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Original Research Article

A prospective study of management of benign neck swellings at tertiary care centre

Parth V. Pomal[1]*, Neena H. Bhalodiya[2], Chaitry K. Shah[2], Sharvil M. Nimavat[1], Maitri D. Parmar[1], Yash A. Gandhi[1]

[1]Department of ENT, Gujarat Adani Institute of Medical Science, Bhuj, Gujarat, India
[2]Department of ENT, GMERS Medical College, Sola, Ahmedabad, Gujarat, India

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***Correspondence:**
Dr. Parth V. Pomal,
E-mail: parth.pomal108@gmail.com

ABSTRACT

Background: Careful medical history and physical examination is must while evaluating neck swelling in which the patient's age, the location, size, and duration of swelling are crucial points for diagnosis. The objectives of this study were to study the commonest cause of neck swelling in our tertiary hospital set up and to assess the common pathologies presenting as neck swellings in our region and their clinical, radiological and cytopathological correlation to understand the nature of the lesion and accuracy of the diagnostic tools in finding a definitive diagnosis and its respective management.
Methods: Total 100 patients from July 2019 to January 2021 of neck swelling were included in this prospective study. They were subjected to detailed clinical history, clinical examination, haematological and hormonal investigation, radiological and cytological investigations. Special investigations were done for some specific cases. Ultrasonography, fine needle aspiration cytology (FNAC) and histopathological examinations (HPE) were compared with each other to evaluate their accuracy as a diagnostic tool for neck swellings.
Results: During our study we found that for accurate diagnosis and treatment combined approach based on history, clinical examination, ultrasonography, FNAC and HPE followed by surgical and/or medical management is recommended. Thyroid swellings were most common entity found in neck swelling with female dominating benign neck swellings.
Conclusions: Although medical management has its own role in management of benign neck swelling, surgical management consists of treatment of choice.

Keywords: Fine needle aspiration cytology, Histopathological examinations, Management, Neck swelling, Ultrasonography

INTRODUCTION

Neck masses are defined as any swelling or enlargement of the structures in between the inferior border of mandible and clavicle and are a common clinical finding that can be encountered in patients of all age groups. In routine practice, ENT surgeons face many types of neck masses and the evaluation of these neck masses is more challenging due to various differential diagnosis and their similar presentation.[1]

The patient's age and the location, size, and duration of the mass are important pieces of information. Inflammatory and infectious causes of neck masses, such as cervical adenitis and cat-scratch disease, are common in young adults. Congenital masses, such as branchial anomalies and thyroglossal duct cysts, must be considered in the differential diagnosis. Neoplasms (benign and malignant) are more likely to be present in older adults.[2]

There are usually no associated symptoms besides the recognition of a swelling noticed incidentally on palpation and cosmetic appearance with increase in size of swelling over a duration or noticed by another individual.[3] Two most common methods of classifying neck swellings are according to site of lesion and its etiology. Neck swelling may be benign or malignant. The most common benign neck swellings are thyroid swellings, swellings of salivary gland and cervical lymphadenopathy. Less common pathologies presenting as neck swelling are thyroglossal cysts, branchial cleft cyst and lymphatic malformation.[3] Benign neck swelling may be congenital or acquired, inflammatory or non-inflammatory, depending upon tissue of origin it may be benign or malignant; primary or secondary lesion; it may be occult primary. If it is secondary, one should find the source of primary.[4] Radiological and cytological tools such as ultrasound (USG) neck, computed tomography (CT)/ magnetic resonance imaging (MRI) and fine needle aspiration cytology (FNAC) often give valuable information to aid the diagnosis. However, a good clinical, radiological, and cytological correlation is a must to plan an effective surgical intervention.[5] All the diagnosed benign neck swellings usually undergo surgical excision and histopathological analysis to know the correct diagnosis and some might require medical treatment either with surgery or alone. The objectives of this study were to study the commonest cause of neck swelling in our tertiary hospital set up and to assess the common pathologies presenting as neck swellings in our region and their clinical, radiological and cytopathological correlation to understand the nature of the lesion and accuracy of the diagnostic tools in finding a definitive diagnosis and its respective management.

