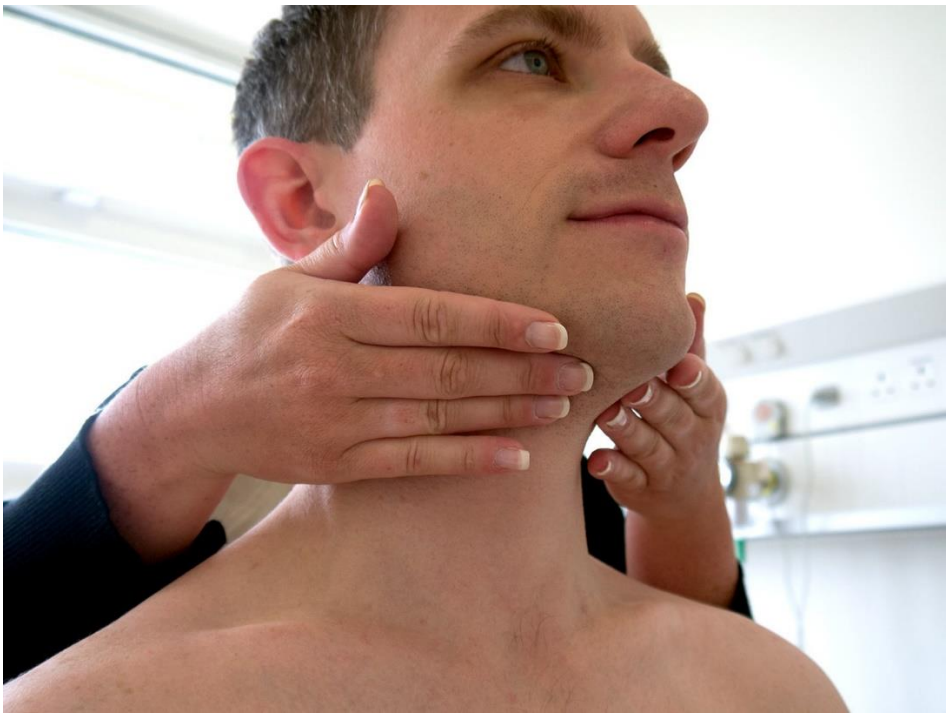
SEMINAR TOPIC

EXAMINATION OF LYMPH NODES



SUBMITTED TO: DEPARTMENT OF ORAL MEDICINE AND RADIOLOGY

SUBMITTED BY: DEEPANSHU

CERTIFICATE

This is to certify that the seminar titled "**EXAMINATION OF LYMPH NODES**" is presented and submitted by DEEPANSHU(BDS FINAL YEAR STUDENT) OF SRI SUKHMANI DENTAL COLLEGE AND HOSPITAL in Department of ORAL MEDICINE AND ORAL RADIOLOGY

SIGNATURES

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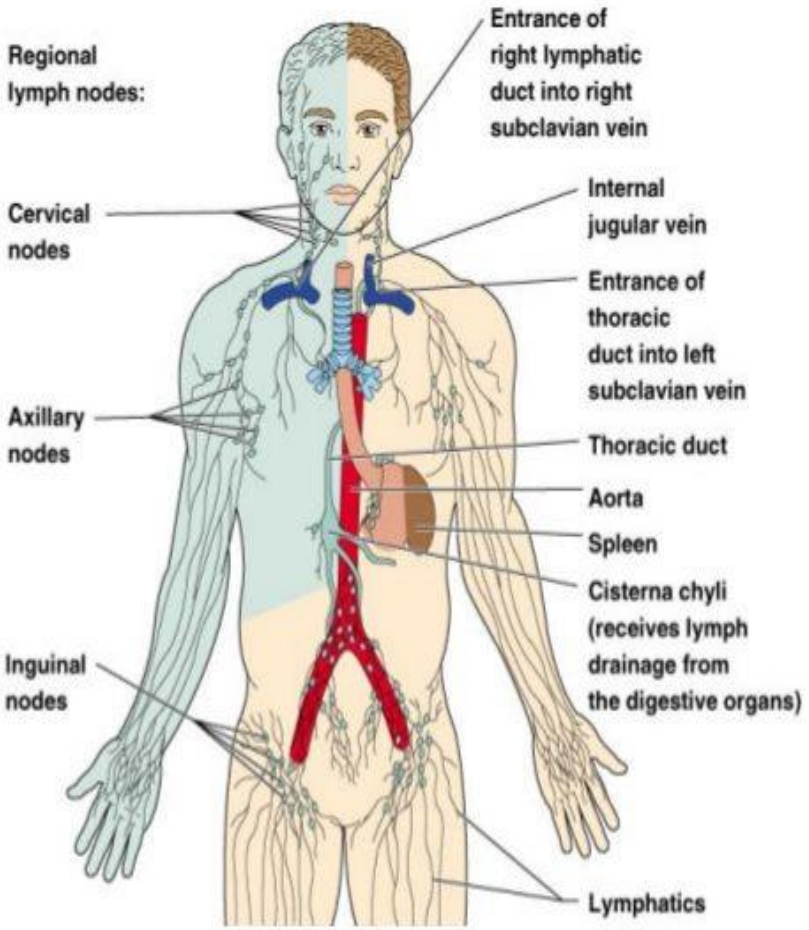
CONTENTS

