

Varied Pattern Of breast Diseases - A Study Of 443 Cases

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I. Introduction

Breast is an organ which undergoes cyclical changes under the influence of various hormones throughout a woman's reproductive life. It was observed in some studies on breast disorders that more attention is devoted to the histopathological characteristics of the lesion with little discussion of the clinical perspectives. The vast majority of the lesions that occur in the breast are benign but in the present modern time the incidence of breast cancer is on the rise. Upto 30% of women suffer from some benign breast disorders and this compels them to seek treatment. Breast diseases make a sizeable portion of the general surgical practice. Large portion of patients presenting with breast diseases are treated by surgery. Of all breast disorders, palpable breast lump is second most common presentation, the pain being the first. Over 60% of breast lumps are benign and breast pain is statistically significant in malignant breast disease. Moreover pattern of breast lump is changing in females from fibro adenoma to adenosis and fibrocystic diseases. Any patient presenting with palpable breast lumps should preferably be managed by surgeon with special interest and training in breast diseases.

The incidence of benign breast lesions begins to rise during the second decade of life and peaks in the fourth and fifth decades, as opposed to malignant diseases, for which the incidence continues to increase after menopause, although at a less rapid pace.

Benign Breast disease constitute a spectrum of lesions ranging from developmental abnormalities, inflammatory lesions, epithelial and stromal proliferations to various neoplasms. Some of the women with benign breast disease especially those with proliferative lesions have been reported to be at increased risk for development of subsequent breast cancer.

Mastalgia

A searing sharp breast pain is referred to as Mastalgia and is always a cause of concern for women of all ages. This can range from a mild dull ache to sharp tingling sensation in the breasts. It can be classified into two main clinical patterns. **Cyclical** when the pain intensity is changing during the menstrual cycle and **Non-cyclical** when the pain remains essentially unchanged during the menstrual cycle. **Cyclical mastalgia** is very often associated with fibrocystic breast changes or duct ectasia and believed to be caused by aberrations in dynamic hormonal changes mainly involving prolactin response to thyrotropin. Some degree of cyclical breast tenderness is normal in the menstrual cycle, and is usually associated with menstruation and/or premenstrual syndrome (PMS). Non Cyclical mastalgia may be caused by imbalance in fatty tissue, trauma and medication like spironolactone, methyl dopa, digitalis etc. It may be due to mastitis.

Developmental Abnormalities

Ectopic breast (mammary heterotopia), which has been described as both supernumerary and aberrant breast tissue, is the most common congenital abnormality of the breast. Supernumerary breast tissue is seen mostly along the milk line; the most frequent sites are the chest wall, vulva, and axilla. Recognition of ectopic breast tissue is important because it can serve as a milieu for the development of a variety of benign and malignant lesions encountered in the normal breast. Excessive breast growth (macromastia) can be seen in pregnancy as well as during adolescence. Underdevelopment of the breast (hypoplasia), when congenital, is usually associated with genetic disorders, such as ulnar-mammary syndrome(1), Poland's syndrome, Turner's syndrome, and congenital adrenal hyperplasia. The complete absence of both breast and nipple (amastia) or presence of only nipple without breast tissue (amazia) is rare (2).

Gynaecomastia is a common disorder of the endocrine system in which there is a non-cancerous increase in the size of breast tissue in males(3,4). Most adolescent boys, up to 70%(5), have some breast

development during puberty(3). Newborn and adolescent males often experience temporary gynaecomastia due to the influence of maternal hormones and hormonal changes during puberty, respectively.

The development of gynaecomastia is usually associated with benign pubertal changes; in adolescent boys, the condition is often a source of psychological distress. However, 75% of pubertal gynaecomastia cases resolve within two years of onset without treatment(4) In rare cases, gynaecomastia has been known to occur in association with certain disease states(5). Gynaecomastia may be seen in individuals with Klinefelter syndrome or certain cancers, with disorders involving the endocrine system or metabolic dysfunction, with the use of certain medications, or in older males due to a natural decline in testosterone production(3,6). Disturbances in the endocrine system that lead to an increase in the ratio of estrogens/androgens are thought to be responsible for the development of gynaecomastia(5).

