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Research Article

Spectrum of Study of Breast Lumps in Young Females between Ages 15 and 20 Years- A Prospective Study in a Teaching Hospital

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Abstract: The breast is one of the most important organs in the female reproductive system. Breast tissue in females is under the influence of various hormones and it is subjected to constant physiological variations throughout a woman's life more so in adolescence, reproductive life and less beyond the reproductive age group too. Breast lumps have a variety of etiologies, could be either benign or malignant. Major fear in a patient with lump is that a breast lump might be cancerous makes patient to present to the hospital. Young females presenting to the surgical outpatient department of Malla Reddy hospital, Suraram, Hyderabad, Telangana State were selected keeping in mind the inclusion criteria such as Age between 15 and 20 years and Palpable breast lump of variable duration. Age more than 21 years and patients reluctant to FNAC and excision biopsy were not included in the study. In our study, out of the hundred cases studied 57 cases (57 %) were Fibro adenomas , 08 cases (8%) were bilateral fibroadenoma, 08 (8%)cases were phyllodes tumor , 07 (7%) cases were giant juvenile fibro adenomas , 06 cases(6%) were tubular adenomas, 04 (4%) cases were multiple juvenile fibro adenomas, 04 cases (4%)were fibro adenomas with cystic change , 03 (3%)cases were lactating adenomas,02 (2%)cases were infarcted fibro adenomas, 01 (1%)case was complex fibro adenoma. Fibroadenomas are most common benign diseases involving breast. Predominantly found in young girls and young women of age 16-45 with varying number and size involving any quadrant or all quadrants of breast. Diagnosis by FNAC is reliable yet confirmation by biopsy is required even in young girls which confirms or rules out unusual presentation.
Keywords: Breast Lumps, Fine Needle Aspiration Cytology (FNAC), Fibroadenoma, Infarcted Fibroadenoma, Multiple Juvenile Fibroadenoma, Lactating Adenoma, Histopathology.

INTRODUCTION

The breast is one of the most important organs in the female reproductive system. Breast tissue in females is under the influence of various hormones and it is subjected to constant physiological variations throughout a woman's life more so in adolescence, reproductive life and less beyond the reproductive age group too. More than 90 % of the breast lesions are benign, as the age of the patient increases the chances of malignancy increase. A mass in the breast is a common complaint from the young females presenting to the general surgical out-patient department in majority of the hospitals. A quick and easy diagnosis of a breast lump is essential. Cost effectiveness, anesthesia requirement, time between the choosing a diagnostic procedure and issue of the report to the patient , patient's need to stay at hospital and most importantly, reliability in deciding subsequent treatment, are all the factors to be taken into account. Considerable factors such as patients comfort, requirement of anesthesia, faster analysis and reporting, and a negligible or absence of pseudo positive results makes FNAC an ideal first line of diagnostic modality in breast lumps [1]. Palpable breast lumps are very common and usually they are benign, but sufficient and thorough evaluation of these lumps and prompt diagnosis are necessary to rule out malignancy in older patients. A thorough clinical examination of the breast, imaging, and tissue sampling are needed for an accurate diagnosis. Fine-needle aspiration (FNAC) is simple, fast, inexpensive, and accurate, and it can also very easily differentiate solid and cystic masses [2]. Mammography screens for occult malignancy in the same and contra lateral breast and can detect malignant lesions in older women; it is less sensitive in women younger than 40 years [3]. Ultrasonography can be used in detecting cystic masses, which are common, and can be used to guide biopsy techniques. Representative tissue specimens obtained by using core-needle biopsy allow histological diagnosis of the lesion, hormone-receptor testing, and up to some extent differentiation between in situ and invasive disease can also be made. Core-needle biopsy is more invasive and pain associated technique than fine-needle aspiration (FNAC), Core needle biopsy also requires more training and experience, and frequently needs supporting guidance from imaging techniques [4]. After the clinical examination of the breast is done, the further evaluation depends largely on the patient's age

and examination characteristics, and the experience of the clinician in performing fine-needle aspiration or core biopsy. Excision is the treatment of choice. We present a one year study of breast lesions/lumps in young girls between the age group of 15 and 20 years. This study was done at Malla Reddy Institute of Medical Sciences and Hospital, Suraram, Hyderabad, Telangana State and the total number of cases studied are one hundred (n=100)

