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RESEARCH ARTICLE

Clinico-pathological Profile of Neck Masses in Patient Attending ENT Indoor and Outpatient Department at Tertiary Care Hospital, Chittagong, Bangladesh

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Abstract

Introduction: The evaluation of a neck mass is a common clinical condition to which an ENT clinician routinely encounters. Commonly presenting neck masses occur within lymph nodes, thyroid, parotid and other salivary glands. Less common pathologies presenting as neck swellings are from thyroglossal cysts, branchial cleft cysts, carotid body tumors, cystic hygromas, pharyngeal pouch abnormalities and lumps of skin appendages.

Aim: to evaluate the efficacy and precision of FNAC in the diagnosis of neck masses in this study.

Methods: The present prospective study was carried out Department of ENT, 250 Bed General Hospital, Chittagong, Bangladesh from January to December 2024, among 100 patients attended the ENT OPD reported with the history of neck swelling. Sample size was achieved by using the randomization table obtained from the WINPEPI Software. To arrive at a tentative diagnosis, a thorough examination, full history taking, and basic pertinent investigations were completed on all 46 patients in accordance with the proforma.

Results: Out of 100 patients, 67 were women and 33 were men. Mean age of the study population was 37.67±15.04. The anterior region of the neck was affected in 43% of patients, according to the table above. 15% of patients had neck involvement in the submental region. Out all, 59 % of swelling in our study were firm, followed by 13 % of swelling were soft and cystic in consistency. 34 thyroid swellings in total, 2 of which was equivocal on FNAC but was later diagnosed as colloid goitre by HPE. There were 24 lymph nodes swelling FNAC reports that were similar to HPE out of a total of 46, whereas the remaining 22 reports were not. Out of total 46 lymph node swelling 2 was inconclusive on FNAC which on HPE turned out to be reactive lymphadenopathy.

Conclusion: We draw the conclusion that fine needle aspiration cytology is easy and safe approach for diagnosing a variety of neck swellings.

Keywords: HPE, Neck Swelling, FNAC.

1. Introduction

Examination of neck swelling is a common clinical problem that otolaryngologists routinely encounter. Common neck swellings occur in lymph nodes, thyroid, parotid, and other salivary glands. Less common conditions that present as neck swelling include thyroglossal cysts, branchial cleft cysts, carotid body tumors, cystic hydroceles, pharyngeal pouch anomalies, and skin adnexa [1]. Fine needle aspiration cytology (FNAC) is a simple, rapid, and cost-effective method to sample superficial neck swellings. The procedure was performed in an outpatient clinic. The trauma to the patient is minimal and the risk of complications is negligible. This

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technique allows easy diagnosis of head and neck masses, such as salivary gland and thyroid masses [2]. FNAC is of great value due to the variety of accessible organs and the wide range of pathologies in the head and neck region. Early differentiation of benign and malignant lesions has great implications for treatment planning [3]. The trauma to the patient is minimal. This technique allows for easy diagnosis of tumors in the head and neck region, including those of the salivary glands and thyroid gland [4,5]. FNAC can be performed under local anesthesia and is particularly useful when a malignant mass is suspected in the neck area. There is no evidence that the thin needles used in this technique promote the spread of tumors. Cystic tumors can be diagnosed and treated with FNAC [6]. FNAC can distinguish benign from malignant tumors with 90% accuracy, making it useful for diagnosing salivary gland tumors [7]. It is clear that FNAC is not a substitute for histology, especially in determining the lymph node architecture of lymphoma, the malignant pattern of follicular thyroid tumors, the intracapsular spread of squamous cell carcinoma, or the distinction between pleomorphic and monomorphic adenomas [8]. The aim of this study is to evaluate the suitability and accuracy of FNAC in the diagnosis of neck tumors. It is clear that FNAC is not a substitute for histology, especially in determining the lymph node architecture of lymphoma, the malignant pattern of follicular thyroid tumors, the distinction between pleomorphic and monomorphic adenomas, or the distinction between pleomorphic and monomorphic adenomas [9]. The aim of this study is to evaluate the suitability and accuracy of FNAC in the diagnosis of neck tumors.