Inflammatory and Related Lesions

Mastitis

A variety of inflammatory and reactive changes can be seen in the breast. While some of these changes are a result of infectious agents, others do not have a well-understood etiology and may represent local reaction to a systemic disease, or a localized antigen-antibody reaction, and are classified as idiopathic.

Acute Mastitis

Acute mastitis usually occurs during the first 3 months postpartum as a result of breast feeding. Also known as puerperal or lactation mastitis, this disorder is a cellulitis of the interlobular connective tissue within the mammary gland, which can result in abscess formation and septicemia. It is diagnosed based on clinical symptoms and signs indicating inflammation.

Granulomatous Mastitis

Granulomatous reactions resulting from an infectious etiology, foreign material, or systemic autoimmune diseases such as sarcoidosis and Wegener's granulomatosis can involve the breast. Many different types of organisms can cause granulomatous mastitis (7,8). Tuberculosis of the breast is a very rare disease. However, both clinical and radiological features of tuberculous mastitis are not diagnostic and easily can be confused with either breast cancer or pyogenic breast abscess by clinicians. Definitive diagnosis of the disease is based on identification of typical histological features under microscopy or detection of the tubercle bacilli with mycobacterial culture (9).

Foreign Body Reactions

Foreign materials, such as silicone and paraffin, which are used for both breast augmentation and reconstruction after cancer surgery.

Recurring Subareolar Abscess

Recurring subareolar abscess (Zuska's disease) is a rare bacterial infection of the breast that is characterized by a triad of draining cutaneous fistula from the subareolar tissue; a chronic thick, pasty discharge from the nipple; and a history of multiple, recurrent mammary abscesses (10). The disease is caused by squamous metaplasia of one or more lactiferous ducts in their passage through the nipple, probably induced by smoking (11). Keratin plugs obstruct and dilate the proximal duct, which then becomes infected and ruptures. The inflammation eventuates in abscess formation beneath the nipple, which typically drains at the margin of the areola (10,11).

Mammary Duct Ectasia

Mammary duct ectasia, also called periductal mastitis is a distinctive clinical entity that can mimic invasive carcinoma clinically. It is a disease of primarily middle-aged to elderly parous women, who usually present with nipple discharge, a palpable subareolar mass, noncyclical mastalgia, or nipple inversion or retraction. The pathogenesis and the etiology of the disease are still being debated. Smoking has been implicated as an etiologic factor in mammary duct ectasia(12,13). This association appears to be more important in young women who smoke(14). Mammary duct ectasia is usually an asymptomatic lesion and is detected mammographically because of microcalcifications. The most important histologic feature of this disorder is the dilatation of major ducts in the subareolar region.

Fibrocystic Changes

Fibrocystic changes (FCCs) constitute the most frequent benign disorder of the breast. Such changes generally affect premenopausal women between 20 and 50 years of age. Although many other names have been

used to describe this entity over the years, (including fibrocystic disease, cystic mastopathy, chronic cystic disease, mazoplasia, Reclus's disease), the term "fibrocystic changes" is now preferred, because this process is observed clinically in up to 50% and histologically in 90% of women (15,16,17). FCCs may be multifocal and bilateral. The most common presenting symptoms are breast pain and tender nodularities in breasts. Although the exact pathogenesis of the entity is not clear, hormonal imbalance, particularly estrogen predominance over progesterone, seems to play an important role in its development (18).

Adenosis

Adenosis of the breast is a proliferative lesion that is characterized by an increased number or size of glandular components, mostly involving the lobular units.

Neoplasms

Fibroadenoma

Fibroadenoma is the most common lesion of the breast; it occurs in 25% of asymptomatic women (19). It is usually a disease of early reproductive life; the peak incidence is between the ages of 15 and 35 years. Conventionally regarded as a benign tumor of the breast, fibroadenoma is also thought to represent a group of hyperplastic breast lobules called "aberrations of normal development and involution" (10,19,20). The lesion is a hormone-dependent neoplasm that lactates during pregnancy and involutes along with the rest of the breast in perimenopause(20). A direct association has been noted between oral contraceptive use before age 20 and the risk of fibroadenoma(21). The Epstein-Barr virus might play a causative role in the development of this tumor in immunosuppressed patients (22). Fibroadenoma presents as a highly mobile, firm, non-tender, and often palpable breast mass. Although most frequently unilateral, in 20% of cases, multiple lesions occur in the same breast or bilaterally. Fibroadenoma develops from the special stroma of the lobule.

