

## Original Research Article

# Spectrum of different pathologies in cytology coming to a tertiary care centre: an experience over one-year duration

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## ABSTRACT

**Background:** The aim of the study was to study the pattern of pathologies identified on Fine needle aspiration (FNA) in a tertiary hospital in Dhanbad, Jharkhand during the period July 2020 to July 2021, as well as to identify the profile of patients undergoing the procedure at our hospital.

**Methods:** The data pertaining to the details of the patients who underwent FNA evaluation from the period July 2020 to July 2021 at a tertiary hospital located in Dhanbad, Jharkhand, was analysed to determine the age and sex distribution of the patients and the distribution of pathologies diagnosed on FNA.

**Results:** The female gender was predominant (54%; 64 out of 118 patients) among the patients who underwent FNAC. A majority of the patients were in the age group of 20 to 50 years. Lymph node aspiration (reactive and granulomatous lymphadenitis) was predominant in our series (40%; 47 cases out of 118 FNA evaluations). Lipoma was the third most common diagnosis (12.7%; 15 out of 118 FNA evaluations).

**Conclusions:** FNA evaluation is a quick, easy, relatively non-traumatic, and, in expert hands, a reliable method of diagnosing the pathology. Reactive lymph node hyperplasia granulomatous lymphadenitis and lipoma were three most common cases in our series.

**Keywords:** FNAC, Granulomatous lymphadenitis, Incidence of pathologies, Reactive hyperplasia, Lipoma

## INTRODUCTION

Fine needle aspiration cytology (FNAC) technique was first introduced by Greig and Grey.<sup>1</sup> Since the 1960's, it has been used extensively as a diagnostic tool for rapid evaluation of mainly superficial lesions. It is cost effective, relatively less traumatic, and enables the pathologist to provide the clinician with a diagnosis in a very short time, and hence is ideal especially for OPD patients.<sup>2</sup>

Lymphadenopathy and breast lump are commonly encountered clinical entity. FNAC has become popular as a valuable tool in preoperative assessment of breast masses, and it shows high accuracy, sensitivity, and specificity. It has gained popularity due to its fast and easy

approach, being inexpensive, and can be performed with little complications. To differentiate benign from malignant lesions is one of the major goals of FNAC. The diagnosis of the cause underlying enables the clinician to plan appropriate management for each patient.

Enlarged superficial lymph nodes and breast lump are easily amenable to evaluation by FNA technique and hence FNAC forms an important diagnostic tool in the armamentarium of the pathologist.<sup>3</sup> While histopathological evaluation of surgically excised is a more specific and accurate diagnostic parameter, it is relatively more-costly, time consuming and discomfiting to the patient, and may not be warranted in every patient. FNAC is more cost effective and relatively non-invasive.<sup>4</sup> FNAC evaluation may prevent a patient having to undergo

unnecessary surgery and permit the treating clinician to offer conservative therapy instead. This study was undertaken to identify the spectrum of patients referred for FNAC evaluation to the laboratory of our tertiary care hospital located in Dhanbad, Jharkhand, India.

**METHODS**

The study was a retrospective study using existing patient data retrieved from the records of the department of pathology, SNMMCH, Dhanbad.

During the period 01 July 2020 to 1 July 2021, a total of 118 patients were referred to the cytopathology department of the pathology SNNMCH, Dhanbad for FNAC evaluation of all patients who were referred for FNAC with visible swelling/lump were included in the study.

Consequent to studying the clinical profile of each patient, including perusing relevant investigation results in each case, the patients underwent FNAC evaluation using a 22- or 23-gauge needle attached to a 10 cc disposable syringe. Consent of the patients was obtained in each case. Smears were prepared on clean glass slides as per standard techniques, and the smears either wet fixed by immersing the slides in 95% methanol or air dried. Where aspirate was scanty, all slides were wet-fixed only. Wet fixed smears were stained by Hematoxylin and eosin (H and E) and Papanicolaou’s (Pap) stains. Air dried smears were stained by Giemsa stain.

All slides after staining were mounted using standard cover slips and then analyzed by standard microscopy. No special stains were used on the slides. Diagnosis was made by either a single cytopathologist or, where mandated, by two or more cytopathologists.

