

# Comparative Study of neck swelling by clinical, cytological and histopathological examination – a study of 50 cases

Ali MI<sup>1</sup>, Huq MM<sup>2</sup>, Rahman SH<sup>3</sup>, Tarafder KH<sup>4</sup>

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**Keywords:** Close clinicopathological correlation is absolutely necessary for useful clinical interpretation.

### 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 Department of Otolaryngology – Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from July 2015 to June 2017. Fine needle aspiration cytology, MRI, CT scan, and histopathological examinations of postoperative specimen of neck swelling, presentation of analyzed data by various tables, graphs and figures done.

**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 4<sup>th</sup> decade with the 3<sup>rd</sup> and 2<sup>nd</sup> in the following suit. Most of the patient were poor. Clinical, cytological and histopathological diagnosis were available in all the cases. The three sorts of diagnoses were compared with each other. Histopathologically 12 cases were tubercular lymphadenopathy. Metastatic carcinoma and lymphoma, 5 cases for each. 12 were nodular goiter, 5 were thyroid carcinoma. 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 neoplasm and no definitive result were made which were subsequently diagnosed by histopathological examination as a follicular adenoma in 1, and follicular carcinoma in 2 cases. Sensitivity of FNAC in the diagnosis of neck masses were found 91% for tuberculosis, 100% for metastatic carcinoma 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 cannot demarcate clearly between follicular adenoma and follicular cell carcinoma. But its accuracy in diagnosing papillary cell carcinoma of thyroid was 100%.

**Conclusion:** Keeping the limitations in mind, FNAC can reduce substantially the need of open biopsy for histopathological examination. The study with the popular saying of Stewart “Diagnosis by aspiration is as reliable as the combined intelligence of the clinician and pathologist makes it”.

### Introduction:

Swelling in the head and neck region is one of the commonest clinical presentation in the otolaryngologic practice. Presence of a neck mass pose a diagnostic dilemma for the Otolaryngologist. A great number of disease manifest as a palpable and /or

visible swellings in the neck. These may be congenital/developmental, inflammatory/ reactionary or neoplastic (primary/secondary).

Each disease may have different mode of presentation. Conversely many diseases may present with similar

1. Dr. Mohammad Idrish Ali, Consultant, Department of Otolaryngology-Head & Neck Surgery, BSMMU, Dhaka

2. Dr. Md. Mahmudul Huq, Assistant Professor, ENT Department, Khulna Medical College Hospital, Khulna

3. Prof. Sheikh Hasanur Rahman, Professor, Department of Otolaryngology-Head & Neck Surgery, BSMMU, Dhaka

4. Prof. Kamrul Hasan Tarafder, Professor, Department of Otolaryngology-Head & Neck Surgery, BSMMU, Dhaka

**Correspondence:** Dr. Mohammad Idrish Ali, Consultant, Department of Otolaryngology-Head & Neck Surgery, BSMMU, Mob: 01712-790646, Email: dridrishalient72@gmail.com

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 in the does never go best interest of the patient. This procedure should be deferred and used only as a last diagnostic resort.<sup>1</sup>

For this reason, the head neck surgeon 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<sup>2,3,4</sup>

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.<sup>1,3</sup> Fine needle aspiration cytology is a simple procedure that can be done on an outpatient basis without local anaesthetic and gives rapid result. It is simple, cost-effective, less traumatic. The procedure may be repeated several times to obtain adequate material for cytological analysis<sup>6,7</sup>.

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

Through this study, exploration of spectrum of diseases producing neck swelling and their socio-demographic feature done. 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 Department of Otolaryngology –Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from July 2015 to June 2017. Fine needle aspiration cytology, MRI, CT scan, and histopathological examination of postoperative specimen of neck swelling, presentation of analyzed data by various tables, graphs and figures done.

A total of 50 patients irrespective of age and sex with neck swelling randomly selected for the study who admitted in the Department of Otolaryngology-Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University Hospital Dhaka from July 2015 to June 2017.

This was a cross sectional study with a sample size 50. Method used in this study included.

Clinical presentation, Fine needle aspirating cytology, Imaging of different types in selective cases, Histopathological examination of post-operative specimen of neck swelling.

All information recorded in a standardized data collection sheet for the study. Data were compiled, analyzed and tabulated in order to obtain statistical and comprehensive results of the study.