Macroscopically, the lesion is a well-circumscribed, firm mass, <3 cm in diameter, the cut surface of which appears lobulated and bulging. If the tumor assumes massive proportions (>10 cm), more commonly observed in female adolescents, it is called "giant fibroadenoma." Microscopically, fibroadenoma consists of a proliferation of epithelial and mesenchymal elements. The stroma proliferates around tubular glands (pericanalicular growth) or compressed cleft-like ducts (intracanalicular growth). Often both types of growth are seen in the same lesion(21).

Phyllodes tumor is a fibroepithelial tumor of the breast with a spectrum of changes. Benign phyllodes tumor is usually difficult to differentiate from fibroadenoma. Hypercellular stroma with cytologic atypia, increased mitoses, and infiltrative margins of the lesion are the most reliable discriminators to separate lesions with recurrence and malignant behaviour. In terms of surgical treatment of these tumors, it is important to recognize phyllodes tumor because it should be excised completely with clear margins to obviate any chance of local recurrence. In cases of recurrent disease, mastectomy is often performed (23,24). Approximately 50% of fibroadenomas contain other proliferative changes of breast, such as sclerosing adenosis, adenosis, and duct epithelial hyperplasia. Fibroadenomas that contain these elements are called complex fibroadenomas. Simple fibroadenomas are not associated with any increased risk for subsequent breast cancer. However, women with complex fibroadenomas may have a slightly higher risk for subsequent cancer (25). The presence of atypia (either ductal or lobular) confined to a fibroadenoma does not lead to a greater risk for long-term breast carcinoma compared with fibroadenomas in general (25).

Fibroadenomas in older women or in women with a family history of breast cancer have a higher incidence of associated carcinoma (19,26). Two studies, which were considered to provide strong evidence of reliability according to El-Wakeel et al.(19) show that the relative risk of developing breast cancer in patients who had surgically excised fibroadenomas increases in the presence of complex features within the fibroadenomas, ductal hyperplasias or a family history of breast carcinoma (in a first degree relative).

Juvenile fibroadenoma is a variant of fibroadenoma that presents between 10 and 18 years of age, usually as a painless, solitary, unilateral mass >5 cm. It can reach up to 15 or 20 cm in dimension, so although it is an entirely benign lesion, surgical removal is recommended (27).

Lipoma

Lipoma of the breast is a benign, usually solitary tumor composed of mature fat cells. It is occasionally difficult to distinguish lipoma from other conditions clinically, thus causing diagnostic and therapeutic challenges (28). Clinically, a lipoma presents as a well-circumscribed, smooth or lobulated mass that is soft and usually non tender. FNA biopsy of these lesions reveals fat cells with or without normal epithelial cells.

As Regards the Malignant lesions of breast, they usually present as painless lump in the breast more commonly in the upper and outer quadrant of Breast. It may also present as erosive or eczematous lesion of nipple. Nipple discharge can be other presenting feature of breast cancer.

Carcinoma Breast

Breast cancer is divided into two broad groups -

- a) in situ and
- b) invasive type.

The carcinoma breast is said to be in situ when the cancer cells do not invade through basement membrane and when they invade the basement membrane the carcinoma is labelled as invasive. Invasive carcinoma is further subdivided into four types ie; Paget's disease of the nipple, invasive ductal carcinoma, invasive lobular carcinoma and rare cancers like adenoid cystic and squamous cell cancers. Invasive ductal carcinoma is divided again into five sub types-

- A. Adenocarcinoma with productive fibrosis (**Scirrhou type or No Special type**) 80%
- B. Medullary Carcinoma 4%
- C. Mucinous(colloid) Carcinoma 2%
- D. Papillary Carcinoma 2%
- E. Tubular Carcinoma 2%

PAGET'S DISEASE constitutes 1% of all breast carcinomas. This condition arises from an underlying carcinoma of the mammary duct, which gradually grows towards the nipple and invades the skin around the nipple. The better prognosis of this condition is probably due to early diagnosis. So Any eczematous lesion of the nipple in a postmenopausal women should be biopsied to exclude Paget's disease.