Aims and Objectives

To study the spectrum of lesions presenting as breast lumps with the help of basic diagnostic tools such as Fine Needle Aspiration Cytology (FNAC) and Histopathology (HPE). FNAC is one of the most important aspects of cytodiagnosis; it is a simple and efficient technique which can be relied upon in terms of avoiding unnecessary diagnostic surgery before proceeding with the final definitive excision procedure. Our primary aim of the study is to diagnose the breast lumps by using FNAC and also to evaluate the correlation between accuracy of FNAC with the findings of histopathology in palpable breast lumps in young females between 15 and 20 years.

The aims and objectives of our study therefore were:

- To subject all patients in our study, presenting with a palpable breast lump in this general hospital, to Fine-Needle Aspiration Cytology on an outpatient basis.
- To admit the patient for the required definitive excision of the lump and study the histopathological features.
- To compare the FNAC report with the findings of the final histopathology report of the excised specimen in all patients.
- To derive conclusions about the correlation, including sensitivity, specificity, positive and negative predictive values, regarding the diagnostic accuracy of FNAC as compared to the final histopathology.

MATERIALS AND METHODS

The materials in our prospective type of study are as follows:

Eligibility criteria for patients: Young female patients attending the surgical outpatient department of our hospital were selected keeping in mind the criteria mentioned below.

A. Inclusion Criteria

- Age between 15 and 20 years
- Palpable breast lump of variable duration

B. Exclusion Criteria

- Patient not willing for FNAC and Excision (written informed consent taken)
- Any frank malignant looking mass with skin infiltration
- Age > 21 years

All the smears made from the aspirate of the breast lump are stained with routine Hematoxylin and Eosin stain (H & E) and in few cases Giemsa stain was also used. Also representative areas were taken from the excised formalin fixed breast lumps and processed using automated processing machine. Paraffin embedding of the tissues was done and sections were stained with routine H& E stain.

RESULTS

In our study, out of the hundred cases studied 57 cases (57 %) were Fibro adenomas (Fig 3 & 4- FNAC Smear and Histopathology examination), 08 cases (8%) were bilateral fibroadenoma, 08 (8%)cases were phyllodes tumor (Fig 6) , 07 (7%) cases were giant juvenile fibro adenomas , 06 cases(6%) were tubular adenomas(Fig 5), 04 (4%) cases were multiple juvenile fibro adenomas(Figure 2), 04 cases (4%)were fibro adenomas with cystic change , 03 (3%)cases were lactating adenomas(Fig 7),02 (2%)cases were infarcted fibro adenomas, 01 (1%)case was complex fibro adenoma (Table 1 and Figure 1).

Table-1: Various Breast Lesions Encountered and Their Number

Diagnosis	No. of cases
Fibroadenoma	57
Bilateral fibroadenoma	08
Phyllodes tumor	08
Giant juvenile fibroadenoma	07
Tubular adenoma	06
Multiple Juvenile fibroadenoma	04
Fibroadenoma with cystic change	04
Lactating adenoma	03
Infarcted fibroadenoma	02
Complex fibroadenoma	01
TOTAL	**100**

