be inhibited.

2- spleen palpation : the left hand sport the tissues in the left lower costal area and the other hand is placed flat in the RIF . Ask the patient to take deep breath while your right hand is passed at the inspiration upward.

To detect splenomegaly, place the examining hand flat on the abdomen as before, well below the left costal margin. Press inwards and upwards and ask the patient to breathe in again. An enlarged spleen should be felt against the fingertips. If you cannot feel an enlarged spleen, move your hand upwards after each inspiration until your fingertips are under the left costal margin. If an enlarged spleen is still not palpable, ask the patient to lie on their right side, facing towards you and palpate up into the left hypochondrium as before, asking for deep breaths on the way. Your other hand can be placed behind the rib cage on the patient's left side for support.

If this does not work, you can examine the patient from their left side, curling the fingers of your left hand beneath their left costal margin as they breathe deeply.
If you can just feel the tip of the spleen, it is significantly enlarged and perhaps twice the size of normal.

3-Palpation of the kidneys: This technique uses two hands.

Reach one hand round to the patient's right loin with your other hand over the right upper quadrant. Push your hands together whilst asking the patient to breathe in and out. Try to palpate any enlarged kidney between your two hands (called 'balloting').

Repeat for the left kidney. This can either be done by examining the patient from the left side with your right hand under their left loin or by examining them from the right side with your left hand reaching round under their left loin area.

In a very thin person who relaxes well, it may be just possible to feel a kidney, especially on the left but usually it is abnormal.

Percussion

Techniques to demonstrate ascites

Fullness of the flanks may be the first indication of ascites. Techniques to demonstrate ascites include:

Percussion for shifting dullness: the patient should be lying on their back. Percuss from the umbilical region moving down towards one side. When the sound becomes dull, mark the spot (or keep your finger there) and ask the patient to move on to the opposite side. Give a short while for the fluid to sink and percuss again. If the marked spot now becomes resonant that is a positive sign. Percuss back down towards the umbilicus until dullness is reached again. Repeat on the other side.

Eliciting a fluid thrill(**transmitted thrill**) : this is more difficult to demonstrate. With one hand on the patient's flank, flick the skin over the other flank using a finger. If an impulse or 'fluid thrill' is felt, this indicates a positive sign. However, to be certain, you should repeat the examination with the patient's hand along their midline in the sagittal plane to dampen any possible thrill transmitted by the abdominal wall.

Auscultation

Bowel sounds can be irregular, so patience is required to decide if they are reduced or normal. On average, you can hear them every 5-10 seconds through a stethoscope.

If bowel sounds are absent, this may indicate paralytic ileus or peritonitis .Diarrhoea is associated with increased bowel sounds.

Intestinal obstruction produces a classical 'tinkling' bowel sound like water being poured from one cup to another. Listen for arterial bruits over the aorta. They may also arise from stenosis of mesenteric or renal arteries.

Acute Appendicitis: Physical Examination

Tenderness on palpation in the right iliac fossa (RIF) over the **McBurney's point** is the most important sign of acute appendicitis.

More specific physical findings in appendicitis are **rebound tenderness**, pain on percussion, rigidity, and guarding.

Other signs of acute appendicitis

1-Rovsing's sign

It is said to be positive if palpation in the left lower quadrant results in increased pain in the RIF.

2-Obturator sign

It is a sign of appendicitis or other peritoneal inflammation and is said to be positive if patient complains of RIF pain with internal rotation of the right leg with the leg flexed to 90 degrees at the hip and knee.

3-Psoas sign

Right iliac fossa pain with extension of the right hip or with flexion of the right hip against resistance suggests irritation of the ilio psoas group of hip flexors. Positive psoas sign may indicate an inflamed retrocaecal appendix.

Neurological Physical Examination

1-Examination of the Cranial Nerves

Olfactory nerve - CN I

Olfactory function is tested easily by having the patient smell common objects such as coffee or perfume. Commercially available scented scratch papers may also be used.

