

Spectrum of Palpable Lesions by Fine Needle Aspiration Cytology in the Rural Population of Northern Uttar Pradesh

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Abstract

Introduction: Palpable swellings at various sites, commonly encountered in day-to-day practice by clinicians are a major concern for an individual. Fine needle aspiration cytology (FNAC), being fast and minimally invasive, is the investigation of choice for such cases. It differentiates between infective and neoplastic etiology, hence bringing great help to choose further management of the disease.

Aims and objectives: To study the cytomorphological spectrum of palpable lesions on FNAC. To categorize all palpable lesions into non-neoplastic or neoplastic category.

Material and methods: It is a retrospective study carried out for a period of 24 months in a tertiary care hospital. A total number of 2672 cases of all age groups were included.

Results: In the current study female preponderance was observed. The age of patients ranged from 2 to 87 years. Sites encountered were Lymph node, Thyroid, Breast, Salivary gland and miscellaneous. All lesions were classified as non-neoplastic or neoplastic, with non-neoplastic forming the major category.

Conclusion: Fine needle aspiration cytology helps in differentiating neoplastic from non-neoplastic etiology in palpable lesions. It adds to rapid and appropriate choice of management for such cases.

Key words: FNAC, palpable lesions, cytomorphology, cytodiagnosis, neoplastic, nonneoplastic.

Introduction

Palpable swellings anywhere in the body are a source of concern for any individual, which is commonly encountered by clinicians in day-to-day practice. Fine needle aspiration cytology is considered the first line investigation of choice for evaluating these palpable swellings^[1]. Therefore, it is recognized as a useful diagnostic tool due to its rapidity, ease of use, minimal trauma, and lack of complications. It is a widely used method for identifying different types of swellings^[2].

Nevertheless, FNAC continues to be used worldwide, especially in developing countries and is widely accepted as a reliable technique for preoperative evaluation of palpable lumps. Scope of FNAC has now extended into identifying the subtypes of benign, malignant lesions and residual disease for the purpose of planning the therapeutic protocol^[3].

Aims and objectives

To study the cytomorphological spectrum of palpable lesions on FNAC. To categorize all palpable lesions into non-neoplastic or neoplastic category.

Material and methods

This was a retrospective study carried out in a tertiary care hospital for a period of 24 months from June 2023 to May 2025. It included 2672 FNAC cases across all age groups.

The patient was asked about relevant history and clinical presentation. A physical examination was done, and positive findings were noted. Each patient was explained about the procedure and written consent was taken. All the FNACs were performed under aseptic conditions, using a 23-gauge needle with or without aspiration wherever necessary. Smears were prepared from the aspirated material on clean glass slides and fixed with 95% alcohol. Alcohol fixed smears were stained using Hematoxylin & Eosin

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and Papanicolaou stain while air dried smears were stained with Leishman and Giemsa stain. Modified Ziehl-Neelsen's stain was done wherever required.

Results

All FNAC smears obtained from 2672 cases were examined, diagnosed and categorized according to the cytomorphological features.

Table 1: Distribution of cases amongst males and females

Total number of cases	Male	Female
n = 2672	964 (36.1%)	1708 (63.9%)

In the current study female preponderance was observed with females being 1708 (63.9%) and males 964 (36.1%) in number (Table 1). The presenting age of patients ranged from 2 years to 87 years, the mean age being 35 years.

Table 3: Distribution of cases according to category

Category	Cases	%
Nonneoplastic	1818	68.04
Neoplastic	854	31.96
Total	2672	100

All lesions were classified as non-neoplastic (1818, 68.04%) and neoplastic (854, 31.96%).

Table 4: Distribution of cases according to cytological category

Site	Category	Age (Years)					Total
		0-20	21-40	41-60	61-80	>80	
Lymph node	Nonneoplastic	442	403	154	154	34	1122
	Neoplastic	15	21	19	06	06	67
Thyroid	Nonneoplastic	12	97	122	88	02	321
	Neoplastic	12	29	24	11	04	80
Breast	Nonneoplastic	-	-	-	-	-	-
	Neoplastic	175	152	48	12	-	387
Salivary gland	Nonneoplastic	30	45	29	04	-	107
	Neoplastic	17	18	14	05	-	54
Miscellaneous	Nonneoplastic	77	97	82	10	02	268
	Neoplastic	68	80	89	25	-	266
Total							2672

Neoplastic lesions were further classified as benign and malignant. In this study the highest number of non-neoplastic lesions (1122/41.99%) were seen in lymph nodes (Table-4). The highest number of cases amongst neoplastic lesions were seen in breast (387/14.48%).