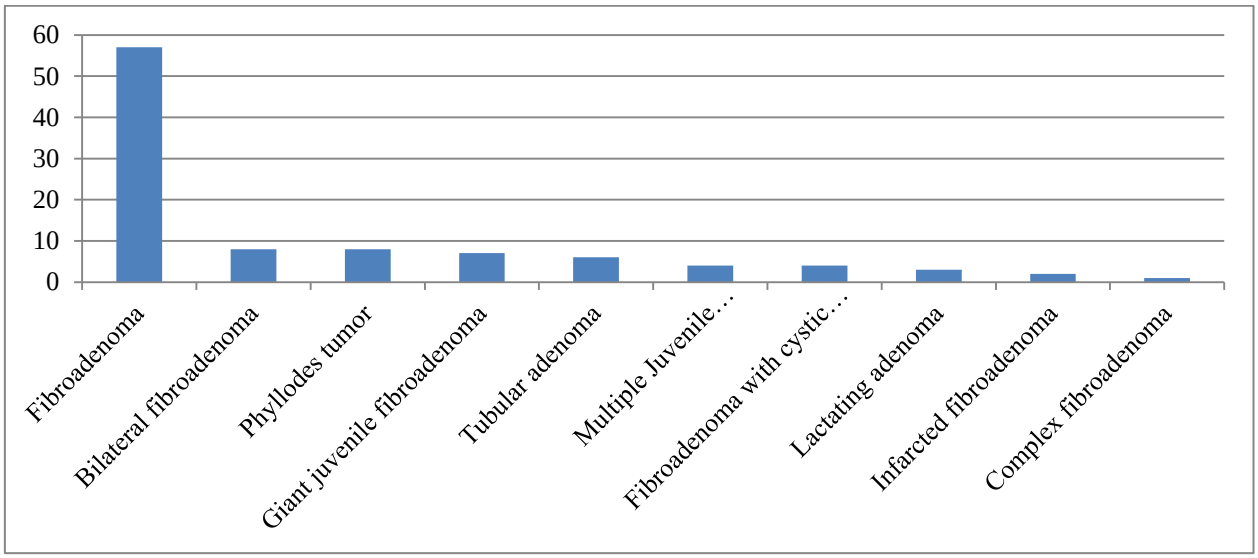

Fig-1: Distribution of Various Breast Lesions

Fig-2: Gross Image of the multiple juvenile fibroadenomas

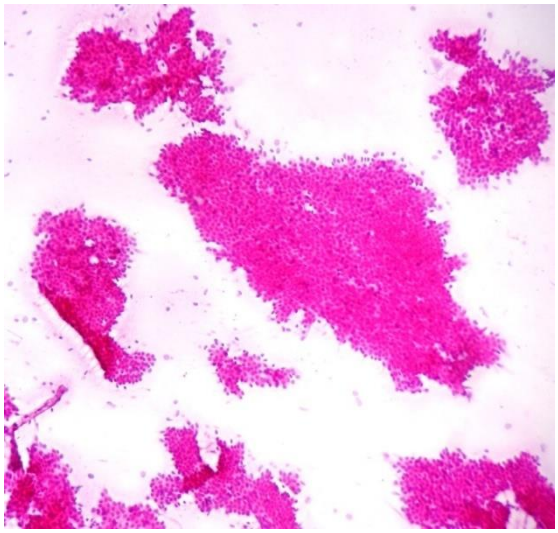

Fig-3: Cytosmears shows sheets of benign ductal epithelial cells.

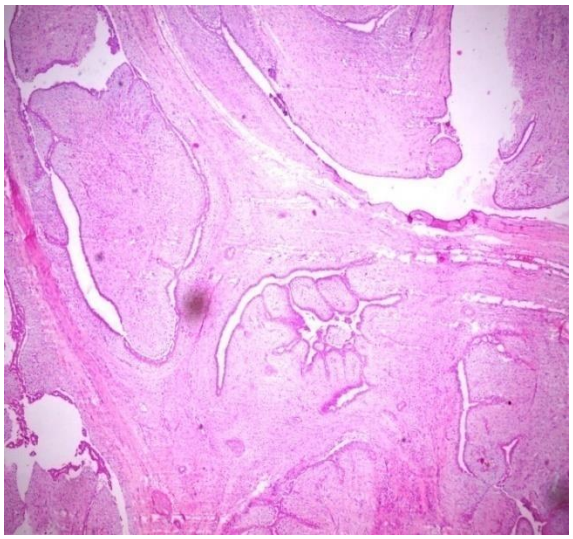

Fig-4: Hematoxylin and eosin (H & E) stained sections of fibroadenoma showing epithelial and stromal components