Optic nerve - CN II

The following testing is appropriate:

Acuity, by using the **Snellen chart** (near and distant vision)

Visual fields, by means of **confrontation**

Color vision , with use of an **Ishihara chart** or by using common objects, such as a multicolored tie or color accent markers

Oculomotor nerve - CN III

The oculomotor nucleus of the nerve is located in the midbrain and innervates the pupillary constrictors; the levator palpebrae superioris; the superior, inferior, and medial recti; and the inferior oblique muscles. Lesions of CN III result in paralysis of the ipsilateral upper eyelid and pupil, leaving the patient unable to adduct and look up or down. The eye is frequently turned out (exotropia). Paralysis of CN III is the only ocular motor nerve lesion that results in diplopia in more than 1 direction .

Trochlear nerve - CN IV

It innervates the superior oblique muscle .Trochlear nerve typically allows a person to view the tip of his or her nose.

An isolated right superior oblique paralysis results in exotropia to the right

Trigeminal nerve - CN V

It has sensory and motor function . It provides sensory innervation for the face and supplies the muscles of mastication.

Paralysis of the first division (**ophthalmic; V1**) is usually seen in the superior orbital fissure syndrome and results in sensory loss over the forehead along with paralysis of CN III and CN IV.

Paralysis of the second division (**maxillary; V2**) results in loss of sensation over the cheek and is due to lesions of the cavernous sinus; it also results in additional paralysis of V1, CN III and CN IV. Isolated V2 lesions result from fractures of the maxilla.

Mndibular division V3

Complete paralysis of CN V results in sensory loss over the ipsilateral face and weakness of the muscles of mastication. Attempted opening of the mouth results in deviation of the jaw to the paralyzed side.

Abducens nerve - CN VI It innervates the lateral rectus, which abducts the eye. Isolated paralysis results in esotropia and inability to abduct the eye to the side of the lesion.

Facial nerve - CN VII

It innervates the muscles of facial expression .it is a pure motor nerve .

A lower-motor-neuron lesion of the nerve, also known as peripheral facial paralysis, results in complete ipsilateral facial paralysis; the face draws to the

opposite side as the patient smiles. Eye closure is impaired, and the ipsilateral palpebral fissure is wider. In an upper motor neuron lesion, also known as central facial paralysis, only the lower half of the face is paralyzed. Eye closure is usually preserved.

Vestibulocochlear nerve - CN VIII

The vestibulocochlear or statoacoustic nerve enters the brainstem at the pontomedullary junction and contains the incoming fibers from the cochlea and the vestibular apparatus, forming the eighth CN. It serves hearing and vestibular functions, each of which is described separately. Hearing loss may be conductive or sensorineural. Three tests help in evaluating the auditory component of the nerve.

The Weber test involves holding a vibrating tuning fork against the forehead in the midline. The vibrations are normally perceived equally in both ears because bone conduction is equal. In conductive hearing loss, the sound is louder in the abnormal ear than in the normal ear. In sensorineural hearing loss, lateralization occurs to the normal ear. The sensitivity of the test can be increased (up to 5 dB) by having the patient block his or her external ear canals by simultaneously pressing the index fingers at the introit.

To perform the Rinne test, the vibrating tuning fork is placed over the mastoid region until the sound is no longer heard. It is then held at the opening of the ear canal on the same side. A patient with normal hearing should continue to hear the sound. In conductive hearing loss, the patient does not continue to hear the sound, since bone conduction in that case is better than air conduction. In sensorineural hearing loss, both air conduction and bone conduction are decreased to a similar extent.

In the Schwabach test, the patient's hearing by bone conduction is compared with the examiner's hearing by placing the vibrating tuning fork against the patient's mastoid process and then to the examiner's. If the examiner can hear the sound after the patient has stopped hearing it, then hearing loss is suspected.