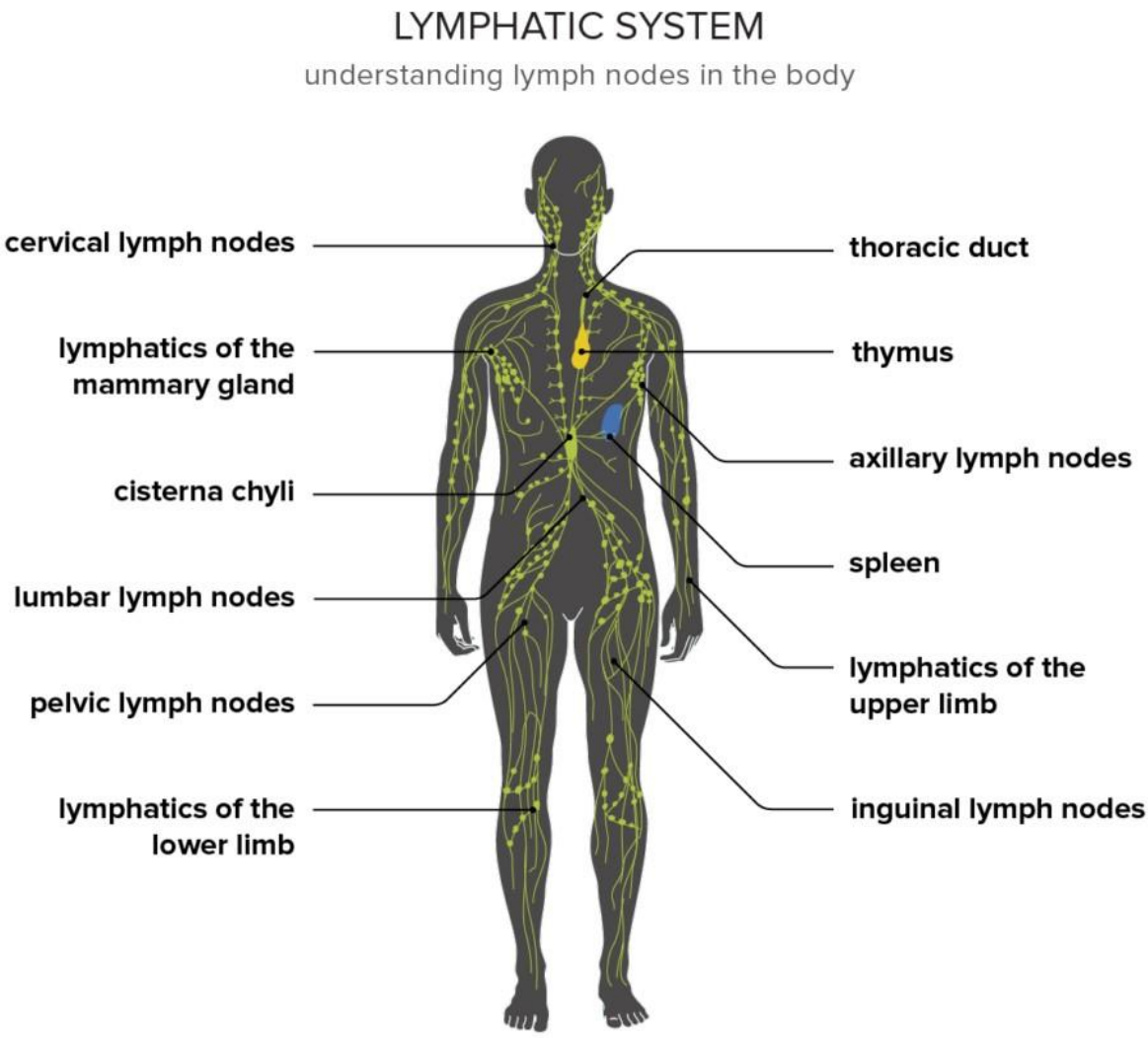
INTRODUCTION

- The lymphatic system is the part of the immune system compromising a network of conduits called lymphatic vessels That carry a clear fluid called lymph (from latin lympha means”water”)in a unidirectional pathway.
- The widely and extensively dispersed vessel system collects tissue fluids from all regions of the body to eventually convey them towards the heart.



THE COMPONENTS OF THE LYMPHATIC SYSTEM:

- Lymph ;the recovered fluid
- lymphatic vessels; which transport the lymph
- lymphatic tissue; composed of aggregates of lymphocytes macrophages that populate many Organs of the body .
- Lymphatic organs in which these cells r especially concentrated and which are set of from surrounding organs by connective tissue capsules.