The results of the FNAC analyses were retrieved from the laboratory archives and analyzed to establish the spectrum

of pathologies reported on FNAC during the period under study. The age and gender profile of the patients was also studied. No correlation with biopsy reports was undertaken during this study. Data was analyzed using MS excel sheet and calculations of incidence made from the same.

**RESULTS**

A total of 118 patients reported for FNAC evaluation during the period of July 2020 to July 2021.

The distribution of lesion diagnosed is given in the Table 1. Reactive lymph node was the most common finding (23.7%) 28 out of 118 cases followed by granulomatous lymphadenitis (16.1%) was the 2<sup>nd</sup> most common finding. While lipoma was the third most common finding.

The age of all cases is given in the Figure 1. Female patients constituted 54.2% of all cases as seen in Figure 2. 5 most common cases are depicted in the Figure 3 and gender wise each case is depicted in the Figure 4.

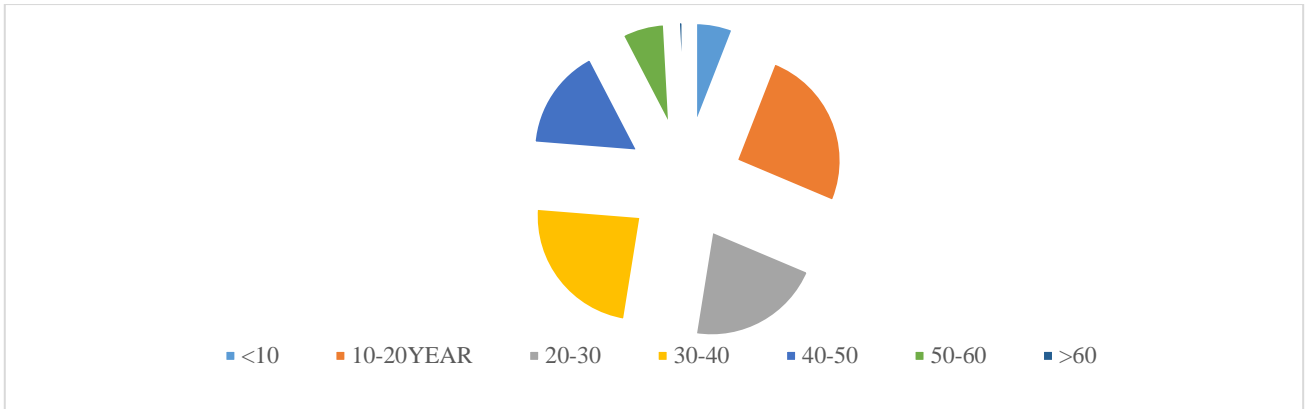
Most of the patients were in the age group of 10-50 years. No age or gender specific predilection was seen for any of the pathologies reported. Reactive lymph node hyperplasia was diagnosed by the presence of a polymorphous population of lymphoid cells and tangible body macrophages. This formed the predominant pathology in our series of FNAC’s.

Granulomatous lymphadenitis was diagnosed by the presence of epithelioid cell granulomas, with or without caseating necrosis. We do not routinely do AFB stain on such smears in our laboratory. Fibroadenoma was diagnosed by presence of tightly cohesive cluster of bimodal population of ductal and myoepithelial cells against the background of bare nuclei.