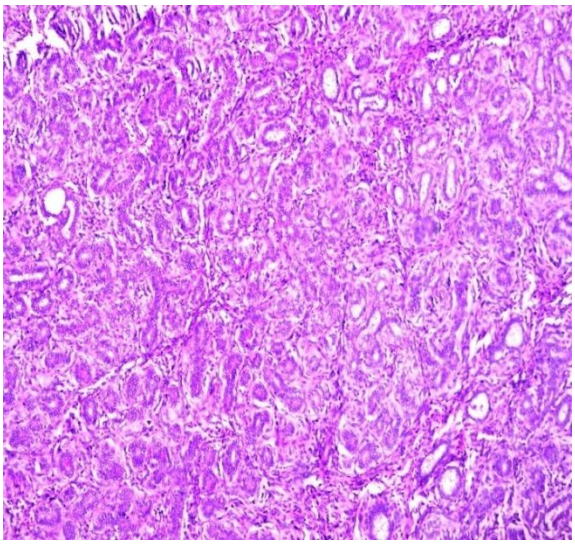

Fig- 5: H & E sections of tubular adenoma showing tubular glands and scant stroma

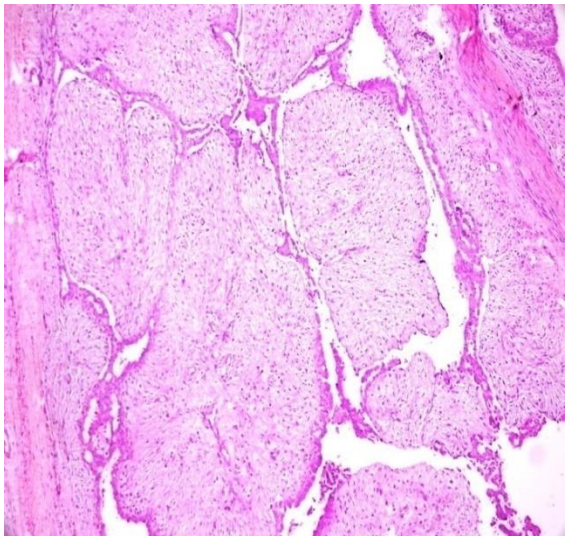

Fig-6: H & E sections of phyllodes tumor with benign epithelium and hyperplasia of the stroma

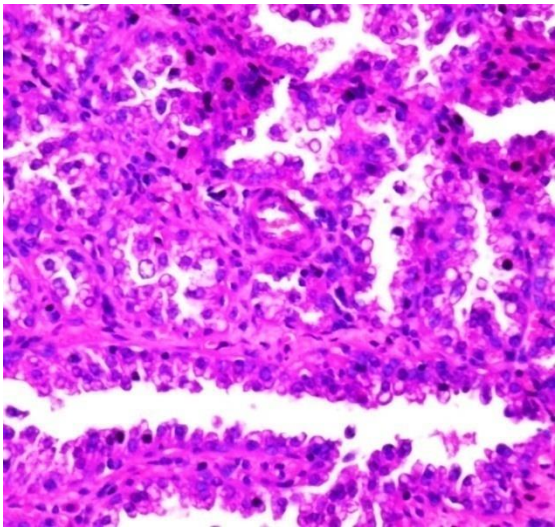

Fig-7: H & E sections showing lactating adenoma with secretory type of epithelium

In our study, age wise distribution of breast lumps was studied. Least incidence/occurrence was noted among 15 years with 06 (6%) of cases, highest incidence was seen among 18 and 19 years group (Table 2 and Figure 8).

Table-2: Age Wise Distribution of The Cases

Age	No. of Cases
15 years	06
16 years	13
17 years	15
18 years	23
19 years	23
20 years	20
TOTAL	**100**

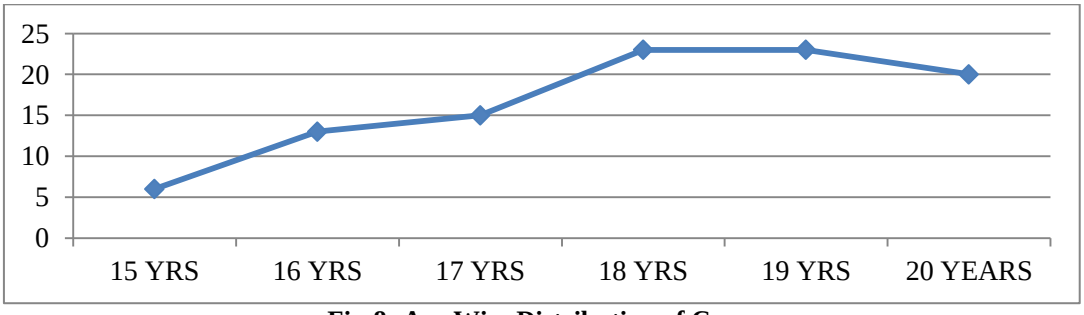

Fig-8: Age Wise Distribution of Cases

In our study, left breast involvement (43 % cases) was predominant followed by right breast (39 % of cases). In few cases bilateral involvement was also seen (18 % of cases) (Table 3 and figure 9).

