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Causes of non thyroid neck mass

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Abstract
Background: The neck is the transitional area between the cranium superiorly and the clavicles inferiorly that joins the head to the trunk and limbs, it serves as a major conduit for structures passing between them, in addition, several important organs with unique functions are located here.
Objectives: To diagnose the causes of the non-thyroid neck swelling.
Method: This is an prospective study on 74 patients with neck swelling from the period of January 2015 to January 2016
Results: Seventy four patients were studied, 44 female (59.46%) and 30 male (40.54%), and female to male ratio was 1.47:1. The age ranged from 1 to 70 years, with a mean age of 30 years ± 5 years. The majority being in the third decade of life constituting 20 patients (27.02%). Also my study showed that the causes of the swelling are inflammatory 30 patients (40.54%), neoplastic 27 patients (36.48%), congenital 13 patients (17.56%) and miscellaneous 4 patients (5.4%)

Keywords: Cervical mass, lymphadenopathy, Neck mass

Introduction
The neck is the transitional area between the cranium superiorly and the clavicles inferiorly that joins the head to the trunk and limbs, it serves as a major conduit for structures passing between them, in addition, several important organs with unique functions are located here [1]. The sternocleidomastoid muscle divides the neck into the anterior and the posterior triangles [2]. The anterior triangle is bounded above by the body of the mandible, posteriorly by the sternocleidomastoid muscle, and anteriorly by the midline [2]. The posterior triangle is bounded posteriorly by the trapezius muscle, anteriorly by the sternocleidomastoid muscle, and inferiorly by the clavicle [2]. The investing layer of the deep cervical fascia lies deep to the skin, between the skin and the investing layer is the platysma muscle [3]. Other than subcutaneous lipomata and sebaceous cyst, most neck swelling lie deep to the platysma [3]. When considering the swelling that may arise in any anatomical region, may be enumerates the anatomical structures lying there in and then the pathological swelling that may arise from them [4]. The lymphatic drainage of the head and neck is of considerable clinical importance [5]. The most important chain of nodes are the jugular nodes (also called cervical), which run adjacent to the internal jugular vein [5]. The other main groups are the submental, submandibular, pre- and post-auricular, occipital and posterior triangle nodes [5]. A neck swelling is any congenital or acquired swelling arising in the anterior or posterior triangles of the neck between the clavicles inferiorly and the mandible and base of skull superiorly. Neck masses are often seen in clinical practice, and the family physician should be able to determine the etiology of a mass using organized, efficient diagnostic methods. The first goal is to determine if the mass is malignant or benign; malignancies are more common in adult smokers older than 40 years. Etiologies can be grouped according to whether the onset/duration is acute (e.g., infectious), subacute (e.g., squamous cell carcinoma), or chronic (e.g., thyroid), and further narrowed by patient demographics. If the history and physical examination do not find an obvious cause, imaging and surgical tools are helpful. Contrast-enhanced computed tomography is the initial diagnostic test of choice in adults. Computed tomography angiography is recommended over magnetic resonance angiography for the evaluation of pulsatile neck masses. If imaging rules out involvement of underlying vital structures, a fine-needle aspiration biopsy can be performed, providing diagnostic information via cytology, Gram stain, and bacterial and acid-fast bacilli cultures.

Method
This is an prospective study on 74 patients with neck swelling from the period of January 2015 to January 2016.

Results

Seventy four patients were studied, 44 female (59.46%) and 30 male (40.54%), as showed in table 1, and female to male ratio was 1.47 :1. The age ranged from 1 to 70 years, with a mean age of 30 years ± 5 years. The majority being in the third decade of life constituting 20 patients (27.02%), as showed in table 2. Also my study showed that the causes of the swelling are inflammatory 30 patients (40.54%), neoplastic 27 patients (36.48%), congenital 13 patients (17.56%) and miscellaneous 4 patients (5.4%) as showed in table 3. Table 4 showed the types of inflammatory neck masses and their percentage. Table 5 showed the types of benign and malignant lesion. Table 6 show congenital lesion. And the miscellaneous causes are showed in table7

Table 1: Sex distribution of patients.