SCIRRHOUS TYPE accounts for 80% of breast cancers and presents with macroscopic or microscopic axillary lymph node metastases in 60% of cases. This cancer usually presents in perimenopausal or postmenopausal women in the fifth to sixth decades of life as a solitary, firm mass.

MEDULLARY CARCINOMA is a special-type breast cancer; it accounts for 4 % of all invasive breast cancers. It is bulky and often positioned deep within the breast and is relatively mobile. Bilaterality is reported in 20% of cases. Approximately 50% of these cancers are associated with Ductal Carcinoma in situ, which is characteristically present at the periphery of the cancer. Medullary carcinoma is less frequently associated with lymph node metastases. Axillary lymph node metastasis is reported in only 45% of cases.

MUCINOUS CARCINOMA (COLLOID CARCINOMA) another special-type breast cancer, accounts for 2% of all invasive breast cancers and typically presents in the elderly population as a bulky tumor. Lymph node metastases occur in 33% of cases.

PAPILLARY CARCINOMA is a special-type cancer of the breast that accounts for 2% of all invasive breast cancers. It generally presents in the seventh decade of life. Typically, papillary carcinomas are small and rarely attain a size of 3 cm in diameter. It shows a low frequency of axillary lymph node metastases.

TUBULAR CARCINOMA is another special-type breast cancer and accounts for 2% of all invasive breast cancers. It is usually diagnosed in the perimenopausal or early menopausal periods. Approximately 10% of women with tubular carcinoma will develop axillary lymph node metastases. It is associated with very low recurrence rate after treatment.

INVASIVE LOBULAR CARCINOMA accounts for 10% of breast cancers. It is frequently multifocal, multicentric, and bilateral. Because of its insidious growth pattern and subtle mammography features, invasive lobular carcinoma may be difficult to detect.

ADENOID CYSTIC CARCINOMA lesion is very rare - less than 0.1% of all types of breast cancer. These cancers present as small lesions , 1-3 cm in diameter. These are characteristically well circumscribed with well defined margins. Axillary metastases are rare with this type of carcinoma but distant metastases like pulmonary metastases are not uncommon.

INFLAMMATORY CARCINOMA Inflammatory breast carcinoma accounts for less than 3% of breast cancers. It frequently occurs during lactation, so it is often called as 'lactational carcinoma'. This cancer is characterized by the skin changes of brawny induration, erythema with a raised edge, and edema (peaud'orange). Inflammatory breast carcinoma has a rapid onset of symptoms – pain or itchiness, redness, swelling, or thickening of the skin. Inflammatory breast carcinoma often occur over weeks or a few months. There is redness, pain and swelling of the involved breast. IBC may be present without a lump but sometimes there may be an associated breast mass. Inflammatory breast cancer may also be mistaken for a bacterial infection of the breast ie; acute mastitis. If symptoms don't improve after a few days on antibiotics, then IBC should be suspected and biopsy should be taken. Axillary lymph node involvement is quite early. More than 75% of women afflicted with inflammatory breast cancer present with palpable axillary lymphadenopathy and frequently also have distant metastases.

II. Aims And Objectives

- To study the pattern of various breast disorders.
- To study the various types of benign disorders.
- To study the various types of malignant disorders.
- To study the various breast disorders in relation to age and sex.
- To study the changing pattern of breast disorders.

III. Material And Methods

A total of 443 cases admitted to our surgical unit in Guru Nanak Dev Hospital Amritsar during 2011 to Feb 2016 formed the material for the study. A detailed clinical history of symptoms related to the breast such as mastalgia, lump in the breast, nipple discharge, nipple retraction was noted. Relation of various symptoms with menstruation was also noted. Details of family history, menstrual history and history of malignancy of the organ was also enquired. Breast was examined with respect to nipple areola, lump details, including size, site, surface, margins, mobility, consistency, fixity to underlying structures, skin and chest wall. Axilla of same side was examined for lymph nodes. The local examination was completed only after the examination of opposite breast and axilla. Systemic examination included respiratory system, cardiovascular system, central nervous system, and per abdomen (per vaginal and per rectal if necessary) examination. written informed consent was taken in each case before interventional procedures. The imaging (USG, Mammography, MRI) of the breast was done according to patient's condition and presentation. The final impression was noted.

