

Role of FNAC in evaluation of head and neck swellings in a tertiary care hospital

¹Dr Majid Ali Sarfraz, Junior Resident of ENT, GMC, Jammu

²Dr Shabnam Sarfraz, Senior Resident of Pathology, GMC, Rajouri

³Dr Kamal Kishore, Associate professor of ENT, GMC, Jammu

Corresponding Author: Dr Shabnam Sarfraz, Senior Resident of Pathology, GMC, Rajouri

Citation this Article: Dr Majid Ali Sarfraz, Dr Shabnam Sarfraz, Dr Kamal Kishore, “Role of FNAC in evaluation of head and neck swellings in a tertiary care hospital”, IJMSIR- October - 2020, Vol – 5, Issue - 5, P. No. 81 – 86.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: Head and neck swellings are the commonest clinical presentations encountered by the practicing physicians. Fine Needle Aspiration Cytology (FNAC) is quick, simple, inexpensive, rapid and minimally invasive technique used to diagnose different type of swellings located in head and neck region. It is safe and inexpensive outdoor procedure.

Aim: To study the spectrum of swellings diagnosed on FNAC in head and neck region.

Material and Methods: The present study included 255 patients that underwent FNAC for various head and neck swellings. Detailed clinical history of the patients was noted. Aspiration was done by using 10ml syringe and 22/23gauge needles. Smears were stained with May Grunwald Giemsa and Papanicolaou stains. Cytomorphological diagnosis was given.

Results: Out of 255 patients with head and neck swellings studied, lymph node (57.25%) was the commonest site aspirated with reactive lymphadenitis being the commonest diagnoses. Thyroid swellings constituted 19.6% followed by miscellaneous group (18.03%) and salivary gland swellings (5.09%). Male: Female ratio is 0.84:1.

Conclusion: Fine needle aspiration cytology is simple, safe, minimally invasive and cost-effective technique for diagnosis of head and neck swellings. It could differentiate the infective process from neoplastic one and avoids unnecessary surgeries. Thus, FNAC can be recommended as first line of investigation in the diagnosis of head and neck swellings.

Keywords: Lymph node, Head and Neck, FNAC

Introduction

Fine needle aspiration cytology is simple, safe and cost-effective method for diagnosis of various head and neck swellings [1]. FNAC is an outpatient procedure and helps to avoid surgery in inflammatory and neoplastic masses. [2,3]. Evaluation of the head and neck swellings must be approached in a thorough and disciplined manner [4]. There is an extensive list of differential diagnosis of the patients presenting with head and neck swellings which show considerable variation according to the age of patient. Especially in the adult population, these swellings can present as only manifestation of a serious and potentially malignant pathology. Evaluation of a patient with head and neck swelling should always begin with a thorough clinical history, followed by a complete head and neck

examination. The entire mucosal surface of the upper aerodigestive tract requires special attention. The common head and neck swellings encountered in routine daily practice are from lymph nodes, salivary glands, thyroid and soft tissue tumours. These lesions may be inflammatory or neoplastic. Neoplastic can be either benign or malignant. These head and neck swellings are noticed by the patients easily. The inexpensive diagnostic procedure that the clinician can think first is the Fine needle aspiration cytology (FNAC). It is simple, easy, procedure, can be repeated, can be done for multiple swellings, and has low risk of complications. It is highly suitable for debilitated patients. Hence it is a globally accepted diagnostic procedure [5]. Cancer is among the ten leading causes of death in India and incidence of head and neck malignancies is 23% of all cancers in males and it accounts for 6% in females [6]. FNAC is the procedure without any complications of anaesthetic drugs [7]. FNAC of deeper structures are also possible with the help of newer radiological techniques [8]. Most common pathologies encountered in head and neck swellings are Reactive (Specific or Nonspecific) lymphadenitis, Metastatic deposits, Lymphomas. Thyroid swellings include Goitre, Lymphocytic thyroiditis. Common swellings seen in salivary gland are Sialadenitis, Pleomorphic adenoma, Adenoid cystic carcinoma, Warthin tumour. The other less common swellings are Bronchial cyst, Lipomatous swellings, Benign soft tissue lesions.