2. Materials and Methods

The present prospective study was carried out Department of ENT, 250 Bed General Hospital, Chittagong, Bangladesh from January to December 2024 among 100 patients attended the ENT OPD reported with the history of neck swelling. All patients gave their verbal, fully informed consent in writing.

2.1 Inclusion Criteria

1. Age above of 2 years and below the age of 75 years
2. Any Lymph node swelling in neck

2.2 Exclusion Criteria

1. Patients below the age of 2 yrs. and above the age of 75 yrs.
2. Patients with history of previous neck surgery
3. The patient who underwent FNAC but did not receive a subsequent histological evaluation.

Using a 23-27-gauge needle connected to a 10ml disposable plastic syringe, the pathology department performed fine needle aspiration biopsies on each instance with neck swelling in every instance, needle was inserted to the desired depth using strict aseptic precautions. From the needle, the aspirate was injected onto the slide. Smears that had air dried were stained with MAY-GRUNWALD-GIEMSA stain and Hematoxylin and Eosin., whereas Papanicolaou stain was applied to 95% ethyl alcohol fixed smears. All of the cases had incisional or excisional biopsy surgery. Of The HPE pathology department received the biopsy specimen. All instances' cytological characteristics and related histopathological characteristics were evaluated.

2.3 Statistical Methods

In the current study, descriptive statistical analysis has been done. Results are reported as Mean SD for continuous measurements and as Number (%) for categorical data. (Min-Max). Sensitivity, specificity, PPV, NPV, and accuracy diagnostic statistics have been performed to determine the relationship between FNAC and diagnosis with HPE results.

3. Results

Table 1. *Demographic Details.*

Agegroup	No. of Patients	Percentage
11to 20	22	22%
21to 30	13	13%
31to 40	20	20%
41to 50	28	28%
51to 60	15	15%
60to 70	2	2%
Gender		
Male	67	67%
Female	33	33%
Total	100	100%

Most people in this age range are between 41 and 50. years old. Mean age of the study population was 37.67±15.04. Out of 100 patients, 67 were women and 33 were men.

Table 2. *Anatomical Site Distribution.*

Location	No. of Patient	Percentage
Anterior Part of Neck	43	43%
Lateral Part of Neck	9	9%
Lower Cervical Part of Neck	7	7%
Middle Cervical Part of Neck	2	2%
Midline of Neck	9	9%
PosteriorPartofNeck	2	2%
Submandibular Region of Neck	4	4%
Submental Part of Neck	15	15%
Upper Cervical Part of Neck	9	9%
Total	100	100%

The anterior region of the neck was affected in 43% of patients, according to the table above. 15% of patients had neck involvement in the submental region.

Table 3. *Consistency of Swelling.*

Consistency	No. of Patient	Percentage
Cystic	13	13%
Firm	59	59%
Fluctuant	6	6%
Hard	9	9%
Soft	13	13%
Total	100	100%

Out all, 59 % of swelling in our study were firm, followed by 13 % of swelling were soft and cystic in consistency.

Table 4. *Clinical Diagnosis of Studied Patients.*

On Clinical Diagnosis	No. of Patients	Percentage
AcuteSuppurativeLymphadenitis	22	22%
Branchial Cyst	2	2%
Chronic Lymphadenitis	20	20%
Chronic Sialadenitis	4	4%
Lipoma	2	2%
Malignant Lesion of Larynx	2	2%
Multinodular Goiter	30	30%
Solitary Thyroid Nodule	13	13%
Tubercular Lymphadenitis	5	5%
Total	100	100%

Total 30 patients were diagnosed with multinodular goiter, 22 with acute suppurative lymphadenitis, 20 with chronic lymphadenitis, 13 with a solitary thyroid nodule, 4 with tubercular lymphadenitis, 2 with a malignant lesion of the larynx

Table 5. *Correlation of clinical diagnosis, FNAC report and HPE final diagnosis.*

