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Clinical evaluation of occurrence of different type of neck swelling in population from Bihar region

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Abstract
It is concluded that "all neck swellings" are "carcinogenic" or "goitrogenic" in nature and this perception has to be detached from the patients by educating them. They must be educated and counselled moreover to eliminate the negative thoughts from their minds and motivate them such that they voluntarily get themselves evaluated for any neck swelling and take the treatment for the same at the earliest. Hence based on above findings the present study was planned for Clinical Evaluation of Occurrence of Different Type of Neck Swelling in Population from Bihar Region.
The present study was planned in Department of ENT, Nalanda Medical College and Hospital Patna, Bihar, India. The study was conducted from January 2019 to May 2019. Total 100 cases diagnosed with the neck swelling were enrolled in the present study. Diagnostic 0-degree nasal endoscopy and 70-degree telescopy was done in view of the swelling in all the patients. The relevant laboratory, radiological and cytological evaluation was done based on the location and type of swelling in all the patients to arrive at a diagnosis.
It is concluded that "all neck swellings" are "carcinogenic" or "goitrogenic" in nature and this perception has to be detached from the patients by educating them. They must be educated and counselled moreover to eliminate the negative thoughts from their minds and motivate them such that they voluntarily get themselves evaluated for any neck swelling and take the treatment for the same at the earliest.

Keywords: neck swelling, midline, lateral, benign, malignant, etc

Introduction
The differential diagnosis for cysts in the neck includes congenital neck masses, metastatic squamous cell carcinoma, acquired laryngoceles, and cystic schwannomas. Congenital masses in the neck include branchial cleft cysts, thyroglossal duct cysts (TGDCs), ectopic thymus cysts, dermoid and teratoid cysts, cystic vascular abnormalities, and lymphatic malformations such as the cystic lymphangioma [1, 2]. This article mainly focuses on the common entities of branchial cleft cysts and TGDCs, and, to a lesser degree, it discusses lymphatic malformations.
Most neck masses in children are benign inflammatory lesions, which can be successfully treated medically with antibiotics. Most neck masses in children that require surgery for diagnostic and therapeutic purposes are congenital in origin. Thyroglossal duct cysts (TGDCs) and branchial cleft cysts are the 2 most common congenital lesions.
Baer first described the branchial apparatus in 1827. The branchial arches begin to develop during the second week of gestation. During the fourth week of fetal development, 5 ridges, known as branchial arches, form on the ventrolateral surface of the embryonic head. Each arch contains mesoderm from which cartilage, muscle, and bone develop. Each arch is separated from the other arches by an external cleft of ectodermal origin. Each arch also has an internal pouch of endodermal origin and an associated cranial nerve, artery, and cartilage.
The anatomic location of a branchial cleft abnormality represents the presumed branchial cleft of origin. Branchial cleft anomalies can manifest in several different forms, including the following:
Fistula - Epithelial-lined tract with both an internal and an external opening.
Sinus - Incomplete fistula with either an internal or an external opening.
Cyst - Epithelial-lined cavity with neither an internal nor an external opening
More than 90% of branchial cleft anomalies arise from the second branchial cleft system. Approximately 8% of branchial cleft anomalies arise from the first branchial cleft system. Cysts arising from the third and fourth branchial cleft system rarely occur. Branchial cleft anomalies and thyroglossal duct cysts (TGDCs) occur with equal frequency in males and females. Branchial cysts are twice as common as either branchial sinuses or fistulas. TGDCs are the most common mass found in the midline of the neck in children. Several theories are proposed to explain the genesis of branchial cleft anomalies. Incomplete closure of branchial clefts and pouches with failure of obliteration of the cervical sinus of His is suggested as a possible mechanism. Incomplete closure of branchial clefts and pouches with rupture of the branchial plate is another possible mechanism.
The thyroid gland forms as a diverticulum from the floor of the pharynx (tuberculum impar) at a site that later becomes the foramen cecum of the base of the tongue. The thyroid gland then forms 2 lobes and descends along a hollow canal

called the thyroglossal duct in the midline of the neck. During the descent, the thyroglossal duct passes in close proximity to the developing hyoid bone. The thyroglossal duct normally involutes; however, when involution does not occur, the potential for development of a thyroglossal duct cyst (TGDC) increases. Arrest in the normal descent of the gland results in ectopic thyroid tissue.

The recognition of a cyst in the neck may not occur until decades later, commonly in association with a minor upper respiratory infection. This suggests that the potential for a cyst had existed for years. Many patients with a TGDC have some thyroid tissue in the cyst; therefore, thyroglossal duct anomalies might be a better term for their condition.