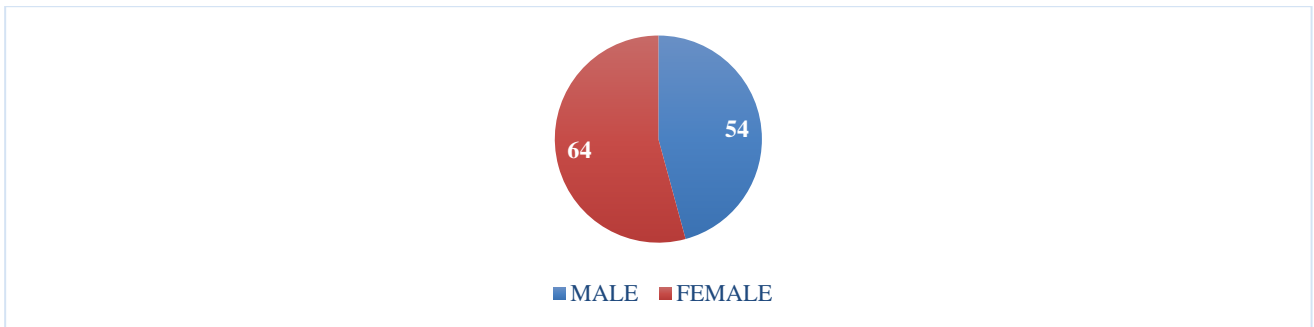
**Table 1: Characteristics.**

Age (years)	RLN	GLN	EC	Lipo- ma	FA	Abs- cess	Ductal Ca	PA	NF	HA	HF	BC	GM	S- CC	Total
<10	3	2	1								1				7
10-20	6	10	5		5	1		1		1		1			30
20-30	7	2	1	4	3	5	1		1			1			25
30-40	6	4	3	5	2	3	1	1	1	1		1			28
40-50	3	1	4	4	2	3						1	1		19
50-60	2			2	1			1				1		1	8
>60	1														1
<b>Total</b>	<b>28</b>	<b>19</b>	<b>14</b>	<b>15</b>	<b>13</b>	<b>12</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>118</b>

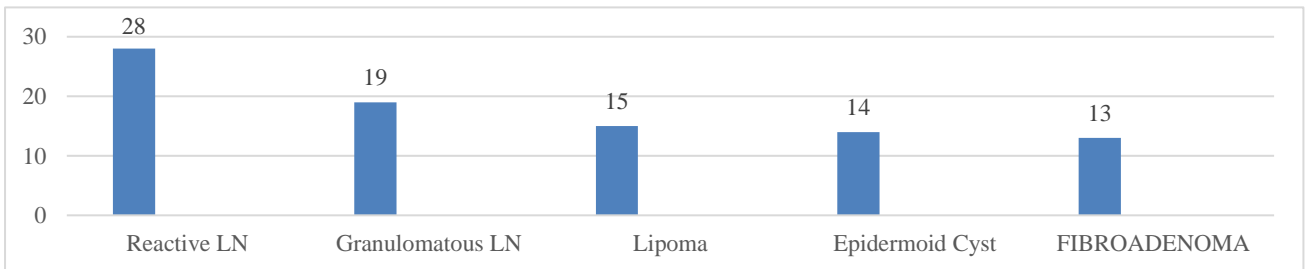
Note: RLN: Reactive lymph node, GLN: Granulomatous lymph node, EC: Epidermal cyst. FA: Fibroadenoma, PA: Pleomorphic adenoma, NF: Neurofibromatosis, HA: Hemangioma, HF: Hemangiofibroma, BC: Benign cystic lesion, GM: Gynecomastia, SCC: Squamous cell Ca.



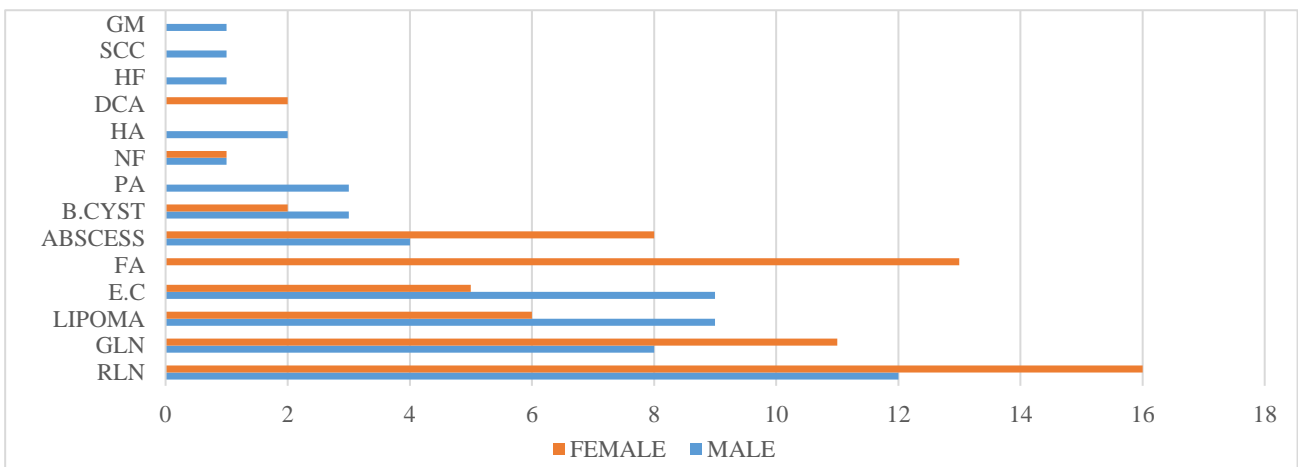
**Figure 1: Cases age wise (years).**



**Figure 2: Gender wise.**



**Figure 3: 5 most common cases.**



**Figure 4: Gender wise.**

## DISCUSSION

FNAC is used as an initial diagnostic tool in evaluating different lesions in adult patients.