Table- 3: Distribution Based On Site

Site	No. of Cases
Left Breast	43
Right Breast	39
Bilateral	18
TOTAL	**100**

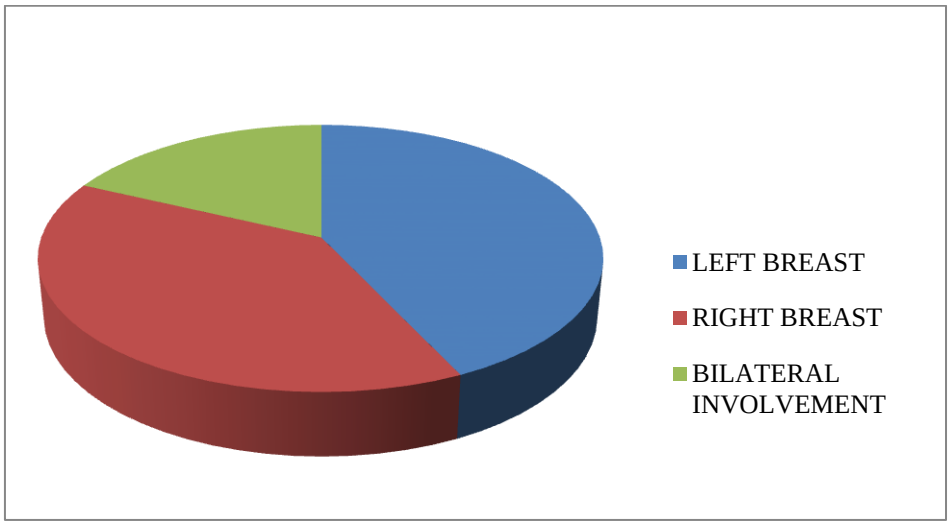

Fig-9: Distribution Based On Site

In our study, the most predominant breast lumps noted were of size ranging from 2 to 2.9 cm; only 7 cases were of size more than 5 cm (Giant fibroadenoma). (Table 4 and Figure 10)

Table- 4: Distribution of Cases Based on the Size

Size in Centimeters (cm)	No. of Cases
1 cm to 1.9 cm	14
2 cm to 2.9 cm	34
3 cm to 3.9 cm	26
4 cm to 4.9 cm	19
More than 5 cm	07
TOTAL	**100**

