**Differential diagnosis of neck masses**

**Lateral neck mass**

**Congenital**

**Branchial cyst:**

Mostly occur in late childhood or early adulthood as smooth fluctuant mass underlying the junction of the up.3rd and lower two 3rd of sternomastoid m. usually painless unless there is secondary bacterial infection(pain and redness and increase in size). Mostly arise from the 2nd branchial pouch and often has a tract coursing between the internal and external carotids to the tonsillar region. FNA aspiration from the mass reveals cholesterol crystals.

**Treatment**: surgical excision.

**Acquired :**

1- skin and associated structures

2- neck space infection :

parapharyngeal and retropharyngeal abscesses.

**3- Cervical lymphadenopathy:**

inflammatory or neoplastic

**A- inflammatory: specific or non specific**

Non- specific LAP : Reactive LNs hyperplasia. When there is inflammation in a region in the neck, the LNs draining this region will enlarge as lymphadenitis following tonsillitis or dental infection. The enlarged LNs are tender, frequently bilateral with systemic manifestations (fever, malaise) sometimes with torticollis and trismus.

Specific LAP :

1-TB adenitis: due to typical mycobacteria (M. tuberculosis) or atypical (M. avium- intracellulare). Usually transmitted through the infected tonsil. Open pulmonary TB may or may not be present. The affected LNs are usually in the posterior triangle in the typical and anterior triangle in the atypical type. The LNs are firm, painless and may be matted together or develop a cyst or fistula.

2- Suppurative lymphadenopathy: pus formation in the cervical LNs mostly due to Staph.aureus and streptococci.

Treatment: initially with antibiotics. Failure to response or presence of fluctuation (abscess) is an indication for incision and drainage.

3- Cat-scratch disease: caused by Bartonella henslae bacteria transmitted through contact with cats.

4- Toxoplasmosis: infection with Toxoplasma gondii.

5- Infectious mononucleosis

6- Brucellosis

7- AIDS

8- Sarcoidosis

9- Drug-induced LNs enlargement: as phenytoin, phenylbutazine. Pyrimethamine.

B- **Neoplastic LN enlargement:**

primary or secondary:

Primary :

As lymphoma (Hodgkin's and non-Hodgkin’s ) , here the LNs are multiple, rubbery and non-tender .

Leukemia: acute or chronic (associated with other features of the disease)

Secondary :

Metastasis in the cervical LN from primary tumor in the upper aero-digestive tract . Here the LNs are hard, non-tender and fixed in advanced cases with symptoms and signs of the primary tumor.

**4- Salivary gland mass:**

a- Non-neoplastic :

As mump(viral) , bacterial parotitis. Here the gland is enlarged and tender with systemic manifestations .

Calculi : presented with intermittent painful swelling during meals which resolve after minutes to hours.

b- Neoplastic:

Benign as pleomorphic adenoma or malignant as adenoid cystic carcinoma and mucoepidermoid carcinoma. The benign tumor is usually slowly growing and symptomless apart from the mass.

While the malignant tumor usually associated with pain , rapid increase in size or facial nerve palsy.

Parotid mass presents as an enlargement in the preauricular region just anterior or below the auricle obliterating the retromandibular sulcus.

**5- Thyroid gland mass**

a- Non-neoplastic:

Simple goiter ( diffuse or multinodular).

Toxic goiter.

b- Neoplastic:

Benign as adenoma or malignant as papillary ca. , follicular ca. , medullary ca. , anaplastic .

**6- Neurogenic tumors**

As schwannoma and neurofibroma, in the neck mostly arise from the nerve sheath of the vagus nerve and less commonly hypoglossal, accessory and sympathetic trunk.

Carotid body tumor: arises from the carotid body at the carotid artery bifurcation.

**7- Other rare causes**

Pharyngeal pouch.

Laryngocele.

**Mass in the Posterior Triangle**

**A- Congenital**

Cystic hygroma: type of lymphangioma (dilated lymphatic spaces), usually present at birth as a huge mass in the posterior triangle and may extends into the face and axilla causing obstructed labor.

Treatment : surgical excision which might be repeated several times.

**B- Acquired**

1- Skin and associated structures.

2- Cervical lymphadenopathy.

3- Neurogenic tumors.

**4- Cervical rib**

Present as a mass in the posterior triangle and diagnosed by x-ray.

**5- Large osteophyte**

Also may present as a mass in the posterior triangle and diagnosed by x-ray.

**Management of a mass in the neck**

**1- History**

**Age** : in children inflammatory and congenital are more common, while in adults more than 40 neoplasm should be expected until proved otherwise.

**Gender** : goiter is more common in females, while carcinoma is more in males.

**Duration** : short duration goes with inflammatory and malignant tumors, while long one goes with benign tumors.

**Symptoms** : pain and constitutional features goes with inflammatory cause . Painless mass with weight loss goes either with toxic goiter( good appetite) or TB (poor appetite).

**Other symptoms**: as hoarseness, dysphagia, dyspnea…..etc.

**History of smoking and alcohol consumption or animal contact.**

**2- Physical examination**

General examination: weight loss, anemia, jaundice…. .

ENT examination: thorough exam. Looking for signs of inflammation or primary tumor.

Examination of the mass: site, size, shape, surface, tenderness, consistency(cystic or solid), movement on swallowing or tongue protrusion, pulsatile(vascular tumor), transillumination(cystic hygroma) and auscultation of the mass (bruit in toxic goiter).

Examination of other systems.

**3- Investigations**

Not all the investigations required in all cases.

1- **Hematological:** complete blood picture and blood film.

2- **Biochemical:** renal and liver function tests.

3- **Serological tests**: tuberculin test(TB), monospot test(IMN), Rose Bengal test(brucellosis).

4- **Thyroid function tests**: if goiter is suspected.

5- **Sputum**: for acid fast bacilli isolation if TB is suspected.

6- **Radiological:**

a- plain x-ray of the neck and chest: may show focus of TB or secondary lung metastasis.

b- ultrasonography: useful in differentiating between solid and cystic mass and guide for

FNA and also can detect intra-abdominal LAP and hepatosplenomegaly.

c- contrast study: as Ba swallow if pharyngeal or esophageal pathologies are suspected.

d- angiography: if vascular tumor is suspected.

e- radionuclide scanning: for thyroid and salivary masses.

f- CTS and MRI : site, size and extent of the mass and its relation to adjacent structures and

when used with contrast can delineate vascularity of the mass.

g- Positron emission tomography: fluoro-deoxy glucose. Useful for unknown primary.

**7-** **Fine needle aspiration and cytology (FNAC**)

Indicated in persistent mass with negative investigations. It can differentiate inflammatory from neoplastic mass. The degree of accuracy reaches 90% with skilled cytopathologists.

**8- Endoscopy and biopsy from suspicious areas**: endoscopy of the pharynx, larynx, esophagus and bronchial tree with biopsy from any suspicious area is indicated if all the above investigations were negative or not conclusive.

**9- Excisional biopsy**: excision of the whole mass and sending it for histopathology. This is done as a last choice if all the above investigations were negative.

Incisional biopsy(part of the mass removed) is contraindicated in neck mass because it may cause seeding of the tumor cells along the wound.

**4- Treatment**

According to the underlying cause.

If inflammatory mass is suspected specially in children (tender mass of short duration with fever and other constitutional symptoms) then a trial of antibiotics can be given for 2 weeks with close follow up.