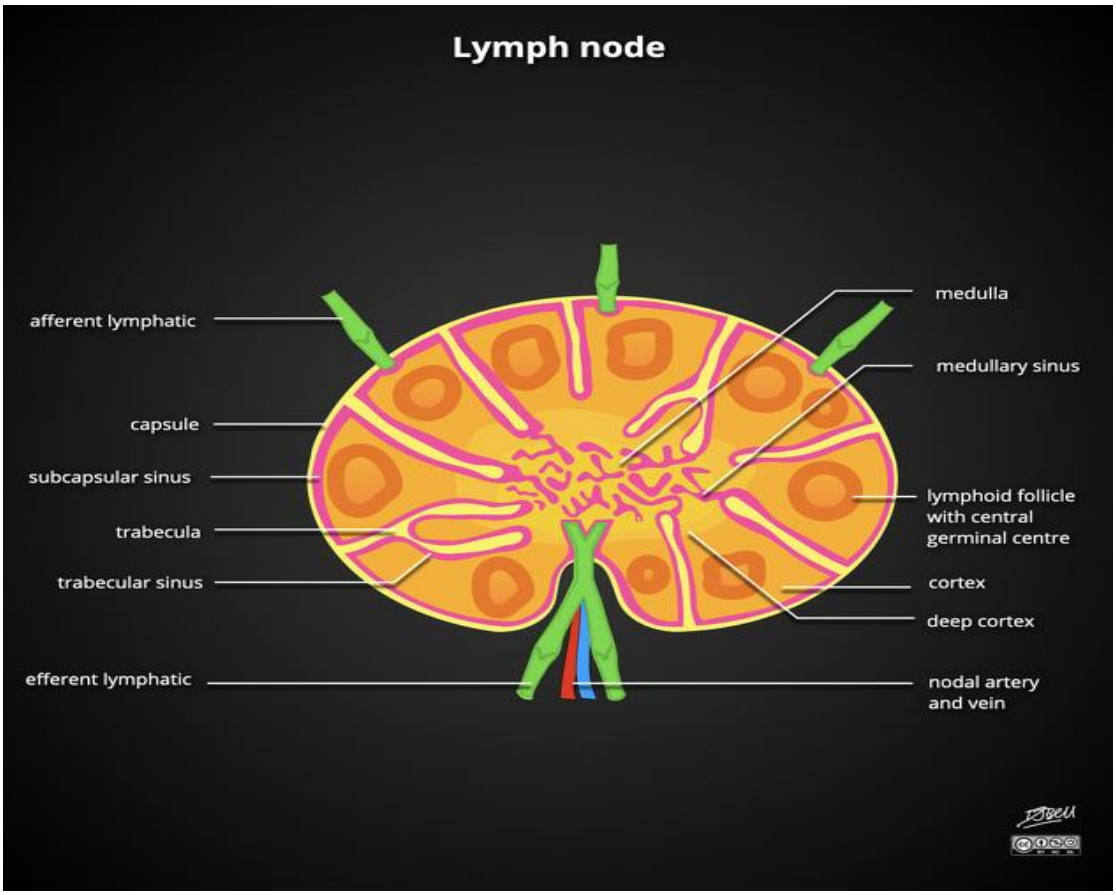


LYMPH NODES

- Lymph nodes are peripheral lymphoid organs connected to the circulation by a afferent and efferent lymphatics
- o these are ovoid or bean shaped nodular formation composed of tense accumulation off lymphoid tissue very in size from 2 to20 ml and average of 15 mm in longitudinal diameter
- there are about it 100 lymph nodes in the body and around 300 are located in the head and neck

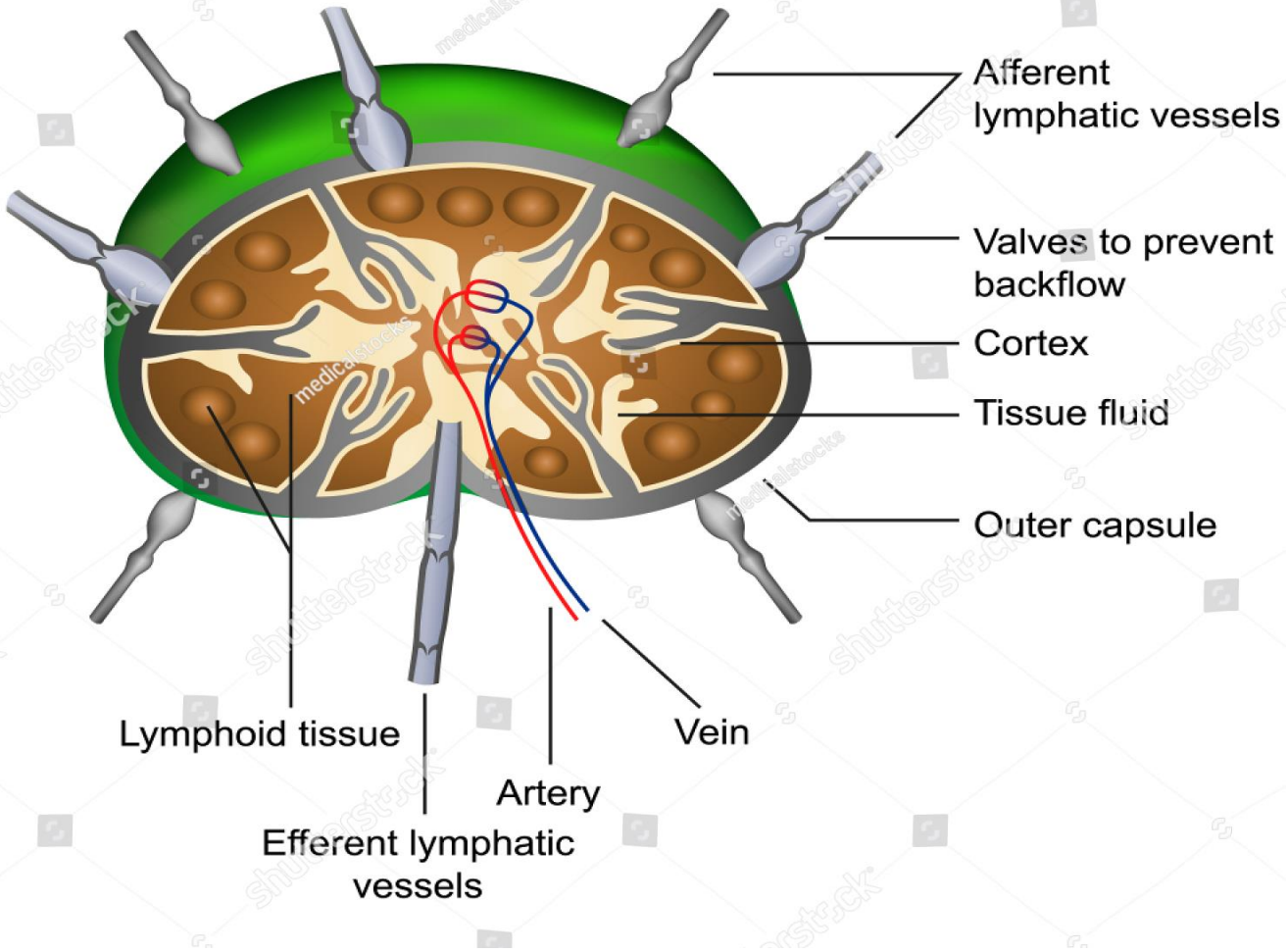
- superficial lymph notes are gateways for assessing health of entire lymphatic system.

Parts of Lymph Nodes -



STRUCTURE:-

Lymph nodes structure



Lymph Flow

Path of Lymph Flow through a Lymph Node

6. **Efferent lymphatics** (*efferens*, to bring out) leave the lymph node at the hilum. These vessels collect lymph from the medullary sinus and carry it toward the venous circulation.

5. Lymph continues into the **medullary sinus** at the core of the lymph node. This region contains B cells and plasma cells.