IV. Results

A total of 443 cases having one or the other breast disorder were studied among these 342 (77.20 %) patients had benign breast disease and 101 (22.79 %) had malignant breast disease as shown in fig.1.

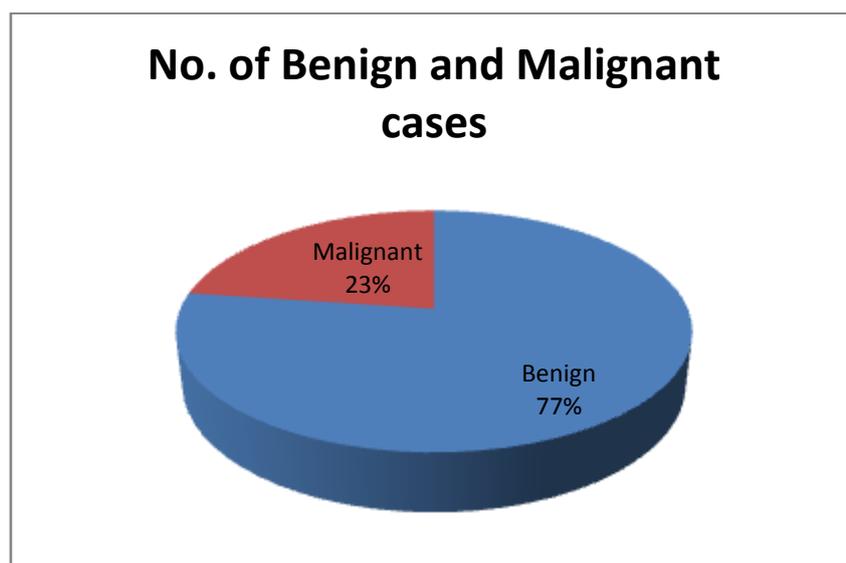


Fig. No. 1 :Percentage Number of cases of Breast Disorders

The benign to malignant ratio was calculated as 3.3 : 1.

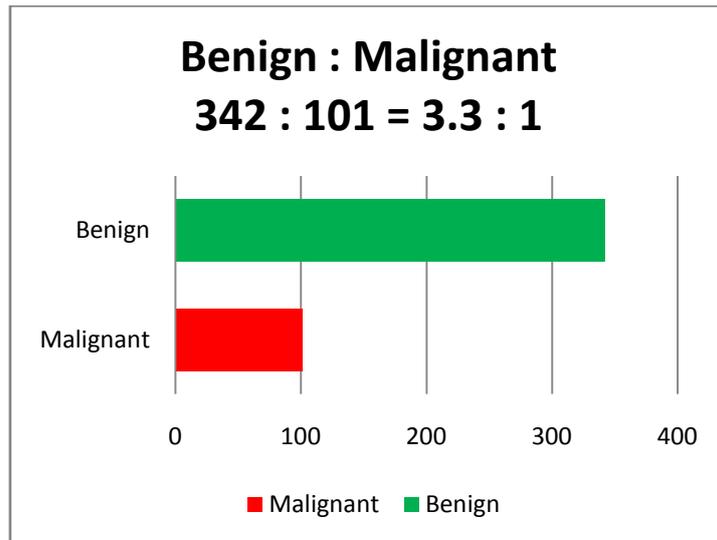


Fig. No. 2 Showing Benign to Malignant Ratio

In the present study 221 (49.88 %) had right sided breast involvement while 170 (38.37 %) had left breast involvement. Bilateral involvement was seen in 52 (11.73 %) patients.

