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Original Article

Evaluation of neck swelling by cytological and histopathological examination

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Abstract:

Objective: In this study 50 patients of neck swelling were studied to compare the findings with clinical diagnosis and histopathological report for its diagnostic reliability.

Methods: This cross sectional study was done in ENT Department of Sher-E-Bangla Medical College Hospital, Barisal, Bangabandhu Sheikh Mujib Medical University and Dhaka Medical College Hospital, Dhaka from July 2006 to December 2006. Fine needle aspiration cytology, MRI, CT scan, and histopathological examination of postoperative specimen of neck swelling, analyzed data presented by various tables, graphs and figures.

Results: In the present series 50 cases of neck swelling were studied. Out of these 50 cases 19 were male and 31 were female. The male, female ratio was 1:1.63. Age range was 4 – 60 years with maximum frequency in the 4th decade with the 3rd and 2nd in the following suit. Most of the patient was poor. Clinical, cytological and histopathological diagnosis was available in all the cases. The three sorts of diagnoses were compared with each other. Histopathologically 12 cases were tubercular lymphadenopathy, 12 cases were nodular goiter, 5 cases were Metastatic carcinoma, 5 were thyroid carcinoma and another 5 cases were lymphoma, Rest were benign, congenital and nonspecific inflammatory conditions. Correct diagnosis was made by FNAC in 45 cases. In the rest 5 cases smear were unsatisfactory in 2 cases and gives inconclusive result, remaining 3 were follicular neoplasmand no definitive result were made which were subsequently diagnosed by histopathological examination as a follicular adenoma in 1 and follicular carcinoma in 2. Sensitivity of FNAC in the diagnosis of neck masses were found 91% for tuberculosis, 100% for metastatic carcinoma and also for salivary gland tumour. In case of nodular goiter sensitivity was 92%. But it is only 60% sensitive in case of thyroid malignancy, as FNAC can not demarcate clearly between follicular adenoma and follicular cell carcinoma. But its accuracy in diagnosing papillary carcinoma of thyroid was 100%.

Conclusion: FNAC can reduce substantially the need of open biopsy for histopathological examination. Accuracy of FNAC will be improved with relevant information provided by clinicians.

Key words: Neck swelling, Cytology, Histopathology.

Introduction:

Swelling in the head and neck region is one of the common clinical presentations in the otolaryngologic practice. Presence of a neck mass poses a diagnostic dilemma for the Otolaryngologist. A great number of disease manifests as a palpable and /or visible swellings in the neck. These may be congenital/developmental, inflammatory/ reactionary or neoplastic (primary/ secondary).

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Each disease may have different mode of presentation. Conversely many diseases may present with similar symptoms. For this reasons diagnosis often becomes difficult in neck swelling. Many case of neck swelling may be diagnosed after a comprehensive history and a thorough clinical examination of the head neck. Further evaluation is done by hematological, cytological and imaging technique. Diagnosis is confirmed by histopathological examination of the specimen.

The medical profession must be emphatically remained of the frequency with which cervical metastasis may appear as the first and only symptom in cancer of the mouth, pharynx and larynx, less often elsewhere in the body. There can be no possibility of cure until the primary lesion is found. The immediate removal of a lymph node for diagnosis is never goes in the best interest of the patient. This procedure should be deferred and used only as a last diagnostic resort[1].

For this reason now the head neck surgeons have advocated a careful search for primary malignancy before the presenting neck lump is biopsied. Open biopsy causes seedling of tumour cell into avascular plane making them resistant to curative radiotherapy or chemotherapy and the placing of a biopsy incision in an area which may subsequently be inappropriate for radical neck dissection flaps[2, 3, 4]. Open biopsy is an invasive procedure requiring surgical skill and facilities. It is time consuming, costly and some time hospitalization and general anaesthesia may be needed. It delays the definitive treatment[1, 3]. Fine needle aspiration cytology is a simple procedure that can be done on an out patient basis without local anesthetic and gives rapid result. It is simple, cost-effective, and less traumatic. The procedure may repeat several times to obtain adequate material for cytological analysis[6, 7].

In our country FNAC is gradually becoming more popular as a preoperative highly sensitive and cost effective diagnostic tool.