METHODS

Sample size

The sample size was calculated considering confidence level 95%, margin of error 10%, population proportion 40%, and population size as 500000. Using formula $z=4pq/l^2$ sample size came as 93 which was approximated to 100.

Study place

The present study was a prospective study conducted in ENT Department of a teaching hospital of Western India.

Study duration

The duration of the study was from July 2019 to January 2021 on 100 patients.

Inclusion criteria

Patients of all age of benign neck swelling diagnosed clinically and radiologically. All patients with written informed consent. Patient irrespective of sex, caste, religion, socioeconomic status, duration, and severity of neck swelling were included in study.

Ethical approval

Institutional Ethics Committee approval was taken before starting study (GMERSMCS/IEC/101/2019).

Statistical analysis

All the data was tabulated in Microsoft excel sheet and analysed using descriptive statistics. The subjects selected for the study based on inclusion and exclusion criteria were evaluated.

Exclusion criteria

All patients with suspicious or known malignant neck swelling. A detailed clinical history with special focus on neck swelling was taken in terms of onset, duration, progress, and other associated symptoms according to different neck swellings.

A detailed clinical examination including general examination, local examination including neck, indirect laryngoscopic examination and Hopkins's examination with 70-degree rigid endoscope was done. All patients of neck swelling went under haematological, hormonal (thyroid function test in thyroid swellings), radiological and cytopathological investigation. USG, FNAC and HPE were compared with each other to find their accuracy as a diagnostic tool. Some patient went through medical management and some required surgical management.

RESULTS

We have covered different parameters to identify common benign neck swellings, relations of swellings with age, sex, site, size, number, consistency, and types of different neck swellings present in our tertiary care centre and comparison of USG findings, FNAC findings and HPE findings for different neck swellings of 100 patients who presented with neck swelling, 65 were female and 35 were male, with a striking female preponderance (Table 1). The mean age of female patient was 36.2 year. The minimum age for female patient was 2 years. The maximum age for female patient was 71 years. The mean age of male patient was 35.4 year. The minimum age for male patient was 2 years. The maximum age for male patient was 59 years. In the present study, the mean age of patients was 35.4 years ranging from 2 years to 71 years of age. The maximum number of patients in present study was found in an age group of 31 to 40 years (25%). Among 100 patients studied 67% patients had swelling size ranging 2 to 4 cm, 15% patients had swelling size ranging from 4 to 6 cm, 9% patients had swelling size less than 2 cm and remaining 9% patients had swelling size greater than 6 cm.

Table 1: Age and sex distribution.

Age group (years)	Male	Female	Total (numbers)	Percentage %
<10	3	2	5	5
11 to 20	7	5	12	12
21 to 30	8	15	23	23
31 to 40	7	18	25	25
41 to 50	5	16	21	21
51 to 60	4	7	11	11
61 to 70	1	1	2	2
71 to 80	0	1	1	1
Total	35	65	100	100

39% patients had right sided swelling, 38% patients had left sided swelling and remaining 23% patients had midline neck swelling. 72% patients had single swelling, 16% patients had diffuse swelling and remaining 12% patients had multiple swelling. 59% swelling were firm in consistency, 41% swelling were soft in consistency. Among 100 patients studied, 53 patients presented with neck swelling of duration between 1 to 6 months, 21 patients had duration of 7 to 12 months, 18 patients had chronic symptoms of more than 1 year and remaining 8 patients had acute symptoms of less than 1 month. Among hundred patients studied clinically 63% patients had thyroid swelling, 9% patients had abscess formation and 20% patients had nonspecific lymphadenopathy. (Figure 1).