4. Lymph then flows through lymph sinuses in the **deep cortex**, which is dominated by T cells.

3. Lymph next flows into the **outer cortex**, which contains B cells within germinal centers that resemble those of lymphoid nodules.

2. The afferent vessels deliver lymph to the subcapsular space, a meshwork of reticular fibers, macrophages, and dendritic cells. **Dendritic cells** are involved in the initiation of the immune response.

Start 1. **Afferent lymphatics** (*afferens*, to bring to) carry lymph to the lymph node from peripheral tissues. The afferent lymphatics penetrate the capsule of the lymph node on the side opposite the hilum.

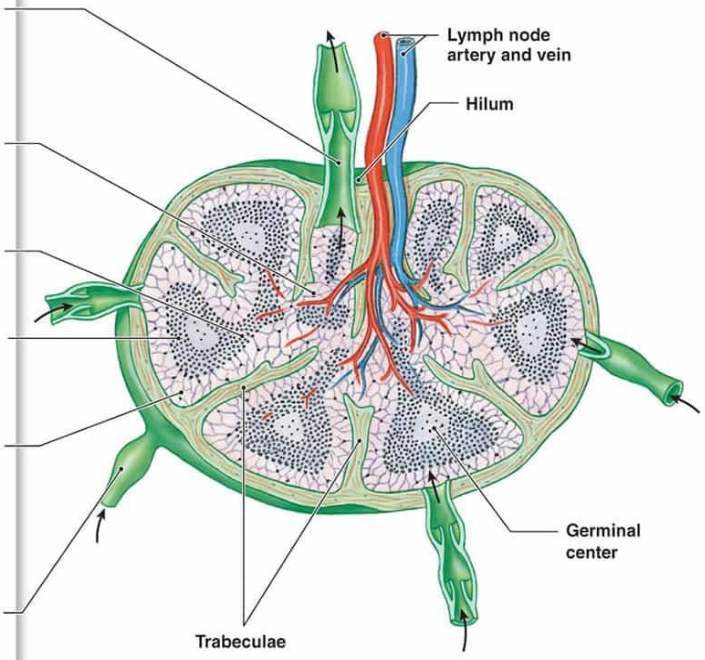


image via: lymphomation.org

➡ Functions of lymph nodes

- Play an important role in the defence mechanism off the body they filter out microorganisms such as bacteria and foreign substances such as toxins etc.
- major functions are
- lymphopoiesis
- filtration of limbs
- Processing of antigens
- multiplication of b cells and t cells from preexisting lymphocytes in response to antigens antibodies produced are carried 2 circulation indirectly helping to mount an immune response.

CLASSIFICATION OF LYMPH NODES

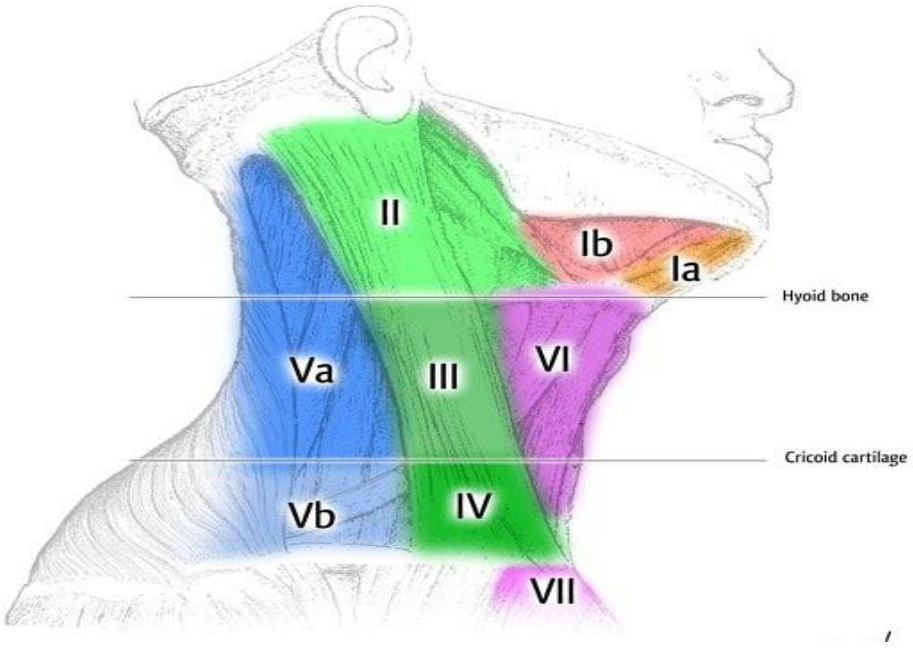
THE LATEST CLASSSIFICATION HAS BEEN CREATED BY **THE AMERICAN JOINT COMMITTE OF CANCER AND THE AMERICAN ACADEMY OF OTOLARYNGOLOGY-HEAD AND NECK SURGERY**

➨ **LEVEL I: SUBMENTAL AND SUBMANDIBULAR**

- superiorly: **mylohyoid muscle and mandible**
- inferiorly: inferior border of the **hyoid bone**
- anteriorly**: platysma muscle**
- posteriorly: posterior border of the **submandibular gland**

➨ There are two sublevels:

- **level 1a** (submental nodes): anteromedial between the anterior bellies of both **digastric muscles**
- **level 1b** (submandibular nodes): posterolateral to the anterior belly of the digastric muscle



➨ LEVEL II: UPPER INTERNAL JUGULAR (DEEP CERVICAL) CHAIN

- superiorly: **base of the skull at the jugular fossa**
- inferiorly: inferior border of the hyoid bone
- anteriorly: posterior border of the submandibular gland
- posterolaterally: posterior border of **the sternocleidomastoid muscle**
- medially: medial border of the **internal carotid artery**

➨ There are two sublevels:

- **level 2a:** inseparable from or anterior to the posterior edge of **the internal jugular vein; includes jugulodigastric nodal group**
- **level 2b:** posterior to and separable by a fat plane from the internal jugular vein.

