Chapter 13: Mass in the Neck

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In approaching the problem of a mass in the neck, one immediately encounters the fact that there are normally palpable masses in the neck (e.g., almost all children have multiple palpable lymph nodes). Furthermore, few areas are as subjective as the results of palpation, depending as it does upon the skill and previous experience of the examiner. The terms used in describing neck masses include "soft", "rubbery", "hard", "freely movable", "fixed", and even "relatively fixed" and "matted". Even the location of neck masses may be vague - "jugulodigastric", "high posterior triangle".

In terms of normalcy of neck masses, essentially all children below puberty have palpable neck nodes. However, nodes larger than 2 cm are distinctly abnormal. This arbitrary size is thus used as a criterion. Most adults will have persistence of at least one enlarged node from childhood, which they can often relate has been present. Its presence is often known by enlargement and regression during viral infections. Otherwise, the presence of a palpable neck node in an adult is pathologic.

Fortunately, there are some statistical guidelines as to the seriousness of palpable lumps in the neck. In children, 80% of palpable neck masses (over 2 cm) are benign. In adults, however, 50-80% of palpable masses are malignant and most of them are metastatic, usually from tumors of the head and neck.

Neck masses are described in location using the commonly described triangles of the neck. Their location also influences the likelihood of their being benign or malignant. We speak of midline masses (usually benign), anterior triangle masses (in front of the sternocleidomastoid muscles), submental triangle masses, submandibular triangle masses (either submaxillary gland or lymph nodes), and posterior triangle masses (usually malignant). Also included are supraclavicular masses (frequently metastatic disease from below the clavicles).

For the purposes of this discussion, we shall divide the masses into those of children and those of adults (although remembering that those common to one group can occur in the other) and we shall not discuss the supraclavicular lesions.

The evaluation of neck masses assumes the performances of a complete examination of the head and neck, following the taking of a complete history including general health, family history, drug history, any early radiation exposure, and history of exposure to infectious diseases such as tuberculosis.
**History**

Age of patient.  
Place of birth and residence.  
Exposure to infectious diseases, animals, birds, unpasteurized milk, etc.  
Irradiation to head, neck, or thorax.  
Duration of neck mass.  
Growth of mass (constant and gradual, rapid, intermittent growth and shrinkage).  
Pain.  
Associated head and neck symptoms: pain, nasal obstruction, bleeding, ear pain, odynophagia, dysphagia, hoarseness.  
Inflammation.  
Recent infections, oral surgery, skin lesions.  
General health: fever, night sweats, weight loss, malaise.  
Family history: thyroid disease or surgery, tumors of the head and neck, endocrine disturbances.

**Physical Examination**

Skin and scalp lesions: infection, tumor.  

Ears: *Pinnae and external auditory canals:* infection, tumor, obstruction of nasal passages, serosanguineous discharge.  

Nasopharynx: tumor.  

Oral cavity: periodontal infection, extraction sites, tumor of floor of mouth, tongue, buccal mucosa, retromolar trigone.  

Oropharynx, tonsil: infection, tumor, unilateral enlargement, tonsillar pillar.  

Hypopharynx: base of tongue (palpate), pharyngeal and larynx walls, epiglottis, aryepiglottic folds, pyriform sinuses (pooling of secretions), postcricoid area, false and true vocal cords.  

Neck: palpation of all triangles; attention to submaxillary glands, tail of parotid; normal laryngeal crepitis, thyroid gland.  

Neurologic examination: all cranial nerves with attention to V (especially infraorbital branch), VI, VII. Also palpate abdomen for liver and spleen and other nodal areas (axilla, groin, etc).  

**Laboratory Studies**

Minimum laboratory studies include, complete blood count (CBC), chest x-ray, and skin test for tuberculosis.
Pediatric Neck Masses

Midline Neck Masses - Children

Subjective Complaints

Most midline neck masses in children present as slowly growing, usually painless lumps. Occasionally there is a history of the mass having become tender and inflamed and perhaps draining. There are usually no systemic symptoms.

Objective Findings

The mass may be located anywhere from just beneath the chin to just above the sternal notch. The most usual location is in the area of the hyoid bone. Unless it has been infected, it will usually be unattached to the skin. It may feel cystic. Some of these masses will be attached to the isthmus of the thyroid gland.

Assessment

By far the most likely lesion in this area is a thyroglossal duct cyst. Because they are sometimes associated with absent thyroid in the usual location, a thyroid scan should be obtained. Also occurring in the midline are pyramidal thyroid lobes, which will be shown by the scan. Dermoids may present as midline lesions. Also an occasional submental lymph node may present in this way.

Plan

Thyroglossal duct cysts should be excised before they grow or become infected. It is necessary to prove the presence of functioning thyroid tissue in the normal location before excision. The important point about excision is that the midportion of the hyoid must be removed to prevent recurrence. Dermoids should be excised. Submental nodes may be watched if they don't exceed 2 cm in diameter. Occasionally, if any inflammatory node is suspected, a course of 7-10 days of antibiotics may be used.

Anterior Triangle Masses - Children

Subjective Complaints

The usual presentation is that of a slowly growing, painless, lateral neck masses. There may be rapid growth, which may or may not be associated with tenderness and overlying erythema. In some cases, there may be a history of intermittent drainage from a small sinus opening along the anterior border of the sternocleidomastoid muscle.