	Clinical Diagnosis (n=100)		**FNAC (n=100)**		**HPE (n=4100)**	
FNAC report	Number	%	Number	%	Number	%
Thyroid Swelling						
Colloid goitre	-	-	33	33%	-	-
Multinodular goitre	30	30%	-	-	-	-
Solitary thyroid nodule	13	13%	-	-	-	-
Papillary cancer of thyroid	-	-	4	4%	4	4%
Follicular Neoplasm of Thyroid	-	-	4	4%	4	4%
Follicular Cells with Crushed Artifact	-	-	4	4%	-	-
Salivary Gland Swelling						
chronic sialadenitis	4	4%	-	-	-	-
Pleomorphic Adenoma	-	-	4	4%	4	4%
Lymph node Swelling						
Acutesuppurativelymphadenitis	22	22%	-	-	-	-
Chronic lymphadenitis	20	20%	-	-	-	-
Tubercular lymphadenitis	4	4%	-	-	20	20%
ReactiveLymphadenopathy	-	-	43	43%	26	26%
OtherSwellings						
Lipoma	-	-	2	2%	2	2%
Branchial Cyst	2	2%	2	2%	2	2%
Malignant lesion Larynx	-	-	2	2%	2	2%
Inconclusive	-	-	4	4%	-	-

In above table we conclude that in case of thyroid swelling FNAC report similar to HPE were total 37 in number and 7 FNAC were not similar to HPE. 43 thyroid swellings in total, 2 of which was equivocal on FNAC but was later diagnosed as colloid goitre by HPE. There were 24 lymph nodes swelling FNAC reports that were similar to HPE out of a total of 46, whereas the remaining 22 reports were not. Out of total 46 lymph node swelling 2 was inconclusive on FNAC which on HPE turned out to be reactive lymphadenopathy. Out of total 4 salivary gland swelling both were similar to HPE on diagnosis. In total inconclusive FNAC report were found in 4 out of 100 sample size. Other neck swelling with respect to FNAC report were in total 7 and all were matching with HPE report.

4. Discussion

Typical neck swellings are found in lymph nodes, thyroid, parotid and other salivary glands. Neck swelling is defined as swelling or enlargement of the structures between the lower end of the mandible and the clavicle and is a common clinical finding that can occur in patients of any age. Otorhinolaryngologists face many types of neck swelling in their daily practice, but the evaluation of these neck swellings is more challenging due to different differential diagnoses and similar symptoms [10,11]. Therefore, it is very important to develop a systematic approach to diagnosis and management in order to obtain better treatment outcomes. According to the “rule of seven” reported in the literature, the typical duration of clinical symptoms of tumors, developmental disorders and infections causing neck swelling was 7 years, 7 months and 7 days, respectively. A study published several decades ago and conducted over a period of 10 years adopted the rule of seven [12]. Of 100 cases that underwent clinical examination, 46 had lymphadenopathy, 43 had thyroid enlargement, 4 had salivary gland enlargement, and 7 had other enlargements. The majority of palpable head and neck tumors aspirated involved lymph nodes. Similar results have been observed in other previously published studies [13,14]. Cervical lymphadenopathy commonly affects both adults and children, but typically has different etiologies and its occurrence varies by geographic distribution and socioeconomic status. A total of 100 patients participated in the study, of which 67 were women and 33 were men. In our study, 91 cases were benign and 9 were malignant.