Material and Methods

The present study included 255 cases of head and neck swellings attended as outdoor patients in Department of ENT GMC Jammu during November 2019 to June 2020. The detailed clinical history related to swelling was taken from all patients and relevant questions to

the etiological cause along with present, past, and family history of tuberculosis was noted. FNAC was performed as an OPD procedure in the department of Pathology GMC Jammu. After explanation of the procedure and taking informed consent of patient the procedure was started. Cleaning of the area, to be aspirated, was done with spirit. The palpable swelling was fixed with one hand and 22- 23 gauged 3-5 cm long needle with 10ml syringe was inserted into the swelling and a negative pressure was applied. The tip of the needle was moved to and fro. The pressure was released and the needle was withdrawn. The pressure was applied to the area of aspiration to avoid bleeding or hematoma formation. The aspiration material was smeared on the clean glass slides and smears made were relevantly stained, with May Grunwald Giemsa, Papanicolaou stain and special stains were carried as and when required. Lymph node swellings, with purulent or cheesy material as aspirate or with clinical suspicion of tuberculosis were stained with ZN stain. Cytological findings were recorded and patients were advised medical treatment and follow up or biopsy and surgical intervention depending upon the pathology. The cytomorphological features of various diseases were studied.

Results

The present study included 255 patients with age ranging from 1 to 90 years, in which 45.88% were male and 54.11 % were female. Maximum incidence was observed in the age group 21- 30 years and 51-60 years with higher incidence among females. Higher incidence of swellings was observed in the neck region than in the head region. Distribution of patients according to age was shown in **Table-1**. Incidence of lymph node swellings was highest in 146 cases (57.25%) followed by thyroid gland swellings in 50 cases (19.6%),

miscellaneous group in 46 cases (18.03%) and salivary gland swellings in 13 cases (5.09%) as shown in **Table-2**. Overall, incidence of thyroid swellings was proportionately more in females (86%) while incidence of lymph node swellings was higher in males (56.16%). Among 146 cases of lymph node swellings, non-specific reactive lymphadenitis and metastatic deposits were most common comprising 26.71% each, tubercular lymphadenitis and granulomatous lymphadenitis 17.80% each followed by acute suppurative inflammation 8.21% (**Table - 3**). Out of 50 cases of thyroid masses 33 cases (66%) were having colloid goitre, 9 cases (18%) were having lymphocytic thyroiditis and 6 cases (12%) were having hyperplastic goitre (**Table - 4**). Out of 13 cases of salivary gland swellings, incidence of pleomorphic adenoma (46.15%) was highest followed by sialadenitis (38.46%) (**Table-5**). Out of 46 miscellaneous group benign cystic swellings (71.74%) were most common followed by lipomatous swellings (23.91%) and benign adnexal tumour (4.35%) (**Table - 6**).

Table 1: Distribution of patients according to age

| | Age Range | Total |
|-------------------------|-----------|-------|
| Age group (in years) | 1-10 | 30 |
| | 11-20 | 25 |
| | 21-30 | 67 |
| | 31-40 | 34 |
| | 41-50 | 32 |
| | 51-60 | 37 |
| | 61-70 | 22 |
| | 71-80 | 06 |
| ≥80 | 02 | |

Table 2: Site wise distribution of head and neck swellings

| Tissue | Male | Female | Total (%) |
|---------------------|------|--------|-------------|
| Lymph nodes | 82 | 64 | 146 (57.25) |
| Thyroid gland | 07 | 43 | 50(19.6) |
| Salivary gland | 06 | 07 | 13 (5.09) |
| Miscellaneous group | 22 | 24 | 46 (18.03) |
| Total | 117 | 138 | 255(100) |

Table 3: Distribution of various Lymph node swellings

| Lesions | No. of cases | % |
|-----------------------------|--------------|-------|
| Reactive lymphadenitis | 39 | 26.71 |
| Tubercular lymphadenitis | 26 | 17.80 |
| Granulomatous lymphadenitis | 26 | 17.80 |
| Acute suppurative | 12 | 8.21 |
| Lymphoma | 04 | 2.73 |
| Metastasis | 39 | 26.71 |
| Total | 146 | 100 |