Objective Findings

Lateral neck masses in children may be cystic or solid. They usually lie deep to the sternocleidomastoid muscle and are freely movable. Inspection along the anterior border of the sternocleidomastoid muscle should be made for sinus openings. Also, the external auditory
canal should be inspected carefully, as should the tonsillar fossa. Palpation of the thyroid gland and the lower deep jugular neck nodes should be performed. The remainder of the body should be examined for lymph nodes. A CBC, chest x-ray, and tuberculin skin tests are part of the workup. If the tuberculin test is weakly positive, skin tests for photochromogens and scotochromogens should be applied. Where low cervical lymph nodes in the area of the thyroid are found, a thyroid scan should be performed. In those patients in whom cervical sinus tracts are found, or those with external auditory canal sinus tracts, radiopaque dye contrast sinograms should be carried out.

Assessment

By far the most common lesions will be congenital. Second, will be infectious diseases, frequently chronic and often due to mycobacteria. Third, will be tumors of the thyroid gland. Also possible are lesions such as lymphomas, neuroblastomas, etc.

Plan

The treatment (and definitive diagnosis) is surgical excision. Where diagnosis is not certain, tissue from the mass should be sent for culture for routine fungus, and mycobacterial cultures. Pus should be examined by gram stain as well as crush preparation for sulfur granules. The finding of papillary thyroid carcinoma calls for near-total thyroidectomy and resection of any associated lymph nodes. The mycobacterial infections are treated with the appropriate antibiotic agents. Actinomycosis is very responsive to penicillin therapy. In the case of branchial cleft cysts, complete excision is necessary. Previous injection of any sinus tracts with methylene blue aids in complete removal of any tracts associated with the cyst.

Posterior Triangle Masses - Children

Subjective Complaints

Most posterior triangle masses present as discrete, slowly growing, painless masses.

Objective Findings

Examination of the scalp should be carried out to rule out melanoma and infectious lesions such as impetigo. If the lesions are seen in a child of Chinese origin, squamous cell carcinoma of the nasopharynx is a strong possibility, and an examination of the nasopharynx is indicated. Examination of the external ear canal should rule out external otitis. Other lymph node groups should be examined.

Assessment

In addition to examination of the nasopharynx under anesthesia and biopsy, x-ray examination of the base of the skull is indicated. The presence of other nodes in the body suggests lymphoma.
Plan

Infectious scalp lesions should be cultured and appropriate antibiotic therapy instituted. Any lesion resembling melanoma should be biopsied. If identified, a metastatic workup is carried out. If negative, wide resection of the primary and neck node dissection in continuity is carried out. If no lesions are found, direct biopsy of the nodes is necessary, with examination of frozen sections and culture of the node tissue.

Adult Neck Masses

Midline Masses - Adults

Most midline neck masses in adults are the same as those in children. The emphasis shifts toward thyroid carcinoma, however. Thyroglossal duct cysts are not uncommon in adults. The presentation and plan are the same.

Anterior Triangle Masses - Adults

Subjective Complaints

The location of the mass in the lateral neck is important. If high and in the submaxillary triangle, a history of recurrent swelling with eating is important (see Salivary Gland Disorders, Chapter 10). Slowly growing lesions in this region may be either submaxillary gland or associated lymph nodes. Most other lesions in the anterior triangle will be painless and slowly growing. A history of any oral lesions should be sought.

Objective Findings

The basic examination of nasopharynx, oropharynx, oral cavity, hypopharynx, and larynx are required. Biopsy of any suspicious obvious lesion is carried out. Masses high in the area of the mastoid tip and medial to the sternocleidomastoid should be checked to see if they move in an anterior-posterior direction and not in a superior-inferior direction. The presence of nodes low in the neck requires careful palpation of the thyroid gland.

Assessment

In adults, the most likely possibility will be metastatic tumor, usually from the head and neck. In the face of a negative clinical examination, x-ray studies of the sinuses, nasopharynx, hypopharynx (by ciné barium swallow), and larynx (by air contrast tomographic laryngograms and CAT scan) are indicated. These are followed by examination under anesthesia by direct nasopharyngoscopy, laryngoscopy, and bronchoesophagoscopy. The tonsils and base of the tongue are palpated. If no lesions are found, biopsy of the nasopharynx, tonsil, retromolar trigone, base of tongue, and pyriform sinus are carried out. If the lesion is fixed to the mandible in the submaxillary triangle, tomograms of the mandible are ordered. Any lesion of the upper neck which appears fixed to the carotid artery (in the absence of any visible primary lesion) where anterior-posterior movement, but not superior-inferior movement, is present requires carotid angiography to rule out chemodectoma (carotid body tumor).
Plan

The identification of a primary tumor (almost always a squamous cell carcinoma) will require the appropriate therapy of surgery and/or radiation therapy and usually chemotherapy. Submaxillary gland tumors are usually treated by wide resection. Infectious diseases such as actinomycosis and the mycobacterial infections, which are not uncommon in the submaxillary area, are treated with the appropriate antibiotics. Carotid body tumors should be resected and vascular anastomosis or graft carried out. Lymphomas must be biopsy-proven and the treatment is chemotherapy and/or irradiation.

Posterior Triangle Masses - Adults

The considerations are the same as for children, with nasopharyngeal carcinoma being a strong likelihood.