## Results and observation:

**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 lymph       | Tubercular lymph adenitis | 19                | 38             |
| adenopathy           | Metastatic carcinoma      | 5                 | 10             |
| Thyroid and related  | Goiter                    | 18                | 36             |
| neck mass            | Thyroglossal cyst         | 1                 | 2              |
| Salivary gland       | Salivary gland tumour     | 4                 | 8              |
| swelling             |                           |                   |                |
| Other congenital and | Branchial cyst            | 1                 | 2              |
| developmental neck   | Submental dermoid         | 2                 | 4              |
| mass                 |                           |                   |                |
| Total                |                           | 50                | 100            |

**Table-IV: FNAC diagnosis of neck masses**

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

**Table-V: Histopathological diagnosis of Neck swelling.**

| Clinical diagnosis  | Histopathological diagnosis             | Total No of cases | Percentage (%) |
|---------------------|-----------------------------------------|-------------------|----------------|
| Cervical lymph      | Tubercular lymph adenitis               | 11                | 22             |
| adenopathy (24)     | Metastatic carcinoma                    | 5                 | 10             |
|                     | Non specific lymphadenitis              | 3                 | 6              |
|                     | Lymphoma                                | 5                 | 10             |
|                     |                                         |                   |                |
| Thyroid and related | Nodular goiter                          | 12                | 24             |
|                     | Papillary carcinoma of thyroid gland    | 3                 | 6              |
|                     | Follicular carcinoma                    | 2                 | 4              |
|                     | Follicular adenoma                      | 1                 | 2              |
|                     | Thyroglossal cyst                       | 2                 | 4              |
| Salivary gland      | Pleomorphic adenoma of salivary gland   | 3                 | 6              |
|                     | No specific submandibular sialoadenitis | 1                 | 2              |
| swelling (4)        |                                         |                   |                |
| Other congenital    | Branchial cyst                          | 1                 | 2              |
|                     | Submental dermoid                       | 1                 | 2              |
| and developmental   |                                         |                   |                |
| neck mass(3)        |                                         |                   |                |
| 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           | Non specific lymph adenitis | 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 is a quite common presentation to an Otolaryngologist. So one should be rational and methodical for the diagnosis and management of such a patient. In the present study 1 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, which is a accurate but cost effective, time consuming and also an invasive procedure.

In the present study of analyzed FNAC report of 50 cases, 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.<sup>8,10,11</sup>

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<sup>8,11,12,13</sup>.

In the present study age of the patient ranged from 4 to 65 years. The highest number of cases were found in 4<sup>th</sup> decade. This was followed by 3<sup>rd</sup> and 2<sup>nd</sup> decades.

In this present series 40% of neck mass were of thyroid in origin which consistent with other studies.<sup>3,14</sup>

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.<sup>10,15</sup>

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 cannot demarcate clearly between follicular carcinoma and follicular adenoma. Although highly sensitive (100%) for papillary carcinoma of thyroid. It is comparable with others studies.<sup>15,16</sup>

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

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

Metastatic carcinoma was found in about 21% of total cervical lymphadenopathy and sensitivity and specificity for diagnosing such lesion is 100% which was aligned with other studies.<sup>17,18,20,21,22</sup>

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.<sup>2,3,16</sup>

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

The overall accuracy of FNAC was found in 90% which is similar to that of other studies<sup>2,3,16,23</sup>.

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<sup>24</sup>. Adequate amount of aspirate from the lesion is essential for accurate diagnosis. Operator must be skilled in performing aspiration. The pathologist must be experienced in cytologic interpretation of the material aspirated. Close clinicopathological correlation is absolutely necessary for useful clinical interpretation.<sup>7</sup>

### Conclusion

Keeping the limitations in mind, FNAC can reduce substantially the need of open biopsy for histopathological examination. Actually the diagnosis by aspiration is reliable when it is the teamwork of the clinician and pathologist.