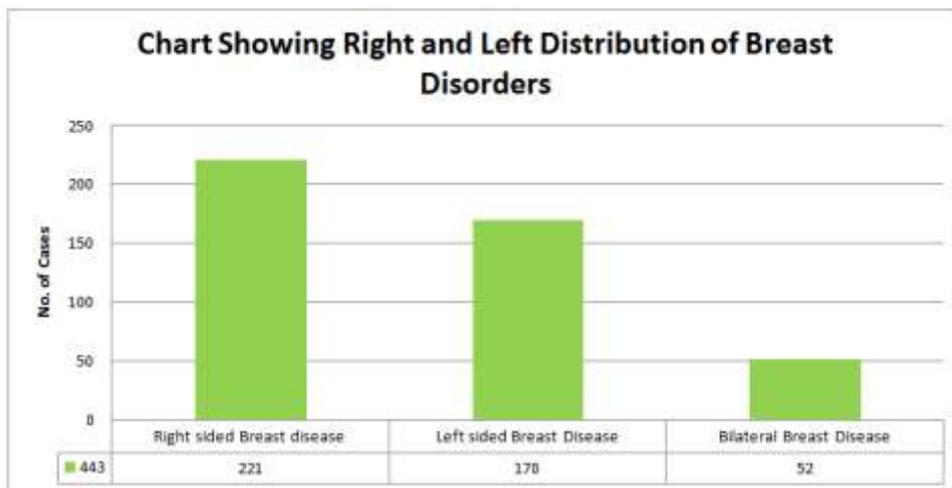


Fig No. 3: Distribution of Breast Disorders in Right and Left Breast.

Among 342 patients of Benign breast disorder, as for as the clinical presentation is concerned 175 (51.16%) cases were of fibroadenoma. Mastalgia was complained of by 59 (17.25%) patients. 51(14.91%) patients were of fibrocystic disease. 26 (7.60%) patients of gynaecomastia were found. Mastitis was found in 16 (4.67%) cases. 4 (1.16%) cases were of duct ectasia, 3 (0.87%) cases of tuberculosis, 2 (0.58%) cases of galactocele, 2 (0.58%) cases were of lipoma and 4 (1.16%) cases of other types of benign disorders like supernumerary nipples, accessory breast, breast ulcer and subareolar haematoma.

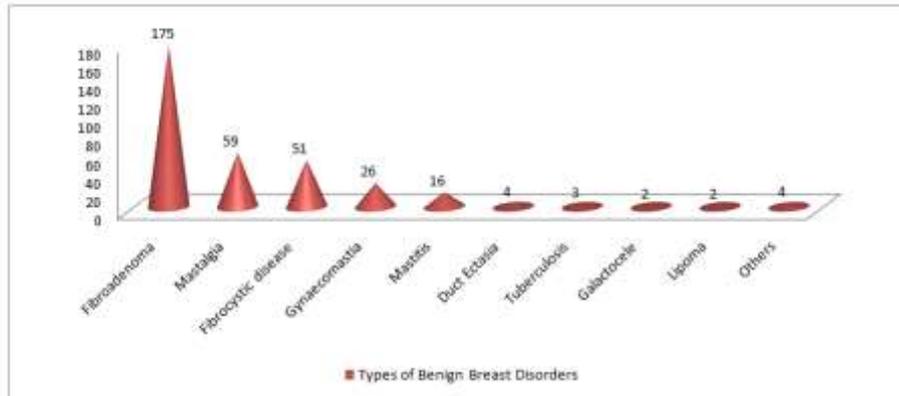


Fig. No. 4: Showing Number of Cases of Various Breast Disorders

Among 101 Patients of malignant breast disorders 2 (1.98%) were of Ductal Carcinoma in Situ, 86 (85.14%) patients were having Infiltrating duct carcinoma, 4 (3.96%) patients were of medullary carcinoma and 2(1.98%) were having lobular carcinoma, 2 patients were of tubular carcinoma, 2 (1.98%) patients were of inflammatory carcinoma, 2 (1.98%) cases were of fibrosarcoma and 1(0.99%) case was of phylloides tumour.