➡ LEVEL III: MIDDLE INTERNAL JUGULAR (DEEP CERVICAL) CHAIN

- superiorly: inferior border of the hyoid bone
- inferiorly: inferior border of the cricoid cartilage
- anteriorly: anterior border of the sternocleidomastoid muscle
- posterolaterally: posterior border of the sternocleidomastoid muscle
- medially: medial border of the common carotid artery

- **Level IV: lower internal jugular (deep cervical) chain**

- superiorly: inferior border of the cricoid cartilage
- inferiorly: level of the clavicle
- anteriorly: anterior border of the sternocleidomastoid muscle
- posterolaterally: oblique line drawn through the posterolateral edge of the sternocleidomastoid muscle and the lateral edge of the anterior scalene muscle [2]
- medially: medial border of the common carotid artery

➨ LEVEL V: POSTERIOR TRIANGLE

- superiorly: skull base at the apex of the convergence of sternocleidomastoid and trapezius muscles
- inferiorly: level of the clavicle
- anteromedially: posterior border of the sternocleidomastoid muscle
- posterolaterally: anterior border of the trapezius muscle

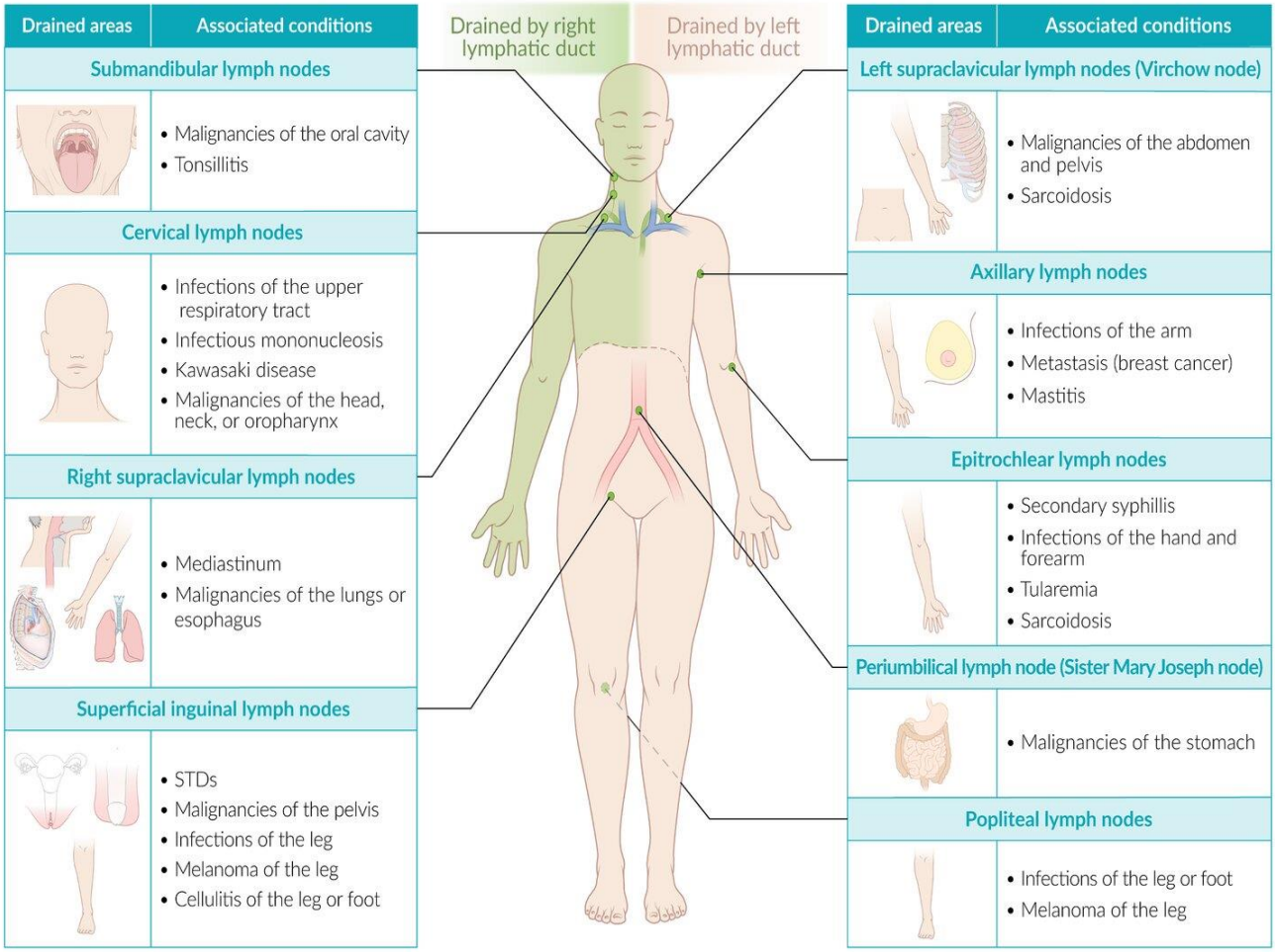
➨ There are two sublevels:

- **level Va:** superior half, superior to inferior border of the cricoid cartilage (posterior to levels II and III); includes spinal accessory nerve
- **level Vb:** inferior half, inferior to inferior border of the cricoid cartilage (posterior to level IV); includes lateral supraclavicular nodes [1]