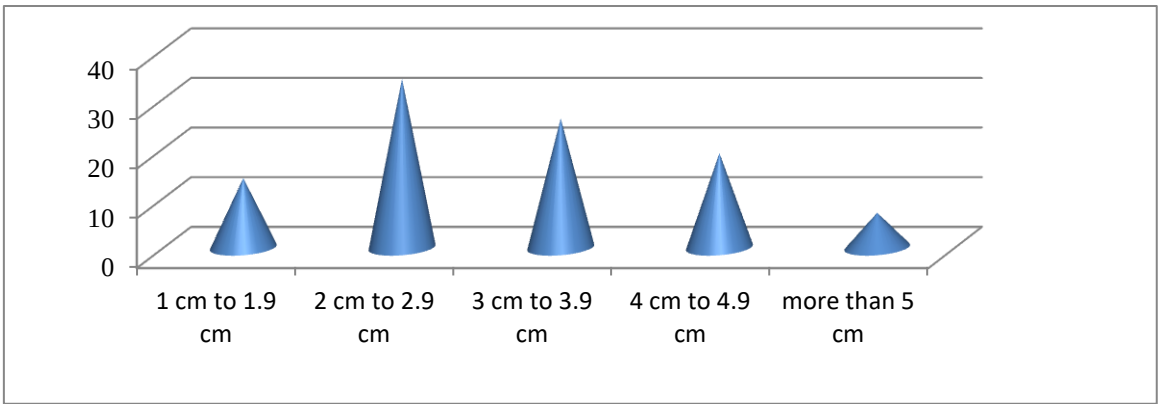

Fig-10: Distribution of Cased Based on The Size

DISCUSSION

Breast lumps have a variety of etiologies, could be either benign or malignant. Major fear in a patient with lump is that a breast lump might be cancerous makes patient to present to the hospital. The breast is one of the most important organs in the female reproductive system. Breast tissue in females is under the influence of various hormones and it is subjected to constant physiological variations throughout a woman's life more so in adolescence, reproductive life and less beyond the reproductive age group too. But benign breast lumps are most commonly encountered than their malignant counter parts, among the benign lumps fibroadenoma is the commonest benign breast mass; invasive ductal carcinoma is the most common among the malignant lesions [5]. Most masses among are benign in young females, but carcinoma breast is one of the common cancer and the 2nd leading cause of cancer deaths in women of age 45 years and beyond. The commonest complaint among the females resenting to the surgical out-patient department of all major hospitals is lump or a mass in the breast. Due to lack of knowledge and education regarding the breast, most of the women disregard the lump and some women fear surgery for various social reasons and also psychological fear of malignant lump. A quick

diagnostic technique is preferred to save time of the patient and clinician in terms of early treatment. Cost effectiveness, anesthesia requirement, time between the choosing a diagnostic procedure and issue of the report to the patient , patient's need to stay at hospital and most importantly, reliability in deciding subsequent treatment, are all the factors to be taken into account. Considering patient's comfort, lack of requirement of anesthesia, rapid analysis and reporting, and an absence of false positive results makes FNAC an ideal initial diagnostic modality in breast lumps.

In our study, out of the hundred cases studied 57 cases (57 %) were Fibro adenomas, 08 cases (8%) were bilateral fibroadenoma, 08 (8%)cases were phyllodes tumor , 07 (7%) cases were giant juvenile fibro adenomas , 06 cases(6%) were tubular adenomas, 04 (4%) cases were multiple juvenile fibro adenomas, 04 cases (4%)were fibro adenomas with cystic change, 03 (3%)cases were lactating adenomas,02 (2%)cases were infarcted fibro adenomas, 01 (1%)case was complex fibro adenoma.

In our search of literature, we found that fibro adenoma of the breast is the commonest solid lesion found in young women which is coinciding with our study where we also reported and documented 57 % of unilateral simple fibroadenoma; remaining 43 % of the cases were also fibroadenomas with additional features. These fibroadenomas typically present as nodular, firm, mobile in various planes, painless, easily palpable breast lumps. They occur in any part of the breast tissue and any part of the reproductive life of female but more common before the age of 30 years, our study was focused to find out various breast lumps occurring in the age group of 15 years and 20 years. The title of fibro adenoma in younger women is most confusing and a plethora of names exist to designate the lesion such as age related term juvenile fibro adenoma and size related term giant or massive fibro adenoma [6]. Exact etiopathogenesis of multiple juvenile fibro adenomas is still unknown; hormonal influences and insensitivity to hormones are thought to be probable contributing factors. Excessive estrogen stimulation and/ or receptor sensitivity or reduced levels of estrogen antagonist during puberty have been implicated in pathogenesis.Giant breast lumps are rapidly growing and often misleading the clinician in terms of malignancy if occurring in middle aged females', giant fibroadenomas are breast masses with diameters exceeding 5 cm and/or weights of more than 500 grams [6, 7]. They can even grow to immense proportions, resulting in congestion due to more supply of blood and ulceration of skin by centrifugal pressure. A wide variant of breast lesions such as phyllodes tumor, virginal hypertrophy, lipoma, hamartoma, cyst, abscess and carcinoma can result or co-exist in solitary or multiple giant masses. Giant fibro adenoma occurs pre-dominantly in adolescent African blacks. In our study, we reported 7 cases of giant fibroadenomas in the age group of 15 and 20 years which is quite rare. These giant fibroadenomas are often confined to one breast as a solitary mass occupying part or the whole breast. In rare cases, it may be multifocal and involve both breasts. These fibroadenomas are well-encapsulated, well circumscribed and has characteristic intra-canalicular or peri-canalicular histological features, with a variable growth pattern of epithelial and connective tissue elements. In general, these giant fibroadenomas and fibroadenomas are almost always benign and the potential to grow decreases with age. Simple enucleation of the tumor is all that is required to control the disease[6,8,9]. The most characteristic feature of spontaneous infarction in fibroadenoma is its association with pregnancy and breast feeding. The pathophysiology of the necrosis is related to relative vascular failure, which would be more easily explained in periods of high metabolic activity in the breast, such as pregnancy or breast feeding. Infarction of fibroadenoma or breast lump is associated with thrombo-occlusive vascular changes in the feeding vessels was documented in the literature. According to some authors, previous FNAC can cause infarction. In our study, we came across two cases of infarcted fibroadenoma but there was no evidence of previous FNAC and both the girls are unmarried which fails to explain clear etiology of infarction. Our study correlating with the study conducted by kumar et al [10] where out of 210 cases of fibroadenomas studied 66 % of the cases are among the age group of 16 years and 30 years. In the same study [10], incidence of fibroadenoma is more on the right breast where in our study the incidence is more on the left breast. Our study also correlating with study conducted by Rahman MZ et al [11] where Fibroadenoma was the major (28.57%) cause of the breast lump in this study. 218 (42.9%) and 196 (38.58%) were in the age group of 21-30 and <20 years age group respectively . In another study conducted by Tiwari M [12] also shows the incidence of fibroadenoma in young females is 39.6% among the 91 cases studied which is correlating with our study of 100 cases.