The vestibular portion of the nerve enters the brainstem along with the cochlear portion. It transmits information about linear and angular accelerations of the head from the utricle, saccule, and semicircular canals of the membranous labyrinth to the vestibular nucleus. Linear acceleration is monitored by the macules in the utricles and saccules; angular acceleration is monitored by the

cristae contained in the ampullae in the semicircular canals. These signals reach the superior (Bechterew), lateral (Deiters), medial (Schwalbe), and inferior (Roller) nuclei and project to the pontine gaze center through the medial longitudinal fasciculus; to the cervical and upper thoracic levels of the spinal cord through the medial vestibulospinal tract; to the cervical, thoracic, and lumbosacral regions of the ipsilateral spinal cord through the lateral vestibulospinal tract; and to the ipsilateral flocculonodular lobe, uvula, and fastigial nucleus of the cerebellum through the vestibulocerebellar tract.

The Romberg test is performed to evaluate vestibular control of balance and movement. When standing with feet placed together and eyes closed, the patient tends to fall toward the side of vestibular hypofunction. When asked to take steps forward and backward, the patient progressively deviates to the side of the lesion. Results of the Romberg test may also be positive in patients with polyneuropathies, and diseases of the dorsal columns, but these individuals do not fall consistently to 1 side as do patients with vestibular dysfunction.

Another test is to ask the patient to touch the examiner's finger with the patient's hand above the head. Consistent past pointing occurs to the side of the lesion. Provocative tests include the Nylen-Bárány test and caloric testing (see Ancillary signs).

Glossopharyngeal nerve - CN IX

The nucleus of the nerve lies in the medulla and is anatomically indistinguishable from the CN X and CN XI nuclei (nucleus ambiguous). Its main function is sensory innervation of the posterior third of the tongue and the pharynx. It also innervates the pharyngeal musculature, particularly the stylopharyngeus, in concert with the vagus nerve.

Vascular stretch afferents from the aortic arch and carotid sinus, as well as chemoreceptor signals from the latter, travel in the nerve of Herring to join the glossopharyngeal nerve; they reach the nucleus solitarius, which in turn is connected to the dorsal motor nucleus of the vagus and plays a part in the neural control of blood pressure.

Lesions affecting the glossopharyngeal nerve result in loss of taste in the posterior third of the tongue and loss of pain and touch sensations in the same area, soft palate, and pharyngeal walls. CN IX and CN X travel together, and

their clinical testing is not entirely separable. Therefore, examination of CN IX is discussed with that of the vagus nerve.

Vagus nerve - CN X

Starting in the nucleus ambiguous, the vagus nerve has a long and tortuous course providing motor supply to the pharyngeal muscles (except the stylopharyngeus and the tensor veli palati), palatoglossus, and larynx. Somatic sensation is carried from the back of the ear, the external auditory canal, and parts of the tympanic membrane, pharynx, larynx, and the dura of the posterior fossa. It innervates the smooth muscles of the tracheobronchial tree, esophagus, and GI tract up to the junction between the middle and distal third of the transverse colon.

The vagus provides secretomotor fibers to the glands in the same region and inhibits the sphincters of the upper GI tract. Along with visceral sensation from the same region, the nerve participates in vasomotor regulation of blood pressure by carrying the fibers of the stretch receptors and chemoreceptors (ie, aortic bodies) of the aorta and providing parasympathetic innervation to the heart.

The pharyngeal gag reflex (ie, tongue retraction and elevation and constriction of the pharyngeal musculature in response to touching the posterior wall of the pharynx, tonsillar area, or base of the tongue) and the palatal reflex (ie, elevation of the soft palate and ipsilateral deviation of the uvula on stimulation of the soft palate) are decreased in paralysis of CN IX and CN X. In unilateral CN IX and CN X paralysis, touching these areas results in deviation of the uvula to the normal side.

Unilateral paralysis of the recurrent laryngeal branch of CN X results in hoarseness of voice. Bilateral paralysis results in stridor and requires immediate attention to prevent aspiration and its attendant complications.