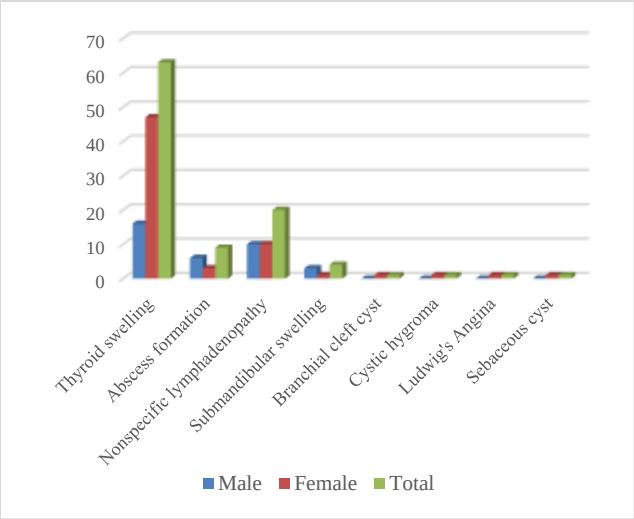

Figure 1: Type of neck swelling.

Ultrasound was done in all patients studied out of which lesion related to thyroid gland was present in total 60 patients, 13 patients had lesion suggestive of Koch's Lymphadenopathy, 6 patients showed lesion suggestive of abscess formation likely, 13 patients showed lesion suggestive of nonspecific lymphadenopathy, 1 patient showed submandibular sialadenitis while 3 patients had submandibular abscess, 3 patients showed residual lesion in parathyroid and 1 patient showed sebaceous cyst. FNAC was done in 83 patients out of which 60 patient showed lesion related to thyroid pathology, 9 patients showed nonspecific lymphadenopathy while Koch's lymphadenopathy was the findings in 5 patients.

Out of thyroid pathology seen in 60 patients, 31 patients showed goitre, 14 patients showed follicular lesion of thyroid, 12 patients showed nodular hyperplasia of thyroid and thyroiditis was the finding in the remaining 3 patients.

Table 2: Comparison of USG, FNAC and HPE findings.

Findings	Findings in USG	Findings in FNAC	Findings in HPE
Koch's lymphadenopathy	13	5	16
Nonspecific lymphadenopathy	13	9	
Nonspecific inflammation			9
Reactive lymphadenopathy			7
Abscess formation	6	6	3
Goiter	21	31	21
Thyroid adenoma	6		
Follicular lesion of thyroid	13	14	11
Nodular hyperplasia of thyroid	17	12	5
Papillary adenoma of thyroid			3
Papillary hyperplasia of thyroid			1
Parathyroid adenoma			3
Residual lesion in parathyroid	3		
Thyroiditis	3	3	3
Submandibular sialadenitis	1	2	
Submandibular abscess	3		
Lipoma			1
Cystic hygroma			1
Sebaceous cyst	1		1
Cat scratch disease		1	
Branchial cleft cyst			1
Thyroglossal duct Cyst			1

Histopathological examination was done in 87 patients out of which 44 patient showed lesion related to thyroid pathology, 16 patients showed Koch's lymphadenopathy,

9 patients showed nonspecific inflammation, 7 patients showed reactive lymphadenopathy, 3 patients showed abscess formation, 3 patients showed parathyroid adenoma, 1 patient showed cystic hygroma, 1 patient showed lipoma, 1 patient showed sebaceous cyst, 1 patient showed branchial cleft cyst and 1 patient showed thyroglossal duct cyst (Table 2).

Out of the thyroid pathology seen in 44 patients, 21 patients presented with morphological features of goitre, 11 patients showed follicular adenoma, 5 patients showed nodular hyperplasia of thyroid, 3 patients showed papillary adenoma, 1 patient showed papillary hyperplasia and 3 patients showed thyroiditis.