Through this study we tried to find out spectrum of diseases producing neck swelling and their socio-demographic feature. Histopathological report has been taken as a confirmatory diagnostic test in all the cases and compared with the FNAC findings to find out its diagnostic reliability.

Methods:

This cross sectional study was done in ENT Department of Sher-E-Bangla Medical College Hospital, Barisal, Bangabandhu Sheikh Mujib Medical University and Dhaka Medical College Hospital, Dhaka from July 2006 to December 2006.

A total of 50 patients irrespective of age and sex with neck swelling randomly selected for the study.

Clinical examination and Fine needle aspirating cytology was done in all cases, Imaging of different types were performed in selective cases. Histopathological examinations of post-operative specimen of neck swelling were also done.

All information recorded in a standardized data collection sheet. Then those were complied, analyzed and tabulated in order to obtain statistical and comprehensive results.

Results:

Table I

Age distribution of the patients.

Age group	No of cases	Percentage
0 – 10	2	4
11 – 20	10	20
21 – 30	14	28
31 – 40	16	32
41 – 50	6	12
51 – 60	2	4
Total	50	100

Table II

Socioeconomic condition (n=50).

Socioeconomic condition	No of cases	Percentage
Poor	30	60%
Middle class	15	30%
Affluent	5	10%

Table III
Clinical diagnosis of neck masses.

Clinical diagnosis	Disease	Total No of cases	Percentage (%)
Cervical lymphadenopathy	Tubercular lymph adenitis	19	38
	Metastatic carcinoma	5	10
Thyroid and related neck mass	Goiter	18	36
	Thyroglossal cyst	1	2
Salivary gland swelling	Salivary gland tumour	4	8
Other congenital and developmental neck mass	Branchial cyst	1	2
	Submental dermoid	2	4
	Total	50	100

Table IV
FNAC diagnosis of neck masses

Clinical diagnosis	FNAC diagnosis	Total No of cases	Percentage (%)
Cervical lymph adenopathy (24)	Tubercular lymph adenitis	10	20
	Metastatic carcinoma	5	10
	Non specific lymphadenitis	3	6
	Lymphoma	5	10
	Unsatisfactory smear	1	2
Thyroid and related neck mass (19)	Nodular goiter	11	22
	Papillary carcinoma of thyroid gland	3	6
	Follicular neoplasm	3	6
	Thyroglossal cyst	1	2
	Unsatisfactory smear	1	2
Salivary gland swelling (4)	Pleomorphic adenoma of salivary gland	3	6
	No specific submandibular sialoadenitis	1	2
Other congenital and developmental neck mass (3)	Branchial cyst	1	2
	Submental dermoid	1	2
	Unsatisfactory smear	1	2

Table-V

Histopathological diagnosis of neck swelling.

Clinical diagnosis	Histopathological diagnosis	Total No of cases	Percentage (%)
Cervical lymph adenopathy (24)	Tubercular lymph adenitis	11	22
	Metastatic carcinoma	5	10
	Non specific lymphadenitis	3	6
	Lymphoma	5	10
Thyroid and related neck mass (20)	Nodular goiter	12	24
	Papillary carcinoma of thyroid gland	3	6
	Follicular carcinoma	2	4
	Follicular adenoma	1	2
	Thyroglosal cyst	2	4
Salivary gland swelling (4)	Pleomorphic adenoma of salivary gland	3	6
	No specific submandibular sialoadenitis	1	2
Other congenital and developmental neck mass (3)	Branchial cyst	1	2
	Submental dermoid	1	2
	Total	50	100

Table VI

Comparison between clinical FNAC and histopathological diagnosis of cervical lymph node masses.

Clinical diagnosis	No of cases	FNAC diagnosis	No of cases	Histopathological diagnosis	No of cases
Tuberculosis	19	Tubercular lymphadenitis	10	Tubercular lymph adenitis	10
		Non specific lymph adenitis	3 3	Non specific lymph adenitis	3 3
		Lymphoma	5	Lymphoma	5
		Unsatisfactory smear	1	Tubercular lymph adenitis	1
Metastatic carcinoma	5	Metastatic carcinoma	5	Metastatic carcinoma	5

Table VII

Compare between clinical FNAC and histopathological diagnosis of thyroid and related disease.