Table 4: Distribution of various Thyroid swellings

| Thyroid lesions | No. of cases | % |
|-----------------------------|--------------|-----|
| Colloid goitre | 33 | 66 |
| Lymphocytic thyroiditis | 09 | 18 |
| Hyperplastic goitre | 06 | 12 |
| Papillary carcinoma thyroid | 01 | 02 |
| Follicular neoplasm | 01 | 02 |
| Total | 50 | 100 |

Table 5: Distribution of various Salivary Gland swellings

| Salivary Gland | No. of cases | % |
|---------------------|--------------|-------|
| Sialadenitis | 05 | 38.46 |
| Pleomorphic Adenoma | 06 | 46.15 |
| Warthin Tumour | 02 | 15.38 |
| Total | 13 | 100 |

Table 6: Miscellaneous Group

| Miscellaneous | No. of cases | % |
|------------------------|--------------|-------|
| Cystic lesion | 33 | 71.74 |
| Lipomatous swelling | 11 | 23.91 |
| Benign adnexal tumours | 02 | 4.35 |
| Total | 46 | 100 |

Discussion

In 1930, Martin and Ellis described and first introduced the technique of FNAC for diagnosis of organ lesions [9]. Success of FNA depends on two fundamental requirements. One is representative sample and other is high quality of preparation. These two prerequisites will always remain a sine qua non, no matter how sophisticated are the supplementary techniques [8]. FNAC is simple, quick and cost-effective methods of evaluating palpable head and neck masses. It is always beneficial while doing an early differentiation of benign from malignant pathology as it greatly influences the planned treatment. It can be both diagnostic and therapeutic in cystic swellings [2]. Head and neck neoplasms constitute a major form of cancer in India accounting for 23% of all cancers in males and 6% in females [10,11,12] and approximately 5% all childhood neoplasms.[13]. Head and neck swellings are the commonly encountered clinical conditions. In the present study of 255 cases of various head and neck swellings, the results achieved were compared with different studies. This study included patients from all age groups. Majority of patients were female with male to female ratio of 0.84:1. Similar results of female preponderance were also reported by Kishor H et al. [10] and Muddegowda et al.[16]. In this study the most common site for the occurrence of head and neck swellings were lymph nodes followed by thyroid, other soft tissues and salivary glands. Our findings were comparable to other studies that have shown lymph

nodes as the commonest site FNAC in head and neck region [14,15]. Among 146 cases of lymph node lesions, non-specific reactive lymphadenitis and metastatic deposits were most common comprising 26.71% each, tubercular lymphadenitis and granulomatous lymphadenitis 17.80% each followed by acute suppurative inflammation 8.21%. Following studies observed reactive lymphadenitis as the most common diagnosis of lymph node similar to our study [17,18]. In contrast, few studies showed tubercular lymphadenitis as the most frequent finding among lymph nodes [15].

In our study FNAC of thyroid swellings was the next common site. Colloid goitre (66%) was the predominant finding followed by lymphocytic thyroiditis (18%). Muddegowda et al. [17] also found thyroid swellings as the predominant site of FNAC in their study with colloid goitre as the predominant finding. Female preponderance was observed in FNAC of thyroid swellings in our study with similar findings reported by Muddegowda et al. [17].

In salivary gland swellings pleomorphic adenoma was diagnosed in 6 (46.15%) cases followed by sialadenitis in 5 (38.46%) and warthin tumour in 2 (15.38%). Following studies that reported pleomorphic adenoma as the most common lesion found in salivary gland [15,16,20,21].

In soft tissue swellings benign swellings were the commonest finding including 33 cases (71.74%) of benign cystic swellings and 11 cases (23.91%) of lipomatous swellings. Bhagat et al [22] reported neoplastic swellings in 63% cases with lipoma as the predominant benign tumour. A study by Singal et al found the lipoma as the commonest soft tissue swelling followed by epidermal cyst and hemangioma which was not in accordance with our study [19].

Conclusion

From present study it is concluded that FNAC of head and neck swellings is an excellent first line method for investigating the nature of the swellings. It can help in reducing the number of diagnostic surgeries in patients with head and neck swellings and also differentiate the infective process from neoplastic one and avoids unnecessary surgeries.

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