Lymphatic malformations, which include lymphangioma and cystic hygroma, are areas of localized abnormal development of the lymphatic system. These malformations most commonly occur in the head and neck area. Although the exact embryonic origin of lymphatic malformations is unknown, several etiologies have been proposed. Possible causes include failure of the venous and lymphatic systems to connect, abnormal sequestration of the lymphatic tissue during embryogenesis, and abnormal budding of lymphatic structures from the cardinal vein. Other likely etiologies that focus on an acquired process include infection, trauma, and lymphatic obstruction.

Branchial system anomalies can manifest as a sinus, fistula, or cyst. Branchial cleft sinuses with external openings are usually associated with the first and second branchial cleft arches. Branchial cleft sinuses with internal openings are usually associated with the third and fourth arches. First branchial cleft anomalies are subdivided into 2 types based on anatomic location. In type 1 first branchial cleft anomaly, the cyst or sinus opening can be located medial, inferior, or posterior to the conchal cartilage and pinna. A sinus tract, when present, parallels the external auditory meatus. In a type 2 first branchial cleft anomaly, the cyst and sinus tract are located in the anterior neck, always superior to the hyoid bone. A sinus tract or fistula, when present, travels over the angle of the mandible and through the parotid gland to terminate around the bony-cartilaginous junction in the external auditory meatus. The relationship to the facial nerve and parotid gland is variable with first branchial cleft cysts.

Second cleft anomalies are the most common of the branchial system. When an external opening is present in a second branchial cleft anomaly, the opening is located along the anterior border of the sternocleidomastoid muscle near the junction of the lower- and middle-third portions of the muscle, below the level of the hyoid bone. An internal opening, when present, is located in the tonsillar fossa. When present, a fistula ascends from the lower neck along the carotid sheath and crosses over the hypoglossal nerve and glossopharyngeal nerve. The fistula then passes between the internal and external carotid arteries to end in the tonsillar fossa. Second branchial cleft cysts are more common than sinuses or fistulas. The location of the cyst can be anywhere along the course of the fistula but most commonly is in the anterior triangle of the neck below the level of the hyoid bone.

Third branchial cleft anomalies are rare. When present, the external opening is located in the same location as a second branchial cleft anomaly; that is, along the anterior border of the sternocleidomastoid muscle at the junction of the middle and lower third portions of the muscle. The internal opening is located in the pyriform sinus rather than in the tonsillar fossa. The fistula tract ascends along the carotid sheath posterior to the internal carotid artery, then between the hypoglossal and glossopharyngeal nerves. The fistula tract then pierces through the thyrohyoid membrane and opens into the pyriform sinus. Cysts can occur at any location along this course but are usually found in the anteroinferior cervical triangle on the left side.

In 1972, Sanborn reported the first case of a fourth branchial arch anomaly [3]. If a fourth branchial arch anomaly occurs, it may have (1) an internal opening located near the apex of the pyriform sinus, (2) a fistula or sinus tract that travels between the superior and inferior laryngeal nerves, or (3) an external opening along the anterior border of the sternocleidomastoid muscle in the lower neck. The literature contains more than 30 cases of presumed fourth branchial cleft anomalies. Most are on the left side, with only 5 occurring on the right side.

Branchial cleft cysts manifest in a different manner than branchial sinuses and branchial fistulae. The typical branchial cleft cyst, in the absence of infection, manifests as a nontender, smooth, round mass located along the anterior border of, or just deep to, the sternocleidomastoid muscle. Depending on the arch of derivation, the location can be anywhere from the external auditory canal to the clavicle. Branchial cleft cysts usually enlarge gradually and often are not detectable until the second or third decade of life.

Branchial cleft cysts that manifest in early childhood usually occur with an acute and painful enlargement of the cysts secondary to an upper respiratory infection. Branchial cleft cysts commonly increase in size in the presence of an upper respiratory tract infection and then decrease in size as the infection resolves.

An infected branchial cleft cyst can progress into an abscess or rupture spontaneously to form a draining sinus tract. Neonatal patients and patients with larger cysts can present with aerodigestive tract compromise and associated symptoms of stridor, dyspnea, and dysphagia. Second and third branchial cleft cysts can cause stridor with life-threatening airway obstruction in neonates.

In contrast to those patients with branchial cleft cysts, patients with branchial cleft sinuses and fistulas often present soon after birth because the external opening is visible on the skin. Branchial cleft fistulas and sinuses may also be palpable as a fibrous cord extending along the anterior border of the sternocleidomastoid muscle. Mucus drainage may occur from the external opening. Secondary infections from cutaneous organisms, most commonly Staphylococcus aureus and group A beta-hemolytic streptococci, cause purulent drainage and erythema and edema.