Tubular adenoma is a rare epithelial origin benign tumor of the breast, first described as a distinctive entity in 1968 by Persaud *et al.*[18]. They are considered as variants of pericanalicular type of fibroadenomas with an exceptionally prominent glands or florid adenosis like epithelial proliferation. Tubular adenomas most often affect young women of reproductive age, but they are usually not associated with oral contraceptive treatment or pregnancy; very rare in postmenopausal women. Clinically they are usually asymptomatic, grossly; tubular adenoma is well circumscribed with solid homogenous to finely nodular tan yellow cut surface and firm consistency, and tends to be softer than fibroadenoma. Histologically, it is characterized by the presence of closely packed homogenous acinar and tubular epithelial components with sparse intervening stroma.

Lactating adenoma is a benign tumor of breast typically occurs during lactation or the third trimester of pregnancy. It is characterized by typical changes of secretory epithelium leading to formation of a well-differentiated benign tumor. It is also known as the "tumor of pregnancy" because changes seen in the form of secretion in these lesions resemble lactational changes of pregnancy [13]. They are common in primiparous women in the second or third decade either during pregnancy or lactation period. Clinically, it also presents as a painless, well-defined, freely mobile palpable mass with a firm consistency, most often in the periphery and in the upper outer quadrant [13-15]. Clinically, it is difficult to differentiate from other benign breast tumors, as they show similar clinical features on examination [16]. Definitive diagnosis in difficult and misleading cases is usually confirmed only by careful history, cytological and histopathological examination. According to the literature and various case reports published so far, the origin of Lactating adenoma is controversial, and is sometimes interpreted as a variant of fibroadenoma, tubular adenoma, or lobular hyperplasia, which is also caused by physiological changes. Fibroadenoma is a mixture of stromal and epithelial components of the breast tissue. Lactating adenomas, however, only consists of epithelial component [17]. However, some researchers believe that it is the previously present adenomas, which forms a lactating adenoma. Thus, tubular adenomas and lactating adenomas are two ends of a spectrum; in which lactating adenoma typically occur in pregnancy

CONCULSION

Fibroadenomas are benign diseases involving breast. Predominantly found in young girls and young women of age 16-45 with varying number and size involving any quadrant or all quadrants of breast. Diagnosis by FNAC is reliable yet confirmation by biopsy is required even in young girls which confirms or rules out unusual presentation. Though conservative management or observation can be followed in young girls, surgical excision by a circum-areolar incision is usually preferred in many tumors.

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