➨ LEVEL VI: CENTRAL (ANTERIOR) COMPARTMENT

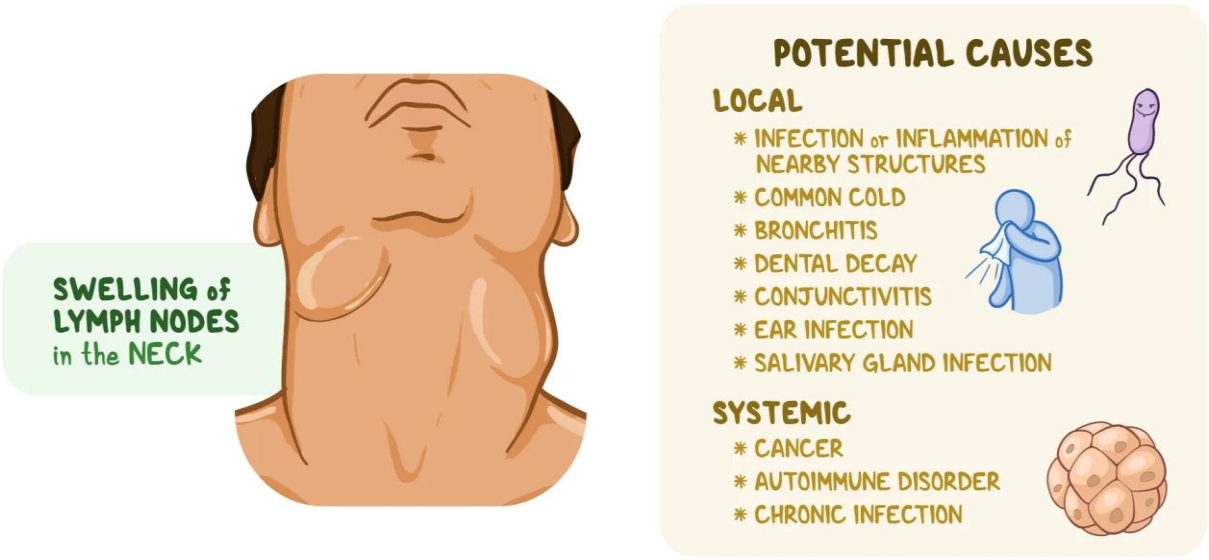
- superiorly: inferior border of hyoid bone
- inferiorly: superior border of manubrium (suprasternal notch)
- anteriorly: platysma muscle [8]
- posteriorly: trachea (medially) and prevertebral space (laterally) [8]
- laterally: medial borders of both common carotid arteries (medial to levels III and IV)
- includes anterior jugular, pretracheal, paratracheal, prelaryngeal/precricoid (Delphian), and perithyroidal nodes

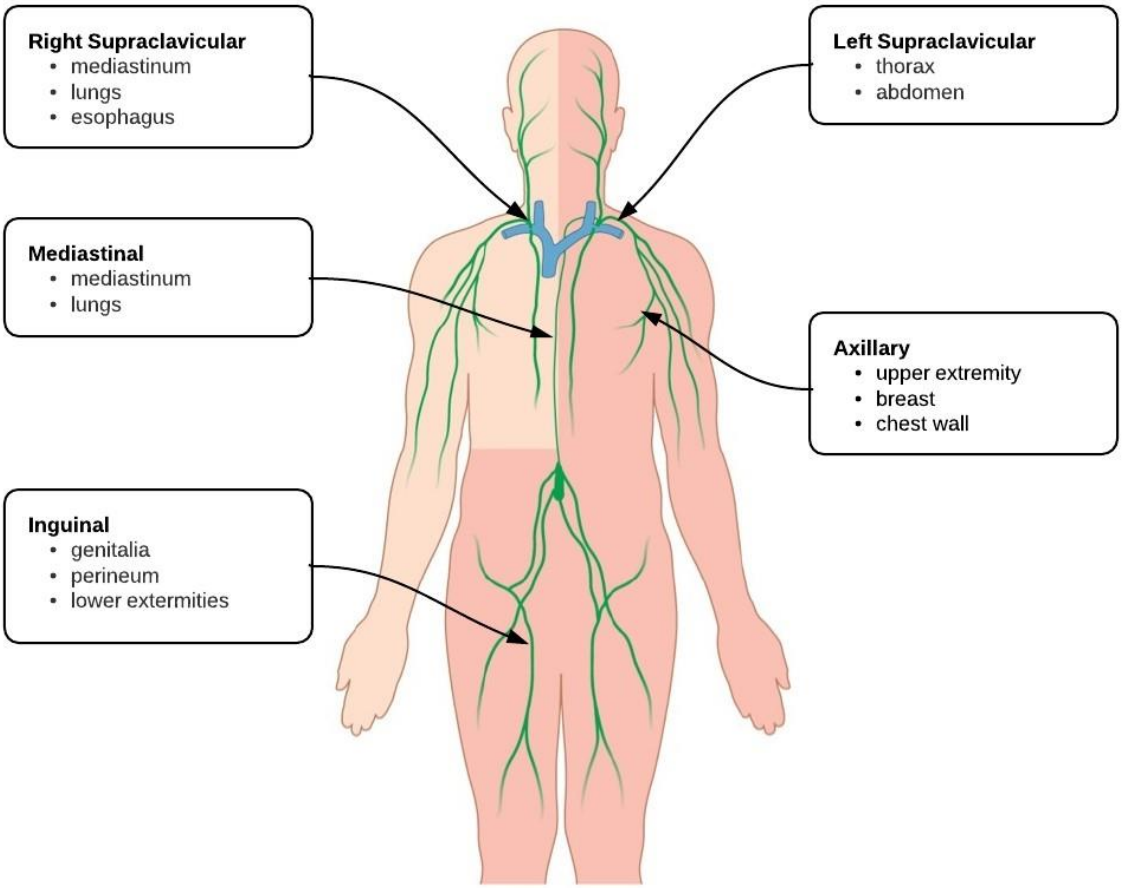
➡DRAINAGE OF LYMPH NODES:



LYMPHADENOPATHY

- Lymph nodes which are abnormal in size, number, or consistency and is often used as a symptom for swollen or enlarged lymph nodes.
- **Classified:**
- **Generalized**-2 or more contiguous area
- **Localized** –involve one area




Right Supraclavicular
• mediastinum
• lungs
• esophagus
Left Supraclavicular
• thorax
• abdomen
Mediastinal
• mediastinum
• lungs
Axillary
• upper extremity
• breast
• chest wall
Inguinal
• genitalia
• perineum
• lower extermities