Majority of patients were treated surgically (79), while 36 patients are treated by medical management, while in 17 patients surgical and medical both types of management required simultaneously either due to intraoperative complication or due to cytological findings suggestive of tuberculosis. Out of 60 patients of thyroid swelling hemithyroidectomy was done in 36 patients, lobectomy was done in 6 patients, subtotal thyroidectomy was done in 2 patients, near total thyroidectomy was done in 1 patient, thyroid isthmectomy was done in 1 patient and total thyroidectomy was done in 3 patients. Out of total 79 patients treated surgically, excision biopsy was done in 11 patients, incision and drainage was done in 10 patients, aspiration was done in 3 patients, parathyroid adenoma excision done in 3 patients, submandibular gland excision was done in 1 patient, sebaceous cyst excision was done in 1 patient and sistrunk operation was performed in 1 patient. Excision biopsy was done in 11 patients which include 4 patients of tuberculous lymphadenitis, 3 patients of reactive lymph node, 1 patient of supraclavicular lymph node, 1 patient of cystic hygroma, 1 patient of cat scratch disease, 1 patient of lipoma. Out of 36 patients treated medically, 16 patients were given AKT, 11 patients were given T. Thyroxine for hypothyroidism, 5 patients were given antithyroid drugs for hyperthyroidism, 4 patients were given Antibiotics.

15 patients underwent for both surgical as well as medical management which include 6 patients of tuberculous lymph node, 2 patients of tuberculous abscess, 1 patient of tuberculous inflammation, 1 patients of acute reactive lymphadenitis, 1 patient of cold abscess, 1 patient of follicular adenoma, 1 patient of colloid goiter and 2 patients of papillary adenoma of thyroid with hypothyroidism. 4 patients of thyroid pathology were started T. Thyroxine postoperatively due to post-operative hypothyroidism.

DISCUSSION

A total of 100 patients with anterior neck swelling were included in this study. USG, FNAC and HPE Findings were compared with each other. Parameter of our study can be comparable with other studies (Table 3). Among hundred patients studied clinically 63% patients had thyroid swelling, 9% patients had abscess formation and 20% patients had nonspecific lymphadenopathy. A study conducted by Rathod et al also showed that out of 200 patients being studied 52% patients were of thyroid swelling, and 28.5% patients were of lymphadenitis, tubercular lymphadenitis being most common.[11] A study conducted by Joshi et al also showed that out of 150 patients being studied 58% patients were of thyroid swelling and 33% patients were of lymph node swelling, reactive lymphadenitis being more common.[12]

Table 3: Comparison of different parameters with various studies.

Study parameters	Present study	Gupta et al[6]	Chaudhary et al[7]	Al Khateeb et al[8]	Sengupta et al[9]	Santosh et al[10]	Rathod et al[11]
Commonest age group	31 to 40 years	30 to 39 years					
% of female	65%		88%				
Size of majority of swelling	2-4 cm			2-8 cm			
% of right-side swelling	39%				43.3%		
Number of swelling	72% - single		64% single				
Consistency of swelling	59% - firm				66.8% - firm		
Duration of swelling	<1 year – 82%					<1 year - 63.3%	
Most common type of swelling	Thyroid swelling -63%						Thyroid swelling - 52%
2nd most common swelling	Nonspecific lymphadenopathy – 20%						Lymphadenitis – 28.5%

Ultrasonography helps in differentiating the true nature of swelling whether as solid or cystic. It is helpful to differentiate between benign and malignant neck swelling. It is both non-invasive and inexpensive. Ultrasound is, however, best suited for evaluation of superficial tissue and will not adequately visualize most portions of the upper aerodigestive tract, where many primary tumours will arise. Ultrasound is also operator dependent, and quality may vary considerably per the experience of the ultra-sonographer. Ultrasound may be considered a first option in clinical situations like thyroid, salivary masses, in situations where there will be a delay in obtaining CT or MRI, if the use of contrast medium is contraindicated, or as an adjunct to expedite FNA biopsy.

