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Lymphatic drainage of head and neck pdf

The head and neck, as a common anatomical region, is characterized by a large number of critical structures located in a relatively small geographical area. It includes bone, nervous, arterial, venous, muscle and lymph structures. Lymphadenopathy is a significant clinical finding associated with acute infection, granulomatous disease, autoimmune disease and malignancy. The participation of specific nodal groups is an indicator of pathologically affected organs and tissues, especially in the context of malignancies. As such, intimate knowledge of the anatomical relations of lymphatic nodal levels and the structures that drain are crucial for the provision of appropriate therapy in many patients with head and neck cancer. This knowledge is especially important for directing the approach to the correct treatment of locoregional, whether through surgery or irradiation. A detailed understanding of lymphatic levels of the neck is required, including their anatomical configuration and boundaries, patterns of drainage and the risk of metastatic involvement in the context of malignancy. The head and neck contain a rich and complex lymphatic network of more than 300 nodes and their intermediate ducts. Aponeuroses connect them together with the muscles, nerves and vessels of the head and neck. These lymphatic chains are strongly lateral and usually do not communicate directly between left and right in the absence of a pathological process. This lymphatic drainage originates at the base of the skull, then continues to the jugular chain adjacent to the inner jugular vein. From there, it moves in the chain of spinal-accessory accessories adjacent to the spinal accessory nerve, or cranial nerve XI, and then corresponds to the supralavicular circuit. Lymph then drains on both sides. On the left side, they drain either directly into the vascular region through the jugulo-subclave venous fusion or directly into the thoracic canal. On the right side, they insing directly into the lymphatic tube. Conversely, most structures drain ipsilaterally, except in the case of structures located in the anatomical middle lines. These include the nasopharynx, pharyngeal wall, tongue base, soft palate and larynx. Lymph nodes of the neck are additionally classified by level. These levels are Ia, Ib, II, III, IV, V, VI, VII, VIII, IX, X. [1][3][4][4]Level Ia: Submental nodes of the Group Anatomy I are those bound by mandibles higher and lateral and than hydin bone hyin bone hyin. Level Ia contains the replacement nodal group, limited better than the menti symphysis and lower than the sublingual bone. It is a limited anterior part of the muscles of the tepsma, posterior from the milochiid muscles, lateral from the anterior abdomen of the dykestral muscle and mediation in the virtual anatomy. These boundaries form a triangular area, also called a replacement triangle. Drainage This group drains the skin of the mental region, or chin, middle lower lip, anterior mouth and floor of the mouth. Associated primary malignancies These nodes most often contain metastatic deposits of malignancies on the floor of the mouth, anterior oral tongue, mandible alveolar ridge, and lower lip. Level Ib: Submandibular group Anatomy level Ib contains the submandibular node, bounded better than the mylochioid muscle and lower than the approach bone. It is surrounded front by the menti symphysis, the posterior part of the posterior edge of the submandibular gland, laterally from the inner surface of the mandible, and medial from the dykestal muscle. These boundaries form a triangular area, also called a submandibular triangle. Drainage They drain the effervescent lymph from level Ia, the lower nasal cavity, both hard and soft palate, both maxillary and mandible alveolar ridges. They also drain them from the skin and mucous membrane of the cheek, both the upper and lower lip, the floor of the mouth and the anterior oral tongue. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the oral cavity, a front nasal cavity, soft tissues of the middle of the face, and a submandibular gland. Level II: The anatomy of the upper group is the beginning of the jugular chain. It contains the upper jugular node group, adjacent to the upper third of the inner jugular vein (IJV) and the upper spinal nerve accessory. It is better surrounded by the placement of the posterior abdomen of the diastral muscle in the mastoid process and lower than the tail boundary of the hyoid bone or alternatively, as a surgical landmark, carotid bifurcation. It is limited a frontal from the posterior edge of the submandibular gland, the posterior edge of the sternocleidomastoid muscle (SCM), lateral from the medial surface of the SCM, and medial from the inner carotid artery and sulfur of the muscles. Drainage This group drains the effernal lymphatic tissue of the face, parotid gland, level Ia, level Ib and retropharyngeal nodes. It receives direct drainage from the nasal cavity, the entire pharyngeal axis, larynx, external auditory canal, middle ear and sublingual and submandibular glands. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the nasal and oral cavities, nasopharynx, oropharynx, hypopharynx, larynx, and the main salivary glands. This is the most commonly participating noda level. [6] [7] [8] [9] [10] Level III: The middle jugular group Anatomy level III contains the middle jugular node group adjacent to the middle third of the IJV. It is bounded better than the tail boundary of the sublingual bone, and lower than the tail edge of the quotid cartilage or alternatively, as a surgical landmark, a plan where omohyoid muscle crosses the IJV. It is also limited to the front edge of the SCM, or the back third of the tyrochiid muscle, and the posterior boundary of the SCM. it is bordered laterally with the media surface of the SCM, and the media with the inner carotid artery and syedicular muscle. Drainage This group drains the effernal lymph of level II and level V and partly from the retropharyngeal, pretracheal and recurrent laryngeal nodes. It receives direct drainage from the base of the tongue, tonsils, larynx, hypopharinx and thyroid gland. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the oral cavity, nasopharynx, oropharynx, hypopharynx, and larynx. [11] [12] [13] [14] [15] Level IVa: Lower jugular groupAnatomy level IVa contains the lower jugular node group adjacent to the lower third of the IJV. It is bounded higher than the tray of crooked cartilage, and lower than the virtual level two centimeters higher than the sternoclave joint, based on surgical conventions at IVa dissection level. It is limited to the front edge of the SCM (higher) and the body of the SCM (lower), and the rear of the rear edge of the SCM (higher) and SM (lower). This group is also laterally bound by the median edge of the SCM (better) and the lateral edge of the SCM (lower). retropharyngeal, pretracheal and recurrent laryngeal nodes. It receives direct drainage from the larynx, hypopharynx and thyroid gland. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the hypopharynx, larynx, thyroid, cervical esophagus, and rarely, the anterior oral cavity. Deposits from the anterior oral cavity can manifest themselves without proximal nox. Level IVb: Medial supraclavicular groupAnatomy This Nobel group is a continuation of level IVa to the upper end of the thoracic manuria. It is a limited front part of the deep surface of the SCM. At the back, it is bound by the front edge of the muscle of rock tissue (higher) and pulmonary tip, brachiofaphial vein and artery on the right, as well as ordinary carotid and subclavian arteries on the left (lower). It is bordered by the lateral edge of the rock muscle and medial from the middle boundary of the common carotid artery, which is also adjacent to level VI. Drainage This group drains the effernal lymphatic from levels IVa and Vc, and partially from pretracheal and recurrent laryngeal nodes. It receives direct drainage from the larynx, trachea, hypopharynx, esophagus and thyroid gland. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the hypopharynx, subglentic larynx, trachea, cervical esophagus. Level Va and Vb: Rear triangle groupAnatomy These nodal groups are contained with the rear triangle. They are located behind the SCM and adjacent to the lower part of the nerve spine and transverse cervical vessels. It is bound by the upper end of the sublingual bone and is inferior to a virtual plane crossing the transverse vessels. It is tied to the front of the rear margin of the SCM and the rear boundary of the front end of the trapezoidal muscle. It is also bound to the muscles of platysma and skin laterally, and by levator blades (higher) and rock muscle (lower) medial. Virtual plane of the lower edge of the curved cartilage divides this group into upper, or Va, and lower, or Vb, rear triangles. Drainage these node groups drain the efferent lymph nodes from the occipital, retro-auriculane, occipital and parietal scalp. It receives direct drainage from the skin of the lateral and back door and shoulder, nasopharynx, oropharynx and thyroid gland. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the nasopharynx, oropharynx, and thyroid gland. Vc level: Lateral supraclavicular group Anatomy This nodual group is an extension of levels Va and Vb; it contains the lateral nadracular group. It is limited better than a virtual plan crossing the transverse ships, and lower than a virtual plan with 2 cm better than sternoclavicular compound. It is also limited to the front by the skin and posterior from the front contour of the table muscles (higher) and jagged front (lower). Laterally it is limited by the trapezoidal muscle (better) and collarbone (lower). Media, it is bordered by cannus muscles and lateral edge of the SCM, and is next to the side edge of the IVa level. Drainage This group drains the efferous lymph of levels Va and Vb. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the nasopharynx. Level VI: Front compartment groupThe front component contains this node group, which is symmetrical for the anatomical middle line. It is also subdivided into the superficially located anterior jugular nodes or level VIa, and the deeper to laryngeal, pre-tracheal and paratracheal (recurrent larynx) nodes or VIb level. Level VIaAnatomy level VIa is better bound than the lower edge of level Ib and lower than the upper edge of the thoracic manuvrium. It is surrounded front by the skin and tapsma, back from the front surface of the infrahyoid muscles, and bilaterally from the front edges of scMs. Drainage VIa resists integrations of the lower surface of the face and front door. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the lower lip and advanced Caribbean mandible carcinoma. Level VIbAnatomy VIb is better limited by the higher edge of thyroid cartilage and lower than the upper limit of the thoracic manuvrium. It is also limited to the front from the back boundary of the infrachioid muscles and posterior from the anterior larynx, thyroid and trachea in the middle line, vertebral muscles on the right and esophagus on the left. This group is surrounded laterally by the general carotid artery and media from the lateral aspects of the trachea and esophagus. Drainage VIb drains the effernal lymphatic system from the anterior floor of the mouth, the tip of the oral cavity, lower lip, thyroid, glot and supraglottic larynx, hypopharynx and esophagus of the cervix. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the lower lip, oral cavity (the floor of the mouth and anterior tongue), thyroid, glot and subglot larynx, on top of the pyriform sinus, and cervical esophagus. [16] [17] Level VII: Prevertebral group, including levels VIIa and VIIbLevel VIIa: Retropharyngeal nodesAnatomy These nodes are contained in a retropharyngeal space. They are divided into medium and lateral subgroups. The lateral groups are better bound by the upper end of the C1 vertebrate body, or the hard palate, and lower than the upper edge of the body of the hyoid bone. Front, they are tied from the back edge of the upper / middle pharyngeal constrictor muscles. They are surrounded by longus capitulation and longus coli muscles, laterally from the medial edge of the inner carotid artery, and mediation along a virtual line parallel to the lateral edge of the longus capitus muscle. The medians are approximately the middle line and are not well defined. Drainage These nodes drain the effertus lymph from the nasopharynx, eustchiatic tube and soft palate. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the nasopharynx, pharyngeal wall, and oropharynx, including tonsillary fossa and soft palate. Level VIIb: Retrostyloid nodes Anatomy These nodes are contained in a greasy space around the large vessels of the neck, leading to jugular chams. They are the better extension of level II. Level VIIb is bound with jugular foramen at the base of the skull and lower than the lower edge of the lateral process of the C1 vertebrate organ, the upper limit of level II. These nodes are bound to the front of the posterior edge of the prestyloid paraphryngeal space and the posterior part of the C1 vertebrate body and the base of the skull. Finally, they are laterally bordered by the styloid process and deep mumps lobe, and the medial with a media edge of the inner carotid artery. Drainage These nodes drain the efferent lymphatic from the nasopharynx. Associated primary These nodes most often contain metastatic deposits from malignancies of the nasopharynx and anywhere in the head and neck, which leads to significant infiltration of the upper levels II nodes, causing by retrograde flow. Level VIII: Parotid GroupAnatomy This group includes subcutaneous preural, superficial and deep intraparotid, and subparotid nodes. It is surrounded higher by the zygomatic arc and the outer auditory canal, and