An infected first branchial cleft sinus or fistula may cause aural drainage in the absence of otitis media or otitis externa. A child presenting with both a draining ear and a tender mass in the neck may rarely have a first branchial cleft cyst associated with a sinus or fistula tract. A child presenting with a mass in the neck and a draining tract along the anterior border of the sternocleidomastoid muscle may have a second or third branchial cleft anomaly. A child with paratracheal swelling associated with tenderness and fever may have acute suppurative thyroiditis. Multiple authors have documented the spread of bacteria from an internal opening in the pyriform sinus in third branchial cleft anomalies.

A thyroglossal duct cyst (TGDC) is the most common mass found in the midline of the neck. The mass is usually located at or below the level of the hyoid bone, although a TGDC can be located anywhere from the foramen cecum to the level of the thyroid gland.

Most patients with a TGDC present with asymptomatic masses in the midline of the neck. The literature reports that most of these lesions occur in patients younger than 30 years, although according to a study by Thompson *et al* of 685 TGDCs, the incidence of these lesions peaks in the first and fifth decades of life [4]. Interestingly, over the last decade, a number of older patients are presenting with a TGDC, some of whom are aged 80-90 years. Recurrent inflammation associated with infection of a TGDC is not uncommon. When infection is present, the cyst often enlarges and an abscess may form. Spontaneous rupture with secondary sinus tract formation can also occur.

The study by Thompson *et al* found a skin fistula associated with about 10% of TGDCs, with the fistula occurring twice as often in pediatric patients as in adults [4].

Approximately half of all lymphatic malformations are diagnosed at birth, and 90% are diagnosed by age 2 years. With today's use of prenatal ultrasonography, diagnosing lymphatic malformations before birth is not uncommon. Most of these neck cysts present as slow-growing cystic cervical masses. When the mass is located in the suprahyoid location, the patient can present with respiratory compromise. Infection and hemorrhage of the malformation can cause sudden enlargement with respiratory compromise.

First branchial cleft fistulas and sinuses have a variable relationship to the facial nerve. No reliable methods are currently available to determine definitively the relationship between the sinus tract or fistula and the facial nerve prior to surgery. Surgeons, therefore, must be prepared for dissection of the facial nerve prior to embarking upon surgery for a first branchial cleft anomaly. A facial nerve monitor may be helpful.

Acute infection is a relative contraindication for surgical excision. Acute infection makes dissection more difficult and increases the risk of injury to surrounding structures. If possible, treat acute infection with appropriate IV antibiotics. If the infection is unresponsive secondary to abscess formation, incision and drainage or repeated aspiration in conjunction with antibiotic treatment may be required.

It is concluded that “all neck swellings” are “carcinogenic” or “goitrogenic” in nature and this perception has to be detached from the patients by educating them. They must be educated and counselled moreover to eliminate the negative thoughts from their minds and motivate them such that they voluntarily get themselves evaluated for any neck swelling and take the treatment for the same at the earliest. Hence based on above findings the present study was planned for Clinical Evaluation of Occurrence of Different Type of Neck Swelling in Population from Bihar Region.

Methodology

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The relevant laboratory, radiological and cytological evaluation was done based on the location and type of swelling in all the patients to arrive at a diagnosis.

All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

Following was the inclusion and exclusion criteria for the present study.

Inclusion criteria: 1. All the patients who presented with neck swelling were considered for the study. 2. Age group of inclusion was 1-80 years of age.

Exclusion criteria: Age group of exclusion > 80 years of age.

Results & Discussion

A neck mass is a frequently encountered entity in clinical practice. Because of its complex anatomy and physiology, neck diseases manifesting as neck swelling can vary from etiological, pathological and prognostic points of view. Despite a vast array of etiologies, the most common neck masses are congenital lesions, lymphadenopathy and neoplasias, both benign and malignant.

Table 1: Neck Swelling diseases

Type of Diseases	No. of Cases
Cervical lymphadenopathy	65
Thyroid Diseases	21
Salivary gland diseases	6
Others	8
Total	100

Table 2: Nature & Site of Swelling

Nature	No. of Cases
Benign	71
Malignant	29
Total	100
Site	No. of Cases
Lateral	78
Midline	22
Total	100

Table 3: Causes for cervical lymphadenopathy

Cervical Lymphadenopathy	Type	No. of Cases
Metastasis secondary to CA	Oral Cavity	3
	Oropharynx	4
	Laryngopharynx	5
	Larynx	2
	NPC	4
	Unknown primary	6
Reactive/ Inflammatory		36
Granulomatous		5
Total		65

Table 4: Salivary gland diseases encountered in the OPD

Salivary Gland Diseases	Type	No. of Cases
Parotid	Parotitis	1
	Mumps	1
	Pleomorphic adenoma	2
Submandibular	Sialadenitis	1
	Sialolithiasis	1
Total		6