Sex	No	%
Female	44	59.46
Male	30	40.54
Total	74	100%

Table 2: Age distribution of patients.

Age group (Years)	N0	%
1 – 10	8	10.81
11 -20	10	13.51
21 - 30	20	27.02
31 – 40	16	21.62
41- 50	12	16.21
51-60	4	5.4
61-70	4	5.4
Total	74	100%

Table 3: Distribution of non-thyroid neck masses according to the etiology

Cause	No	%
Inflammatory	30	40.54
Neoplastic	27	36.48
Congenital	13	17.56
Miscellaneous	4	5.4
Total	74	100%

Table 4: Types of inflammatory neck masses

Types	No	%
Lymphadenitis with abscess	10	13.51
Non specific inflammation	12	16.21
Tuberculous lymphadenitis	8	10.81
Total	30	40.54%

Table 5: Types of neoplastic lesions

Neoplastic	No	%
Benign lesion		
Lipoma	5	6.75
Schwannoma	2	2.70
Total	7	9.45
Malignant lesion		
Secondary	14	18.92
Primary	6	8.10
Total	20	27.30

Table 6: Congenital lesions

Lesions	N0	%
Thyroglossal cyst	6	8.1
Cystic hygroma	2	2.7
Epedermoid cyst	2	2.7
Hemangioma	1	1.35
Dermoid	1	1.35
Branchial cyst	1	1.35
Total	13	17.56%

Table 7: Type of miscellaneous lesions

Lesion	No	%
Sternomastoid tumor	1	1.35
Lymph node hyperplasia	3	4.05
Total	4	5.4

Discussion

Neck masses that appear over a short period are generally symptomatic. Blunt or sharp trauma may damage tissue and vasculature, creating a hematoma. Small hematomas are typically self-limited, but large, rapidly expanding hematomas require immediate intervention and possible surgical exploration. Similar mechanisms of trauma, plus the addition of shearing forces, potentiate the formation of pseudoaneurysms or arteriovenous fistulas characterized by soft, pulsatile masses with a thrill or bruit. Computed tomography (CT) angiography delineates the extent of any possible vascular injury, and treatment is usually surgical ligation [6]. By far, the most common cause of cervical lymphadenopathy is infection or inflammation created by an array of odontogenic, salivary, viral, and bacterial etiologies. These lymph nodes are often swollen, tender, and mobile, and can be erythematous and warm. Upper respiratory symptoms caused by common viruses usually last for one to two weeks, whereas lymphadenopathy generally subsides within three to six weeks after symptom resolution [7]. Although unknown viruses cause 20% to 30% of upper respiratory infections, which occur an average of two to four times per year in adults, more common viral pathogens include rhinoviruses, coronaviruses, and influenza [8, 9].. Biopsy is appropriate if an abnormal node has not resolved after four to six weeks, and should be performed promptly in patients with other findings suggestive of malignancy, such as night sweats, fever, weight loss, or a rapidly growing mass [10]. Certain infectious etiologies (human immunodeficiency virus [HIV], Epstein-Barr virus, cytomegalovirus, toxoplasmosis) tend to cause generalized lymphadenopathy, which emphasizes the need for a comprehensive lymph node evaluation [6]. Bacterial infections of the head and neck predominantly cause cervical lymphadenopathy. Lymphadenopathy caused by *Staphylococcus aureus* or group A beta *Streptococcus* has no predictable sites of lymph node inflammation. *Bartonella henselae* infection causes mobile, fluctuant, erythematous, and tender, but characteristically isolated, lymph nodes similar to lymphadenopathy caused by staphylococcal and streptococcal infections. Cat-scratch disease develops when a kitten or flea transmits *B. henselae*, producing a regional lymphadenopathy, usually near the site of inoculation [6, 7]. The extrapulmonary form of *Mycobacterium tuberculosis* infection causes a cervical lymphadenopathy. The diffuse, bilateral lymph nodes are characteristically multiple, fixed, firm, non-tender masses located in the posterior triangle/cervical chain [6]. Suspicion should be high in those who have recently immigrated from or traveled to