Steele et al. [15] found 34 cases of benign pathology and 59 cases of malignant pathology in their study. Fine needle aspiration cytology is a rapid, simple, and cost-effective diagnostic method that serves as an adjunct to preoperative screening for thyroid tumors and is an important management tool.In Our Series The majority of patients were between the ages of 41 and 50, a total 28 patients were present between 41 to 50 years of age. In 46 cases, lymph node aspiration was done, out of which acute suppurative lymphadenitis was the commonest in our study, the anterior portion of the neck was where neck swelling was most prevalent. and the most common type of consistency of swelling in our study was Firm followed by cystic and soft. Out of total sample size studied only 26 patients presented with tender neck swelling. Out of total sample size studied, 2 swelling came to be as squamous cell carcinoma of larynx ,2 came out to be as lipoma and 2 came out to be as branchial cyst 43 thyroid swelling aspirates produced 37 cytological results that were comparable to HPE reports, whereas 7 FNAC reports were not. Because it can be used to treat some thyroid lesions, including thyroiditis and colloid goitre, FNAC is significant in the context of thyroid lesions. conservatively, while treating other lesions, using radiotherapy or chemotherapy to treat conditions like lymphoma and undifferentiated thyroid cancer, hence reducing the necessity for surgical intervention in such circumstances.Three FNAC reports were insufficient to determine the cause of neck swelling, which an HPE examination later determined to be colloid goiter. Of the 4 salivary glands swellings both were benign in nature and both cases matched with the HPE reporting of respective swellings. In our study, 20 FNAC cases diagnosed with reactive lymphadenopathy these on HPE turned out to be Tubercular Lymphadenopathy. One instance of an unclear neck swelling detected by FNAC in our study was later shown to be a colloid goiter on HPE. For the diagnosis of TB, it is less sensitive than open biopsy, but if a diagnosis is obtained, its predictive value is good. Sensitivity rather than specificity should be prioritized when assessing a test's capacity to detect cancer patients because erroneous negative results could put off further research or treatment. A negative aspiration just suggests that another aspiration might be required and/or that another test, like a biopsy, endoscopy, or CT scan, would be beneficial. The fact that fine needle aspiration is always a step in the diagnostic process and never the conclusion cannot be emphasised enough. The capacity of fine needle cytology to diagnose a tumour in the neck without first determining whether it is a malignant or benign growth is a useful feature of the procedure. This is especially helpful for patients who have a neck lump as their lone finding when they first appear. In our investigation, 46 patients were assessed, and the total FNAC sensitivity and specificity were 100% and 75%, respectively, for the identification of neck masses. Soni et al study exhibited a sensitivity of 83.11% and a specificity of 789.4 percent. Of the 59 patients, 14 had thyroid disease, 13 had salivary gland tumours, and 4 had additional types of neck tumours. Of the 59 patients, 28 had neck nodes [16]. Howlett, D.C., et al. investigated 276 patients in total and discovered that FNAC demonstrated a sensitivity of 89% and a specificity of 57% for neck nodes, a sensitivity of 62% and a specificity of 86% for thyroid masses, and a sensitivity of 64% and a specificity of 100% for salivary glands [17]. In their study of 550 patients, Tilak, Dhaded, et al. discovered that the Overall FNAC sensitivity and specificity for neck masses in that research were 90.91% and 93.18%, respectively [18]. Most patients in our nation are illiterate and unaware of health issues. Most patients arrive with a large neck tumour, which the cytopathologist may quickly and easily find with FNAC without the aid of ultrasound assistance. Furthermore, because these lesions are so large, there could be sampling error within the mass itself, with different areas of the mass displaying variable levels of disease. Richard Schwarz et al. reported on a different study in which they assessed 165 patients. In their investigation, FNAC had a 92% sensitivity for metastatic cancer and a 100% sensitivity for lymphoma. In their investigation, the accuracy was best for the group of salivary glands that were cancerous and lowest for the group that were benign [19]. Finally, James Edward M., et al. found that FNAC had a 94.5% overall accuracy. The accuracy for thyroid metastasis or benign node lesion was about 95%. The accuracy of the lymphomatous lesion diagnosis was lower at 75% [19]. Although histological subtyping is absent from fine needle aspiration cytology, it provides information on cellular architecture. Aspiration cytology's accuracy is influenced by the patient's age, pathologic kind of the mass, expertise, the suitability of the sample, endemicity, and the tools employed to aid in diagnosis [20].

5. Conclusion

Neck tumors are a very common clinical condition that occurs routinely in ENT departments. Fine-needle aspiration cytology is a satisfactory and reliable test,

a simple and fast method, ideal as an outpatient procedure, reducing the need for open biopsy for histopathological examination. With increasing experience and expertise, it is clear that fine-needle aspiration cytology becomes one of the best tests one can hope for with the highest accuracy. Fine-needle aspiration cytology of clinically relevant neck tumors provides the surgeon with the most useful information to decide the next treatment. In addition, it is also important to investigate biochemical tests and clinical signs. Therefore, we conclude that fine-needle aspiration cytology is a simple and safe method for diagnosing a variety of neck swellings.