➨ CAUSES OF ENLARGEMENT:

- ❖ Inflammatory
- ❖ Acute or chronic
- ❖ lymphadenitis
- ❖ Infection
- ❖ Tuberculosis
- ❖ filariasis
- ❖ secondary syphilis
- ❖ infectious mononucleosis

- ❖ **NEOPLASTIC**
- ❖ Carcinoma
- ❖ sarcoma

- ❖ HAEMATOLOGICAL:
- ❖ Hodgkins disease
- ❖ Non-hodgkins
- ❖ Lymphoma
- ❖ Chronic lymphatic
- ❖ Leukemia
- ❖ IMMUNOLOGICAL
- ❖ Aids
- ❖ Drug reaction
- ❖ Systemic lupus
- ❖ Erythmatous
- ❖ Rhematoid arthritis

CLINICAL ASSESMENT

- The Red flags/ alarm signals indicating Neck and throat malignancy by The European Head and Neck society (2017) are as follows:

- • Painful/ sensitive tongue non-healing lesion
  • Red & white mucous membranes in the mouth
  • Throat pain (> 3 weeks)
  • Persistent hoarseness (> 3 weeks)
  • Pain and/or difficulty in swallowing
  • Swelling in the neck
  • Unilateral clogged nose and/or bloody nasal discharge

- Therapists that work on prescription (patients who have been referred and examined by a medical specialist) will rarely need to asses for red flags since they have usually already been excluded by the medical specialist. Sometimes patients are falsely labelled with a simple diagnosis such as tension headache or myalgia of the masticatory muscles; if during the our physical examination the features do not fit the therapist should be alerted and refer patients back to the specialist or GP without delay

- In the craniofacial and mandibular area, the therapist often treats asymmetry. The affected lymph tissue can cause facial asymmetries. The changes in the craniofacial area can be regarded as a problem other than that of the lymphatic tissue and thus mask the actual problem.

- Enlarged lymph nodes may have three causes:
  • Specific and a-specific inflammations.
  • Metastases of tumor cells from the surrounding tissue.
  • Tumors of the lymphatic system .

- When there are no clear indications of a craniomandibular and facial dysfunctions in a subjective examination, but a clear dominant asymmetry in the soft tissue is observed and this discomfort is not observed by an E.N.T. doctor or another specialist, the therapist can perform an global palpation examination on the lymph nodes

CLINICAL EXAMINATION:

HISTORY

- *AGE*
- *DURATION*
- *GROUP FIRST AFFECTED*
- *PAIN*
- *FEVER*
- *PRIMARY FOCUS*
- *LOSS OF APPETITE*
- *PRESSURE EFFECTS*
- *PAST HISTORY*
- *FAMILY HISTORY*

➢ LOCAL EXAMINATION:

INSPECTION: number ,position ,size , skin overlying swelling , pressure effects .

PALPATION: Inspectory findings , consistency , matted or not , fixity to surrounding structures , drainage area .

➢ GENERAL EXAMINATION:

LYMPH NODES in other parts of the body .

- **AGE** tuberculosis and syphilis primary malignant lymphoma Effect young age
- **duration** short acute lymphadenitis group affected first example cervical group affects first in Hodgkin's disease tuberculosis etc. where as inguinal lymph node affects first in filariasis
- **pain** acute and chronic infection are painful where as painless in syphilis primary malignant lymphoma mas and secondary carcinoma
- **fever** evening rise of temperature is characteristic feature of TB periodic fever in filaria once in a month

➡ PRIMARY FOCUS

whenever lymph node in larged it is usual practice to look for primary focus in drainage area of lymph nodes this should be done in acute and chronic lymphadenitis

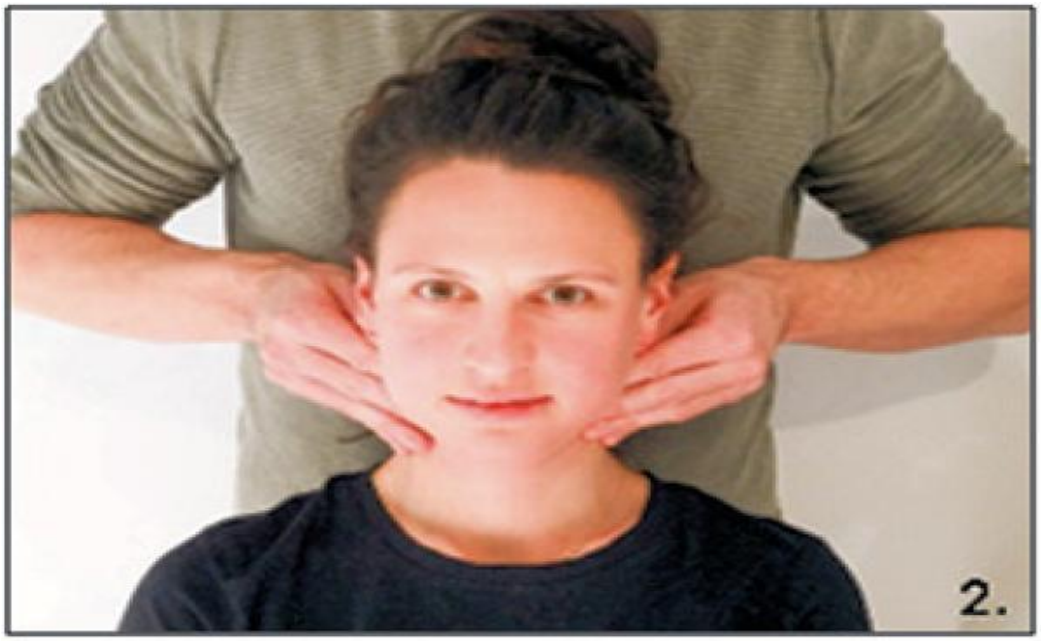
- **loss of appetite and weight** In case of malignant lymphadenopathisis
- **pressure effects** Example dysphagia me occur when esophagus is pressured
- **past history** enlargement of and sub hospital group of lymph nodes maybe enlarged in secondary stage off syphilis
- **family history** sometimes history of TB in family.