tuberculosis-endemic areas such as India, Southeast Asia, or sub-Saharan Africa, and purified protein derivative testing should be performed in these patients. A negative result on purified protein derivative testing does not rule out atypical mycobacterial infections, which also should be considered. A fine-needle aspiration biopsy (FNAB) of the lymph nodes or referral to a head and neck surgeon may be warranted if the lymphadenopathy persists after initial diagnosis and treatment. Subacute masses are noticed within weeks to months. Although these masses might grow somewhat quickly, they often go unnoticed at onset because of their asymptomatic nature. A persistent asymptomatic neck mass in an adult should be considered malignant until proven otherwise [11]. Because delayed diagnosis contributes to decreased survival in conditions such as laryngeal cancer, it is paramount for family physicians to recognize common presentations of head and neck cancers [12, 13]. Lymph nodes associated with malignancy are usually firm, fixed, and matted. However, any persistent cervical lymphadenopathy or symptoms in the setting of risk factors, non-response to antibiotics, or unclear etiology warrants further investigation [12]. The neck is a common area for lymphoma to present as a painless lymph node that may grow rapidly, and subsequently become painful. Early constitutional symptoms often precede development of diffuse lymphadenopathy and splenomegaly. In comparison to lymph nodes associated with metastatic disease characterized above, those associated with lymphoma are usually rubbery, soft, and mobile [14]. Congenital masses are more common in childhood but can grow slowly, persisting into adulthood. Thyroglossal duct cysts, the most common congenital cyst, are midline, adjacent to the hyoid bone, and rise with deglutition. These cysts are normally recognized by five years of age, with 60% diagnosed by 20 years of age. However, in one autopsy series, thyroglossal duct cysts were present in 7% of adults, although most were not clinically apparent. Branchial cleft cysts usually present anterior to the sternocleidomastoid muscle, and represent 22% of congenital neck masses [15]. Patients may describe a discrete, tender, erythematous mass, which often coincides with recurrent upper respiratory symptoms. Dermoid cysts, typically located in the submental triangle, are soft, doughy, painless masses that enlarge with entrapment of epithelium in deeper tissue and are less prevalent than thyroglossal or branchial cleft cysts [15]. A laryngocele may also develop in the anterior triangle as a traumatic neck mass created by chronic coughing or repetitive blowing (e.g., from nose blowing or blowing into a musical instrument), which causes herniation of the laryngeal diverticulum through the lateral thyrohyoid membrane. Increased airway pressure causes an intermittent air-filled swelling of the neck that is resonant to percussion. The swelling can potentially become a laryngopyocele, which can obstruct the airway [16]. Contrast-enhanced CT or laryngoscopy can confirm a laryngocele or laryngopyocele, which requires surgical excision [17]. Paragangliomas are neuroendocrine tumors involving the chemoreceptors of the carotid body, jugular vein, or vagus nerve in the lateral neck. Carotid body and glomus jugulare tumors commonly present in the upper anterior triangle near the carotid bifurcation as a pulsatile, compressible mass with a bruit or thrill [18]. Although mobile from medial to lateral direction, these tumors are fixed in the cranial to caudal plane. They are usually asymptomatic, but when functional they cause flushing, palpitations, and hypertension as a result of catecholamine release. Diagnostic testing includes plasma or 24-hour urine collection for catecholamines and metanephrines [6]. Lipomas are common soft, mobile, discrete, subcutaneous adipose tumors. They usually appear on the trunk and extremities but may be found anywhere on the neck [6]. They commonly occur in patients older than 35 years or posttraumatically [14]. Skandalaskis and co-workers in reviewing of 1616 case with non-thyroid masses find that only (3.2%) are inflammatory wheres (84.8%) are neoplastic and the congenital lesion represent (12%) [19].

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