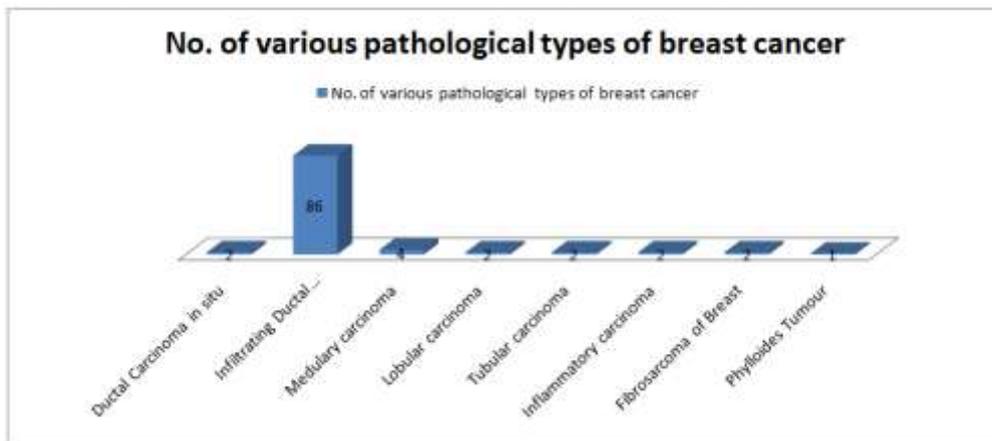


Fig. 5. Showing number of various pathological types of Breast Cancer

Regarding relation of various disorders to age, in benign category Fibroadenoma was found during 12-40 years of age. Out of 175 cases of fibroadenoma 117(66.85%) were found in third decade of life. Fibrocystic disease was found during 18-44 yrs of age. Out of 51 cases of Fibrocystic disease of breast, peak incidence of 62.74% was found during 21-30 yrs with 32 cases occurring in third decade of life. Breast abscess was observed during 15-40 yrs with peak incidence of 75 % in 3rd decade of life. Gynaecomastia was found during 15 - 20 yrs and 45 - 60 yrs with 12(46%) cases occurring during 2nd decade of life. galactocele was found in post pregnancy period with 1 case in 3rd decade and 1 case in 4th decade of life.

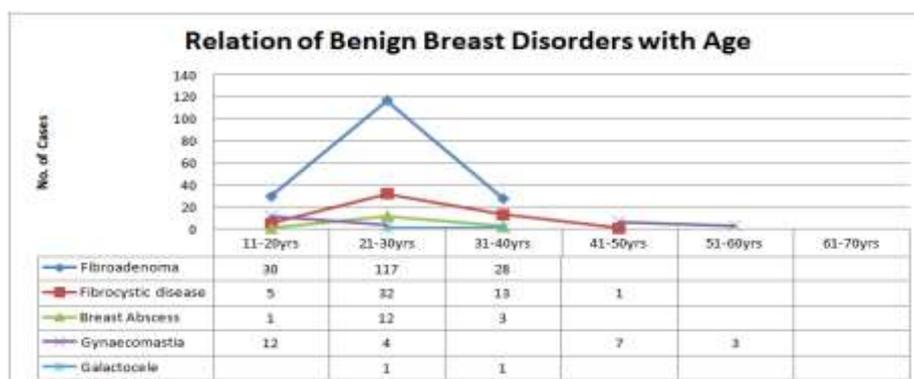


Fig No. 6 : Showing relation of benign disorders with age

Regarding relation of malignant diseases to age, DCIS was found in 2 cases during 40-50 yrs. Out of 86 cases of infiltrating ductal carcinoma 68(79.06%) cases were found during 40-60 yrs, 4 cases of medullary carcinoma were found during 40-50 yrs, 2 cases of lobular carcinoma were found during 50-60 yrs. Similarly 2 cases of tubular carcinoma were found during 30-50 yrs and 2 cases of inflammatory carcinoma were found during 20-40 yrs. 2 cases of fibrosarcoma of breast and 1 case of phylloides tumour were found during 40-50 yrs.

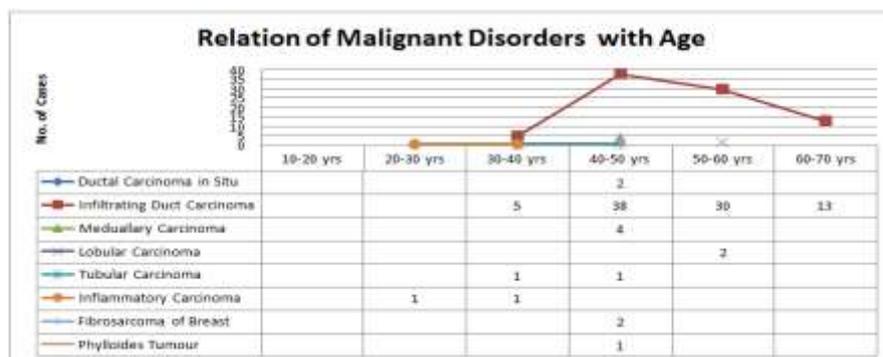


Fig No. 7 : Showing relation of Malignant disorders with age

Regarding relation of various breast disorders to sex only 26 cases of gynaecomastia were males rest all the cases in the study were females. No case of carcinoma breast was found involving the male breast in the present study.