6. References

1. Lumley JSP, Chan S, Harris H, Zangana MOM. Physical signs. 18th edition. Oxford: Butterworth-Heinemann, Oxford, 1997.
2. Celeste NP, Williams JF. Fine Needle Aspiration Biopsy of the Head and Neck. United States of America: Butterworth Heinemann; 1996. p. 1-13.
3. Watkinson JC, Wilson JA, Gaze M, Stell PM, Maran AG. Stell and Maran s Head and Neck Surgery. 4th ed., Ch. 2. Oxford: Butterworth Heinemann; 2000. p. 20-1.
4. Celeste NP, Williams JF. Fine needle aspiration biopsy of the head and neck. USA: Butterworth Heinemann; 1996. p 1–13.
5. Gamba PG, Messineo A, Antoniello LM, Boccato P, Blandamura S, Cecchetto G, Dall'Igna P, Guglielmi M. A simple exam to screen superficial masses: fineneedle aspiration cytology. Med Pediatr Oncol. 1995 Feb;24(2):97-9.
6. Celeste NP, Williams JF. Fine needle aspiration biopsy of the head and neck. USA: Butterworth Heinemann; 1996. p 1–13. 4.
7. Gupta A, Jamwal PS. A Clinicopathological Study of Cervical Lymphadenopathy. Ann. Int. Med. Den. Res. 2019; 5(6): EN05-EN08
8. Watkinson JC, Wilson JA, Gaze M, Stell PM, Maran AGD. Stell and Maran's Head and neck surgery, Butterworth-Heinemann, Oxford, 4th edition, chapter 2; 2000. p 20-21
9. Watkinson JC, Wilson JA, Gaze M, Stell PM, Maran AGD. Stell and Maran 's Head and neck surgery, Butterworth-Heinemann, Oxford, 4th edition, chapter 2; 2000. p 20-21.
10. Pacini F, Schlumberger M, Dralle H, Elisei R, Smit JW, Wiersinga A. European consensus for the management of patients with differentiated thyroid carcinoma of the follicular epithelium. Eur J Endocrinol. 2006; 154:787–803
11. Castro MR, Gharib H. Thyroid fine-needle aspiration biopsy: Progress, practice, and pitfalls. EndocrPract. 2003; 9:128–136.
12. Solem BS, Schroder KE, Mair IWS. Differential diagnosis of a mass in the upper lateral neck. J Laryngol Otol. 1981 Oct;95(10):1041- 7.
13. Modi P, Oza H, Bhalodia J. Utility and adequacy of fine needle aspiration cytology in head and neck lesions: a hospital-based study. Int J Sci Stud. 2014;2(8):100-5.
14. Singal P, Bal MS, Kharbanda JS, Sethi PS. Efficacy of fine needle aspiration in head and neck lesions. Int J Med Dent Sci. 2014; 3:421- 30.
15. Steel BL, Schwartz MR, Ibrahim R. Fine needle aspiration biopsy in diagnosis of lymphadenopathy in 1103 patients. Acta Cytol. 1995 Jan-Feb;39(1):76-81.
16. Soni S, Yashveer B, Srivastava P. Efficacy of fine needle aspiration in diagnosis of neck masses. World articles of Ear Nose and Throat.
17. Howlett DC, Harper B, Quante M, Berresford A, Morley M, Grant J, et al. Diagnostic adequacy and accuracy of fine needle aspiration cytology in neck lump assessment: results from a regional cancer network over a one-year period. J Laryngol Otol. 2007;121(6):571– 9.
18. Vijay Tilak, A V Dhaded, Ragini Jain. Indian J pathol Microbiol. 2002;45(1):23- 30.
19. Young JE, Archibald SD, Shier KJ. Needle aspiration cytologic biopsy in head and neck masses. Am J Surg. 1981;142(4):484-9.
20. Modi P, Oza H, Bhalodia J. Utility and adequacy of fine needle aspiration cytology in head and neck lesions: a hospital-based study. Int J Sci Stud. 2014;2(8):100-5