PERFORMING THE EXAMINATION:

The therapist stands behind the patient, who is sitting in an upright position with the cervical spine in 20-30 degrees flexion.

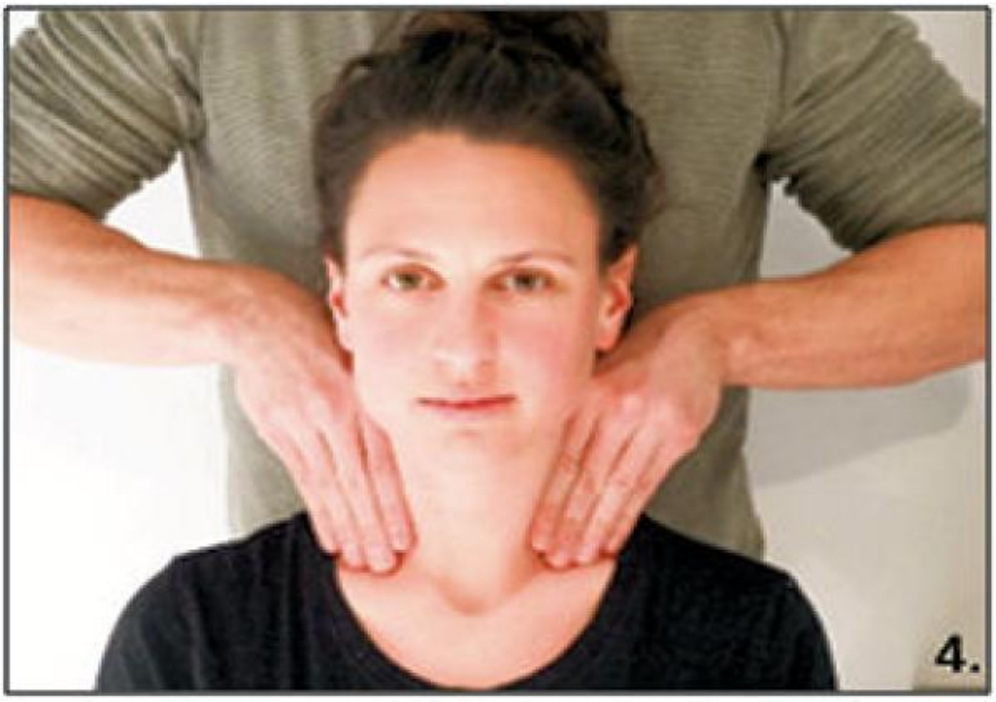
- The palpation is performed with both hands for a comparison of both sides. It is therefore time-saving to first investigate
- sub mentally,
- then towards the angulus mandibularis,
- through anterocranial to the Sternocleidomastoid muscle (Jugular),
- the supraclavicular space and
- then along the edge of the Trapezius muscle (pars descendens) in the direction of the occiput (Nuchal) .
- Hold the hands and fingers flat and begin parallel to the skin. The fingers are stretched and make a rubbing or a somewhat twisting movement. Palpation might be painful, therefore pay close attention to the patient's reactions .

1.Submental



2.Mandibular angle,

3.Jugular,



4.Supraclavicular

5. Nucha

ASSESSMENT

A normal lymph node is small, approximately 3-7 mm, usually spool-shaped, smooth, sharply edged, elastic in consistency, not fused with the skin or underlying tissues and is not painful during palpation. A normal lymph node in the neck is barely perceptible. During palpation they feel like elastic marbles .

- Lymph nodes can be mistaken for a muscle (or artery). You must be able to roll a lymph node in two directions; up and down and from left to right. With a muscle or artery this will not be possible in these two directions .
-

Clinical interpretation of the findings

Lymph nodes in the head and neck region are not visible under normal circumstances and can hardly be palpated. After inflammation in the head and neck area, lymph nodes are often somewhat enlarged reactively. In that case, the node is also slightly firmer in consistency .

- **SIZE:** The lymph nodes size says little about the severity of the condition, only with very large nodes is the chance of a severe illness enhanced.
- **PAIN:** Pain during palpation indicates active inflammation. Sometimes the skin above the lymph node will appear red and warm to the touch.
- **CONSISTENCY:** A soft lymph node is usually harmless. Very firm lymph nodes are often based on metastasis, but firmness also occurs in certain forms of Hodgkin's disease and granulomatous inflammations. A rubbery consistency fits more with malignant lymphoma and chronic leukemia.

- **LOCALIZATION**:The presence of supraclavicular lymph nodes is suspected for malignancy. On the left side in the supraclavicular space is a special lymph node (the gland of Virchov) which is of special importance, because it is located in the drainage area of the thoracic duct. When this lymph node is enlarged pathologically, you must consider a metastasis of a tumor in an area involving lymphogenic drainage via the thoracic duct (for example stomach, gall bladder, ovary, pancreas, lung and testis) (5). Lung and breast cancer often metastasize to the same side as the source. In addition, pathological infraclavicular lymph nodes occur both on the left and right.
- **FUSING:** Enlarged lymph nodes that have grown fused to one another or with the skin, are suspected for an active infection or malignancy.

INVESTIGATIONS

- COMPLETE blood count
- Chest Radiography
- Serological investigation
- Nodal biopsy
- Fine needle aspiration cytology
- C.T scan
- M.R.I

- **LYMPHOGRAPHY** valuable tool for detection of lymphatic fistulas and lymphatic leakage.
- **LYMPHANGIOSCINTIGRAPHY** Tc-99m -interdermally and after 1 minute and again after 10-30 minutes.

CONCLUSION:

- Clinicians working in the domain of the oro-facial region such as specialized physical therapists, speech language pathologists and dentists need clinical knowledge about lymph node pathology and must try to distinguish between benign- and malignant lymph nodes.

REFERENCES

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