Clinical diagnosis	No of cases	FNAC diagnosis	No of cases	Histopathological diagnosis	No of cases
Goiter	18	Nodular goiter	11	Nodular goiter	11
		Papillary carcinoma of thyroid	3	Papillary carcinoma of thyroid	3
		Follicular neoplasm	3	Follicular carcinoma thyroid	2
				Follicular adenoma	1
		Unsatisfactory smear	1	Nodular goiter	1
Thyroglossal cyst	1	Thyroglossal cyst	1	Thyroglossal cyst	1

Table VIII

Compare between clinical, FNAC and histopathological diagnosis of salivary gland disease.

Clinical diagnosis	No of cases	FNAC diagnosis	No of cases	Histopathological diagnosis	No of cases
Salivary gland tumour	4	Pleomorphic adenoma	3	Pleomorphic adenoma	3
		Chronic submandibular sialoadenitis	1	Chronic submandibular sialoadenitis	1

Discussion:

Patients with palpable and or visible neck mass are a quite common presentation to an Otolaryngologist. So, one should to be rational and methodical for the diagnosis and management of such a patient. In the present study, we tried to establish the role of FNAC in the management of such patients by establishing its diagnostic sensitivity and specificity in comparison with histopathological one. Because FNAC is accurate, minimally invasive, outdoor procedure but cost effective, whereas histopathological examination is time consuming and invasive procedure.

In the present study, we analyzed FNAC report of 50 cases. Here satisfactory smears were found in 47(94%) cases. In 3(6%) cases smears were unsatisfactory as they showed in adequate material, definitive diagnosis were made by histopathological examination. The rate of unsatisfactory smear in this study is in close proximity, to that of other studies[8,10,11].

In this study, out of 50 cases 19(38%) were male and 31(62%) were female. The male to female ratio was 1:1.63. The male to female ratio is consistent with the study of other[8,11,12,13].

In the present study, age of the patient ranged from 4 to 65 years. The highest number of

cases was found in 4th decade. This was followed by 3rd and 2nd decades.

In this present series 40% of neck mass were of thyroid in origin which consistent with other studies[3, 14].

In case of thyroid swelling out of 20 cases 12 (60%) cases were proved to be multinodular goiter on histopathology and it is comparable with others[10, 15].

Here FNAC shows highly sensitivity (91%) and specificity (100%) for nodular goiter. But in case of thyroid malignancy its sensitivity is very low (60%) as it can not demarcate clearly between follicular carcinoma and follicular adenoma. Although the highly sensitive (100%) for papillary carcinoma of thyroid. It is comparable with others studies[15, 16].

Cervical lymphadenopathy scored the first position (48%) of which tubercular lymphadenitis was 11 cases (46%). This is consistent with the findings of other studies[17, 18]. In this study the sensitivity 91% and specificity (100%) of FNAC for diagnosing tubercular lymphadenopathy it is high and aligned with other studies[8, 11].

In this study only one false negative result was reaches for tubercular lymphadenopathy by FNAC which due to inadequate aspirate or observer error.

Metastatic carcinoma was finding in about 21% of total cervical lymphadenopathy and sensitivity and specificity for diagnosing such lesion is 100% which was aligned with other studies[17, 18, 20, 21, 22]. In case of salivary gland lesion which scored in the third position in this series. It is found that FNAC is very useful tool for diagnosis as it a nearly 100% sensitive and specific for such lesion[2, 3, 16].

The overall sensitivity and specificity of FNAC in relation to histopathology is 90% and 100% respectively which are compatible with other study[2].

The overall accuracy of FNAC was found in 90% which is similar to that of other studies[2, 3, 16, 23].

To obtain maximum benefit from the procedure, close co-operation between the surgeon and pathologist is very important. The role of an experienced cytopathologist is critical for correct diagnosis[23]. Adequate amount of aspirate from the lesion is essential for accurate diagnosis. The person must be skilled in performing aspiration. The pathologist must be experienced in cytologic interpretation of the material aspirated. Close clinico-pathological correlation is absolutely necessary for useful clinical interpretation[7].

Conclusion:

FNAC can reduce substantially the need of open biopsy for histopathological examination. Accuracy of FNAC will be improved with relevant information provided by clinicians.

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