A study conducted by Garud et al showed 71% patients of colloid goiter out of 84 cases of thyroid swelling which is most common, and 2.59% patients of thyroiditis which is least common.[13] Present study showed 35% patients of colloid goiter out of 60 cases of thyroid swelling and 5% patients of thyroiditis.

Clinicians should perform FNA instead of open biopsy, or refer the patient to someone who can perform FNA, for patients with a neck mass deemed at increased risk for malignancy when the diagnosis of the neck mass remains uncertain. Benefits: rapid, cost-effective test with high sensitivity and specificity for diagnosis, minimal discomfort, low risk of seeding malignancy, does not affect imaging results, can prioritize further imaging or workup.

Risks, harms, costs: discomfort, direct cost, risk of nondiagnostic or indeterminate test results. In present study total 37.36% patients showed colloid goiter in FNAC, 6.02% patients showed Koch's lymphadenopathy and 10.84% patients showed nonspecific lymphadenopathy. This can be comparable with study conducted by Khokle et al which also showed colloid goiter in 30% patients, 10% patients showed TB lymphadenitis and 8% patients showed reactive lymphadenopathy (Table 4).[14]

In present study total 24.14% patients showed colloid goiter in HPE, 18.4% patients showed Koch's lymphadenopathy and 8.05 % patients showed reactive lymphadenopathy. This can be comparable with study conducted by Khokle et al which also showed colloid goiter in 20% patients, 15% patients showed TB lymphadenitis and 6% patients showed reactive lymphadenitis. Out of total 62.03% patients operated for thyroid swelling, 45.57% patients underwent for hemithyroidectomy, 2.53% patients underwent subtotal thyroidectomy, 3.8% patients underwent total thyroidectomy.

Table 4: Comparison of different parameters with various studies.

Study parameters	Present study	Garud et al[13]	Khokle et al[14]	Bhamre et al[15]	Athavale et al[16]
USG findings-colloid goiter	35%	71%	-	-	-
FNAC findings-colloid goiter	37.36%	-	30%	-	-
HPE findings-colloid goiter	24.14%	-	20%	-	-
Surgical management-hemithyroidectomy	45.57%	-	-	62.85%	-
Medical management-AKT	44.44%	-	-	-	26%

Figure 2 (A and B): A patient of midline neck swelling likely to be thyroglossal duct cyst.

A study conducted by Bhamre et al showed 62.85% patients underwent for hemithyroidectomy, 20% patients underwent subtotal thyroidectomy, 22.85% patients underwent total thyroidectomy.[15]

In present study excision biopsy was done in 13.92% patients, this can be compared with study performed by Athavale et al in which excision biopsy was done in 40% patients.[16]

In Adwok et al series 94% patients underwent hemithyroidectomy, 5% patients underwent subtotal thyroidectomy, 1% patients underwent total thyroidectomy.[17] In present study 44.44% patients received antitubercular treatment.

A study conducted by Athavale et al showed that 26% patients received antitubercular treatment for TB lymphadenitis.[16]

Figure 3: CT scan showing thyroglossal duct cyst.

Limitations

All malignant neck swellings or suspicious malignant neck swellings are not included in this study. This study is done in single centre only. Ultrasonography and FNAC done by different technicians in different patients, so there may be variability in results. FNAC is not ultrasound guided. CT scan is not done in all patients.

CONCLUSION

Thyroid swellings were commonest neck swelling among studied patients, second most common being nonspecific lymphadenopathy and third most common being abscess formation. Peak incidence was observed in 4th decade of life (31 to 40 years). Painless single firm swelling on right side of neck was the commonest presentation. Most of the times it is easy to diagnose an anterior neck swelling by clinical, radiological, cytological, and histopathological examinations. However, if there is any discrepancy or doubt, then there should be a clinicopathological and clinic radiological inter-departmental discussion to finalize a diagnosis.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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