lower than the mandible angle. This group is a limited front of the posterior edge of the mandible ramus, the posterior edge of the master muscle (lateral), and a medial pterygoid muscle (median). It is also bordered rear from the front edge of the SCM (lateral) and posterior abdomen of the dykestral muscle (more media). These nodes are bordered laterally by a superficial muscle aponeuroid layer (SMAS) layer within subcutaneous tissues, and medial through the styloid process and muscle. Drainage These nodes drain the effertus lymph from the frontal and temporal skin, eyelids, conjunctiva, ear sluices, external acoustic meats, timpana, nasal cavities, nose root, nasopharynx and eustachian tube. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of previously declared drainage structures, as well as orbit, external auditory canal, and mumps gland. [18] Level IX: Buccofacial GroupAnatomy This group contains mallar and bucophagus nodes. These are superficial nodes surrounding the facial vessels on the outer surface of the buccaneer muscles. It is bounded higher than the lower edge of the orbit and lower than the lower edge of the mandible. It is also limited to the front by the SMAS layer within the subcutaneous tissue, and back from the front edge of the mast muscle and housing adiposum buccae. The lateral boundary is the SMAS layer, and the medial boundary is the bucinator muscle. Drainage These nodes drain the efferent vessels of the nose, eyelids and cheek. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the skin of the face, nose, and buccaneer mucosa, as well as the maxillary sinus, if soft tissues invade the cheek. Level X: Posterior skull group, including levels Xa and XbLevel Xa: Retroauricular and Subauricular nodes Anatomy This group includes superficial nodes of the mastoid process. It is limited better than the upper edge of the external auditory canal, and lower than the mastoid tip. It is also limited to the front of the front edge of the mastoid (less) and the back edge of the external auditory canal (better), and the back edge of the SCM. This group is bordered by subcutaneous tissue and medial with splenius capitis muscles (lower) and lepsoccitic bone (better). Drainage These nodes drain the essential vessels from the posterior auriculum external auditory canal and adjacent scalp. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of retro-auricular skin. Level HB: Occipital nodesAnatomy This group is a better and superficial extension of level Va. It binds better to the outer occipital protrusion and lower than the upper limit of level V. It is also limited to the front of the back edge of the SCM, which is the rear boundary at level Xa and the posterior/lateral side of the trapezoidal muscle. Finally, this group is bordered laterally by subcutaneous tissues, and meditative by splenius capitis muscle. Drainage These nodes drain effective vessels from the back hairy scalp. Associated primary malignancies These nodes most often contain metastatic deposits from malignancies of the occipital skin. [5] Lymphatic drainage of the head and neck is unique. Remarkably well-defined and characterized anatomical subgroups are closely related to the drainage anatomical structure. They, in turn, are associated with malignant neoplasms arising from specific anatomical structures. Intimate knowledge of this network allows the surgeon to complete a suitable oncological-appropriate dissection. It also helps the radiation oncologist appropriate treatment of elective noc field levels to reduce relapse, and the primary care physician to guide the way to the necessary work. Continuing education / review QuestionsLeftatic system, cervical lymph nodes, lymph nodes of the mammary gland, cistern stilettos, Lumbar lymph nodes, pelvic lymph nodes, lymph nodes of the lower extremities, thoracic canal, Thymus, Axillary lymph nodes, spleen, lymph nodes of the upper part, inguinal (more...) Lymph nodes of the neck; Posterior view, Afterseat to deep cervical glands, Afferent vessels of the retropharyngeal glands, Retropharyngeal glands, glands with glands, glands, glands with deep cervical glands, effernal vessels of the retropharyngeal glands. Contribution (more...) Lymph nodes of the hand, Deltoid thoracic glands, Axillary glands, Supratrochlear gland. The contribution of Gray's anatomy plaques mediastinal lymph nodes. Image courtesy S Bhimji MD station for cervical lymph nodes. Contribution from Shekhar Gogna MD 1.Grégoire V, Ang K, Buddha W, Grau C, Hamoir M, Langendijk JA, Lee A, Le QT, Maingon P, Nutting C, O'Sullivan B, Porceddu SV, Lengele B. 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