Table 5: Various other causes of neck swelling

Other causes	Type	No. of Cases
Congenital	Dermoid	3
	Thyroglossal cyst	1
Developmental	Branchial cyst	1
Skin and subcutaneous tissue	Sebaceous cyst	2
	Lipoma	1
Total		8

The most common congenital lesions of the neck are thyroglossal duct cysts, branchial cleft anomalies and cystic hygroma. Other congenital masses include hemangioma, teratoma and dermoid. Thyroglossal duct cyst are the most common non-odontogenic cysts that occur in the neck [5, 6]. They account for approx 70% of the congenital neck swelling. It the migration of the thyroglossal duct fails to involute anywhere along its course, a cyst may from because the duct is lined with secretory epithelium. Occasionally remnants of thyroid tissue are found coexisting within these cysts [6]. The pathogenesis of branchial cleft anomalies is controversial. Incomplete obliteration of the bronchial apparatus, primarily the cleft postulated for their development [7]. The closing membrane and pouch are involving in the development of sinuses and fistula. Most branchial cleft anomalies arises from second branchial apparatus. Most lesions present clinically between 10 and 40 years of age, but may present at any age. There is an equal incidence of branchial fistulae, sinuses and cysts in males and females. Branchial sinuses may be familial in origin. The usual presentation is of a smooth non-tender fluctuant mass adjacent to the anteromedial border of the sternocleidomastoid muscle at the angle of the mandible [7]. Cystic hygroma develop from portions of primitive lymph sacs which have been sequestered from primary lymph sacs during embryonic life [8]. Cystic hygroma are often detected at birth and most lesions appear before two years of age. It contain lymphatic cysts ranging in size from a few millimeters to several centimeters in diameter. Cystic hygroma and lymphangioma are considered part of the spectrum [9, 10].

Otolaryngologists frequently encounter neck masses presenting to them in all age groups. A careful history regarding the patients age, sex, location, size and duration of the mass should be obtained and a detailed clinical examination should be performed. Congenital masses such as cystic hygroma, branchial anomalies, thyroglossal duct cysts, must be considered in the differential diagnosis. Inflammatory and infectious causes of neck masses, such as cervical adenitis are common in young adults. Thyroid swellings are most likely to be present in females and neoplasms (benign and malignant) are more common in adult males who present with neck swellings.

For numerous clinical disorders sonography is the principal streak imaging modality in the evaluation of cervical soft tissue lesions. Sonography of the neck can be used for evaluations of thyroid swellings, soft tissue lesions and cervical lymph node assessment. Hence high resolution is useful in evaluation of head and neck masses where necessary and appropriate ultrasound should be done as an ideal initial examination for narrowing down the differential diagnosis.

Conclusion

It is concluded that “all neck swellings” are “carcinogenic” or “goitrogenic” in nature and this perception has to be detached from the patients by educating them. They must be educated and counselled moreover to eliminate the negative thoughts from their minds and motivate them such that they voluntarily get themselves evaluated for any neck swelling and take the treatment for the same at the earliest.

References

1. Saylam G, Tanrikulu S, Dursun E, Iriz A, Eryilmaz A. A mass at fat density in the parotid gland: dermoid cyst or lipoma. B-ENT. 2009; 5(1):43-5. [Medline].
2. Patel S, Bhatt AA. Thyroglossal duct pathology and mimics. Insights Imaging. 2019; 10(1):12. [Medline]. [Full Text].
3. Sandborn WD, Shafer AD. A branchial cleft cyst of fourth pouch origin. J Pediatr Surg. 1972; 7(1):82. [Medline].
4. Thompson LD, Herrera HB, Lau SK. A Clinicopathologic Series of 685 Thyroglossal Duct Remnant Cysts. Head Neck Pathol. 2016; 10(4):465-474.
5. Ahuja AT, Wong KT, King AD, Yuen EH. Imaging for thyroglossal duct cyst: The bare essentials. Clin Radiol. 2005; 60:141-148.
6. Brousseau VJ, Solares CA, Xu M, *et al*. Thyroglossal duct cysts: Presentation and management in children versus adults. Int J Pediatr Otorhinolaryngol, 2003; 67:1285-1290.
7. Shin JH, Lee HK, Kim SY, *et al*. Parapharyngeal second branchial cyst manifesting as cranial nerve palsies: MR findings. AJNR Am J Neuroradiol. 2001; 22:510-512.
8. Zadvinskis DP, Benson MT, Kerr HH, *et al*: Congenital malformations of the cervicothoracic lymphatic system: Embryology and pathogenesis. Radiographics. 1992; 12:1175-1189.
9. Lev S, Lev MH. Imaging of Cystic Lesions. Rad Clin N Am; Sept. 2000; 38:1013-1029.
10. Som P. Cystic lesions of the neck. Postgrad Radiol. 1987; 7:211-236.