V. Discussion

Patients presenting with breast complaints are quite common in surgical practice. Benign breast diseases are more common than malignant lesions. In present study, the most common benign breast disease was Fibroadenoma occurring in 51.16% of cases. In the study Conducted by Rangabashyam et al,(29)fibroadenoma was the main type of disease in 57%. Khanna et al(30)and Farrow JH et al(31)also reported fibroadenoma as the commonest breast disease of female breast. Incidence in our study is comparable with the literature.

The ratio of benign to malignant disease is 3.3:1 which is little higher that reported by Akhator A et all (2007)(32). They reported benign to malignant ratio as 2.6:1.

In the present study incidence of right sided breast diseases (both benign and malignant) was 49.88% where as 38.37% patients had left sided breast disease. 11.73% patients were having bilateral breast disease. In a similar study by Kumar et al. in western part of rural India of 380 cases of benign breast disease, right sided breast diseases in 47.6% t, 39.7% had left sided and 12.63% bilateral(33).Our results are almost comparable.

In our study, we had 342(77.20%) females having benign breast disorders. 211 (61.69%) young females of third and fourth decades formed the highest incidence among benign breast diseases. Many studies concluded that the incidence of benign breast lesions begins to rise during the 2nd decade of life and peaks in the 4th decade (34,35,36).In 2015 Ramesh kumar Pandey, Ravinder Narang, Bhupendra Mehra and Dilip Gupta conducted a study of 781 patients with breast pathologies at Department of Surgery, Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha, Maharashtra. They observed that out of 781 patients, 722 (females and males) had benign breast disease accounting for 92.4%. Benign breast diseases was more common in 21-30years age followed by 31-40yrs and 11-20years. Similar results were shown by Siddiqui et al (2003)(37), Akhator A et al (2007)(38) and Irabor DO et al (2008)(39). Thus the present study is in concordance with the studies available in the literature.

Mastitis in our study accounted for 4.67% of cases and all of them were lactating mothers except one. The inflammatory conditions of breast are more common in our set up due to poor hygiene and low socioeconomic status

Mastalgia was seen in 59(17.25%)% as compared to 11% cases observed by Khanzada et al 2009(40). This study was done to determine the pattern of breast diseases in females presenting to surgical out patient department.

Among palpable lesions breast carcinoma came to be 2nd most common after fibroadenoma. The most common age of presentation of carcinoma breast is 5th decade.

VI. Summary And Conclusions

Benign breast diseases are significantly more common as compared to malignant breast diseases. The common benign breast diseases seen in our setup include fibroadenoma followed by mastalgia, fibrocystic disease, gynaecomastia, mastitis, duct ectasia, tuberculosis, galactocele, and lipoma in that order. Most of the

benign breast diseases are commonly seen in younger age group and usually present with either breast lumps or nodularity, breast pain and nipple discharge of long duration. Every breast lump should not be considered as cancer and patient should not get scared of the malignancy only because of presence of lump in the breast. Every woman should be aware of her breast and its shape and architecture and any asymmetry in breast should be reported and thoroughly investigated. For correct diagnosis of breast disease, knowledge of general features of individual breast disease like history, incidence, age distribution, symptoms and clinical presentation is very important for differentiation and early detection of malignancy and management.

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Phylloides Tumour



Galactocele



Fibroadenoma



Fibrocystic Disease of the Breast



Breast Abscess



Breast Abscess



Gynaecomastia



Mammary Fistula



Duct Ectasia



Ductal Carcinoma Breast



Inflammatory Carcinoma



Fibrosarcoma of Breast



Chronic mastitis showing ulceration



Malignant tumour(Recurrence)



Accessory Breast