Amongst all the sites, lymph node showed a predominance of non-neoplastic lesions in the age group of 0-20 years (442/1122 cases), whereas neoplastic lesions (21/67 cases) were most commonly seen in 21-40 years of age. The commonest presenting age group for non-neoplastic thyroid lesions was 41-60 years (122/321 cases), while in neoplastic lesions the presenting age group was seen as 21-40 years (29/80 cases). Breast lesions aspirated and diagnosed as neoplastic were usually seen in the age group of 0-20 years (175/387 cases). Out of 107 diagnosed non neoplastic cases of salivary gland, the maximum number (45 cases) presented in the age group of 21-40 years, whereas the neoplastic category showed preponderance (18/54 cases) in the age group of 21-40 years. The miscellaneous sites encountered during the study showed preponderance of non-neoplastic

Table 2: Distribution of cases according to site

Site	Cases	%
Lymph node	1189	44.50
Thyroid	401	15.01
Breast	387	14.48
Salivary gland	161	6.03
Miscellaneous	534	19.99
Total	2672	100

The various sites encountered in the present study were Lymph node, Thyroid, Breast, Salivary gland and miscellaneous (i.e., shoulder, arm, chest, flank, thigh, scalp, back etc.). The maximum number of lesions were seen in Lymph node (1189 cases/44.50 %), followed by Thyroid (401/15.01%), Breast (387/14.48%) and Salivary gland (161/6.03%). Total number of cases which included miscellaneous sites was 534 (19.99%) (Table 2).

lesions in the age group of 21-40 years (97/268 cases), and the majority of neoplastic lesions (89/266 cases) were found in the 41-60 years of age group.

The frequently diagnosed lesions in lymph node were Reactive lymphadenitis, Granulomatous lymphadenitis and Tubercular lymphadenitis. The most common diagnoses in palpable lesions of thyroid were simple colloid goitre, thyroiditis and colloid nodule. The most frequent diagnoses in breast were fibroadenoma, fibrocystic disease and intraductal carcinoma of the breast. The commonest diagnoses in salivary gland lesions were sialadenitis and pleomorphic adenoma. Miscellaneous sites were diagnosed as abscesses, epidermal inclusion cysts and lipomas.

Discussion

A diverse range of inflammatory, cystic and neoplastic processes affect the body, resulting in clinically palpable lesions [4]. The emergence and development of FNAC in the field of cytodiagnosis has proved to be a dynamic tool in the assessment of palpable lesions. FNAC as a technique for diagnosis of lesions was first introduced by Martin and Ellis [5].

In the present study, 2672 cases of palpable lesions were cytologically examined. Slight female preponderance was seen in our study, whereas a study done by Rajesh Kumar et al. [6] showed male preponderance.

The age of patients ranged from 2 to 87 years, the mean age being 35 years. Similar results were observed in previous done study done by Kaur A et al. [1].

In the current study out of 2672 cases, 1818 cases (68.04%) were diagnosed as non-neoplastic, while 854 (31.96% cases) were found to be neoplastic. With early diagnosis by FNAC, these non-neoplastic lesions were well managed conservatively.

The palpable lesions were present on various sites which included, Lymph nodes (1189 cases, 44.50%), Thyroid (401cases, 15.01%), Breast (387 cases, 14.48%), Salivary gland (161 cases, 6.03%) and miscellaneous sites (534 cases, 19.99%).

The most frequent site in this study was lymph node, having the highest number of non- neoplastic lesions (1122/41.99%). Lymphadenopathy is the most frequent clinical finding in any kind of infection or metastasis. The cytological studies done by Kumar V et al. [7] and Sharma R et al. [8] also showed lymph node being the dominant site, consisting of 60.8% and 33.1% cases respectively, similar to the current study.

Lymph node showed a predominance of non-neoplastic lesions in the age group of 0-20 years (442/1122 cases), Jaiswal N et al. [9] encountered similar results in their study, showing 26/51cases.

The frequent lesion diagnosed on FNAC in lymph node was Reactive lymphadenitis.

The highest number of cases amongst neoplastic lesions were seen in Breast (387/14.48%). The palpable neoplastic breast lesions were usually seen in the age group of 0-20 years (175/387 cases). A study done by Reddy S et al. [10] showed preponderance in the age group of 15-30 years (62/106 cases). The most common benign neoplasm encountered was fibroadenoma, as the presenting population was younger females in the present study.

The non-neoplastic lesions of thyroid most commonly presented in the age group of 41-60 years (122/321 cases) which was in concordance with the study done by Shruthi et al. [11]. The commonest lesion of the thyroid was Simple Colloid Goitre. Since the study was done in a rural population, lack of awareness of symptoms could be the cause of late presentation.

Out of 107 diagnosed non-neoplastic cases of salivary gland, maximum number (45 cases) presented in the age group of 21-40 years, which was in concordance with the study done by Poudel et al. [12] (32/63 cases). Sialadenitis was the most frequent diagnosis in salivary gland, as it has varied etiology including infective agent, stones, malignancy, autoimmune and idiopathic [13].

The miscellaneous sites encountered during the study showed preponderance of non-neoplastic lesions such as abscesses, in the age group of 21-40 years (97/268 cases); similar results were observed in a study done by Kishore S. H. et al. [14]. Low socio-economic strata patients avoid medical consultation or management. This delay in prompt treatment frequently leads to infection or abscess formation.

Conclusion:

FNAC is a reliable procedure for the evaluation of palpable lesions. It helps in differentiating neoplastic from non-neoplastic lesions. Hence, it provides a better understanding of the disease and its management to avoid unnecessary surgical interventions and prognostic implications. Therefore, FNAC should be considered as the first line investigation for palpable lesions.

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