The FNAC specimen in present study is from various sites and includes a wide range of cytological diagnosis. Adequacy of material in various studies is found to be in the range of 93-94%. While unsatisfactory aspirates in the range of 6-8%.<sup>5,7,8</sup> In present study adequacy of material is found to be 96.6% and unsatisfactory/inadequate aspirate is found in 3.4% cases. In the present study, Female preponderance was observed 54.2%.

The majority of aspirates were of a benign nature i.e.; 115/118 (97.40%) and rest i.e.; 3/118 (2.60%) were malignant. Correlating well with other studies.<sup>13</sup> A subdivision of FNA diagnosis according to anatomic site revealed a distinct preponderance of lymph nodes, over all other sites i.e.; 47/118 (39.8%), out of all lymph nodes aspirated, 47/118 (39.8%) are cervical group of lymph nodes. Correlating well with all studies. In present study the commonest cytopathological finding among cervical lymph node lesions was reactive lymphadenitis in 54.76% (23/42), followed by granulomatous lymphadenitis 45.2% (19/42). The other major category included the benign cystic lesions i.e.; 19/118 (16.1%) comprised mostly of epidermal cysts, epidermoid cysts and benign cystic lesion. In a study by Pratima et al the most common site for FNAC was cervical lymph node swelling 48.3% (158/327) followed by thyroid swelling.<sup>10</sup> Reactive lymphadenitis was the most common among non-neoplastic lesions 38.8% (103/265) followed by acute suppurative lesion 16.22% (43/265) and colloid goiter 7.2% (19/265). Among cervical lymph node lesions, maximum cases were of reactive lymphadenitis 65.2% (103/158), followed by acute suppurative lymphadenitis 12.6% (20/158), granulomatous lymphadenitis 10.7% (17/158), and tubercular lymphadenitis 10.1% (16/158).

Annam et al also noted that the most common cytopathological finding as reactive lymphadenitis in 58.08%, followed by granulomatous lymphadenitis and tubercular lymphadenitis in 30.55% and 29.01% respectively.<sup>11</sup> Findings in salivary gland lesions were all pleomorphic adenoma. 58.13% (25/43) formed the majority among benign tumors in our study.

Our study showed that most common benign tumor as soft tissue tumors (16.9%), out of which lipoma was the most common accounting for 75% cases followed by benign mesenchymal tumor (hemangioma, hemangiofibroma, fibromatosis and neurofibroma) 25%. Various studies have shown the similar finding. Fibroadenoma was the second most common benign tumour (11.1%). Fibroadenoma 20.8% (10/49) formed the majority among benign tumors in study by Pratima et al and Rioki et al while, Maheshwari et al noted soft tissue tumors (64%) were predominant among benign tumors.<sup>9,10,12</sup>

The malignant group included 2 cases of ductal ca of breast and 1 case of squamous cells carcinoma of penis which was later confirmed by biopsy.

Limitation of study was the small sample size.

## CONCLUSION

FNAC is a safe, simple, cost-effective procedure with high diagnostic accuracy. It has got a good patient acceptance due to less side effects, no morbidity and can be carried out with ease even in children. The necessity to perform excision biopsy is reduced in many cases, saving patients from surgical complications. Hence, it can be used as an initial screening tool in all the superficial lesions in all age group. The reactive lymphadenopathy is commonest clinical presentation which resolves spontaneously and surgical excision is not at all indicated. FNAC has helped to avoid unnecessary excision biopsies, and its complications especially in benign inflammatory condition. Rational and proper planning of surgery/treatment can be done in cases of primary neoplasms as it is used to distinguish between benign and malignant lesions. However histopathological examination is mandatory in few suspicious cases. In resource limited settings, health care providers should realize the importance of FNAC as an initial screening tool in superficial lesions.

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