Spinal accessory nerve - CN XI

From the nucleus ambiguous, the spinal accessory nerve joins the vagus nerve in forming the recurrent laryngeal nerve to innervate the intrinsic muscles of the larynx. The spinal portion of the nerve arises from the motor nuclei in the upper 5 or 6 cervical segments, enters the cranial cavity through the foramen magnum, and exits through the jugular foramen, and provides motor innervation to the sternocleidomastoid (SCM) and the mid and upper thirds of the trapezius.

In testing, functional symmetry of the SCM and the trapezius muscles should be evaluated. Have the patient push the face against resistance to the right and to the left. When the right SCM is weak, pushing to the opposite (ie, left) side is impaired, and vice versa. Shrugging of the shoulder is impaired ipsilaterally when the trapezius is weak.

Hypoglossal nerve - CN XII

The nucleus of this nerve lies in the lower medulla, and the nerve itself leaves the cranial cavity through the hypoglossal canal (anterior condylar foramen). It provides motor innervation for all the extrinsic and intrinsic muscles of the tongue except the palatoglossus. To test the hypoglossal nerve, have the patient protrude the tongue; when paralyzed on 1 side, the tongue deviates to the side of paralysis on protrusion.

2-Examination of the Sensory and Motor Systems

Sensory System

Noncortical sensory system

This is constituted by the peripheral nerves with their central pathways to the thalamus. Light touch, pain, heat, cold, and vibration sensations can be included in this group.

Light touch is tested by touching the skin with a wisp of cotton or tissue. Pain is tested by using a sharp object such as an open safety pin. Temperature can be tested by touching the patient's skin with 2 test tubes, 1 with warm water and the other with cold water. Compare the 2 sides and also to a benchmark, such as the patient's own forehead (assuming sensation there is normal). Vibration is tested with a tuning fork, preferably with a frequency of 128 Hz. Compare findings on the 2 sides, and also compare findings with those in the same body part of the examiner.

Cortical sensory system

The cortical sensory system includes the somatosensory cortex and its central connections. This system enables the detection of the position and movement of the extremities in space (ie, kinesthetic sensation), size and shape of objects (ie, stereognosis), tactile sensations of written patterns on the skin (ie, graphesthesia), and tactile localization and tactile discrimination on the same side or both sides of the body.

Position sensation is tested with the patient's eyes closed. The examiner moves various joints, being sure to hold the body part in such a way that the patient

may not recognize movement simply from the direction in which the patient may feel the pressure from the examiner's hand.

Stereognosis is tested by placing some familiar object (eg, ball, cube, coin) in the patient's hand while his or her eyes are closed and asking the patient to identify the object. Inability to recognize the size or shape is referred to as astereognosis. Agraphesthesia is the inability to recognize letters or numbers written on the patient's skin. These abilities are impaired in lesions of the right parietal region.

Motor System

Trophic state

Assess the 3 S s: size, shape, and symmetry of a muscle. Atrophy, hypertrophy, or abnormal bulging or depression in a muscle is an important diagnostic finding in the presence of different muscle diseases or abnormalities. Hypertrophy occurs with commensurate strength from use and exercise; on the other hand, hypertrophy with weakness is seen commonly in Duchenne muscular dystrophy. The shape may also be altered when the muscle or tendon is ruptured.

Muscle tone

Muscle tone is the permanent state of partial contraction of a muscle and is assessed by passive movement. The muscle may be hypotonic or hypertonic. Hypotonia is defined as decreased tone and may be seen in lower motor neuron lesions, spinal shock, and some cerebellar lesions. Hypertonia may manifest as spasticity or rigidity.

Pyramidal lesions result in spasticity that may manifest as a clasp-knife phenomenon (ie, resistance to passive movement with sudden giving way, usually toward the completion of joint flexion or extension). Bilateral frontal lobe lesions may result in paratonia or gegenhalten (German for against-stop), in which resistance increases throughout flexion and extension. Rigidity refers to increased tone associated with extrapyramidal lesions; it may result in a cogwheel (stepwise) or lead-pipe (uniform) resistance to passive movement.