### References

1. Martin, H, Romien C. The diagnostic significant of a "Lump in the neck: postgrad Med. NY, 1952; 32: 491-500.
2. Young JEM, Archibald SD, Shier KJ. Needle aspiration cytology biopsy in head and neck mass. Am J of Surgery 1981; 142: 484-489.
3. Raju G, Kakar PK et al. Role of fine needle aspiration biopsy in head and neck tumours. The J of Laryngology and Otology 1988, 102: 248-251.
4. Shaheen OH. The thyroid gland. In: Scott Brown's Otolaryngology, 6<sup>th</sup> edn, Butter Worth-Heinemann Oxford 1997; p. 5/20/1-17.
5. Sadlar TW: Langman's medical embryology, 8<sup>th</sup> edn, Baltimore, Williams and Wilkins, 1992, pp. 283-295.
6. Lew WYC. Fine needle aspiration cytology. A personal experience with 800 cases, Singapore Med J. 1987; 28(3): 214-219.
7. Aretz HT, Silverman ML, et al. Fine needle aspiration why it deserve another look. Postgrad. Med 1984; 75: 49-56.
8. Russel RCG, Williams NS, Bulstrode CJK. In: Bailey and Love's short practice of surgery, 24<sup>th</sup> edn. Arnold, London 2004; p. 710-86.
9. Sattar A, Alam M, Haider A et al. Clinico-pathological study of solitary thyroid nodule. Bangladesh J. of Otolaryngology 2003, 9(1/2): 24-27.
10. Salahuddin M. Correlation among clinical diagnosis, FNAC findings and histopathological reports of neck masses. Dissertation submitted to BCPS in 2002.
11. Hanif MA, Alauddin M. The incidence of tubercular cervical lymphadenitis. Bangladesh J of Otolaryngology 1997, 3(2): 42-46.
12. Siddique A, Mahmud CM, Razee KAA, Ahmed CN. Presentation of cervical lymphadenopathy to the surgeons. Journal of Surgical Sciences 2005, 9(2): 54-57.
13. Watkison JC, Gaze MN, Wilson J. A. Benign neck disease. In: Stell and Maran's Head neck surgery, 4<sup>th</sup> edn Butterworth- Heinemann, Oxford 2000; pp. 181- 182.
14. Islam T. Evaluation of thyroid swelling by clinical cytological and histopathological examination. Dissertation submitted to BCPS, Dhaka, 2003.
15. Mondal A, Roychandhuri B.K. Fine needle aspiration cytology (FNAC) in diagnosis of head &

- neck tumours. *Indian Journal of Otolaryngology and Head Neck*, 1992, 1(4): pp. 176-179.
16. Galib MR, Chowdhury MHR, Hoque MS, Anwar MM, Ahsan S. Cervical lymphadenopathy: A study of hundred and twenty cases. *Sir Salimullah Medical Journal* 2005, 13(2): 59-66.
  17. Chessman AD, Holden HB, Richards AES. The neck. In: Mann CV, Russel RCG, editors, *Bailey and Love's short practice of surgery*. 23<sup>rd</sup> ed. ELBS with Chapman and Hall, 2000; 256-69: 704-5.
  18. Hag IA, Childozie LC, Reyees FA, Koller SM. Fine needle aspiration of head and neck masses. *Acta Cytol* 2003 May-June; 47(3): 387-392.
  19. Burnand KG, Young AE. *The new Airds companion in surgical studies*, 2<sup>nd</sup> ed. 1999; 451-7, 980-5.
  20. Alam MS. Clinicopathological study of cervical lymphadenopathy. Dissertation submitted to BCPS in 2004.
  21. Pilotti S, Plasma S, Alasio L, Bartali C, Rilke F. Diagnostic assessment of enlarged superficial lymph node by Fine needle aspiration. *Act Cytol* 1993; 37: 853-866.
  22. Sismanis A, Strong MS, Merriam J. Fine needle aspiration Biopsy diagnosis of neck mass. *Otolaryngology clinic N. America* 1980; 13: 420-429.
  23. Watkinson JC, Gaze MN, Willson January. Metastatic neck disease. In: *Stell and Maran's Head Neck Surgery*, 4<sup>th</sup> edn; Butterworth-Heinemann, Oxford 2000; p. 197-203.
  24. Hibbert J. Metastatic neck disease. In: *Scott-Browin's Otolaryngology*, 6<sup>th</sup> edn. Butterworth-Heinemann, Oxford 1997; p. 5/17/1-7.
  25. Evens PR. Tumours of the oropharynx and lymphoma of the head and neck. In: *Scott Brown's Otolaryngology*, 6<sup>th</sup> edn, Butter Worth-Heinemann Oxford 1997; p. 5/14/5.