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CLINICAL PRESENTATION, IMAGING, PATHOLOGICAL PROFILE AND MANAGEMENT OF FOCAL BREAST NODULARITY BASED ON TRIPLE ASSESSMENT: A PROSPECTIVE STUDY

Rekha Porwal, Hanuman Prasad Gupta, Amit Singh*, Pramod Kumar Kulhari, Nagendra Singh Bhadauria

Department of General Surgery, J.L.N Medical College, Ajmer, Rajasthan.

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***Correspondence for Author**
Dr. Amit Singh
Department of General Surgery, J.L.N Medical College, Ajmer, Rajasthan.

ABSTRACT

Aim: To evaluate patients presenting with focal breast nodularity with clinical, pathological and radiological examination for the outcome and treatment. Material and Method: This prospective study was carried out in the Department of Surgery at a tertiary care hospital in Rajasthan, India. A total of 100 consecutive female patients who presenting with benign breast conditions classified under focal breast nodularity attending the surgery department From January 2013 to January 2015 were enrolled in the study. Patient parameters were recorded on a predesigned case record form. After clinical assessment, imaging and pathologic evaluation was done as indicated. Results: The mean age of presentation was 36.80 yrs. All of patients presented with a commonest complaint of lump in the breast (100%). History of painless lump was present in 24 patients. Pain associate with menstrual period were present in 30 patients. Maximum patients present with dull aching pain. Nodularity was presents in all 100 patients. Average size of nodularity was 3.2 cm × 3.2 cm. Left breast was involved in 52 patients. Diagnostic accuracy of FNAC in detection of focal breast nodularity was 95%. Diagnostic accuracy of TRUCUT BIOPSY was 98% in our study. Out of 100 patients, 96 patients underwent conservative management with reassurance, NSAID, evening primrose oil and danazol and 04 patients underwent surgical managment. Conclusion: The majority of breast lumps are benign, but finding a breast lump understandably creates considerable patient anxiety. Triple assessment a combination of clinical examination, imaging, and pathological examination is essential for all women who have a significant clinical finding such as focal breast nodularity.

KEYWORDS: Focal breast nodularity, ANDI, Triple assessment of breast, TRUCUT BIOPSY.

INTRODUCTION

Benign breast disorders (BBD) constitute the most prevalent group of conditions treated at breast clinic but there is a great deal of confusion in their nomenclature, classification, and treatment protocols. Patients attend the hospital with two major complaints which are breast lump and mastalgia. Of these patients around 70% present with a discrete breast lump or an area of nodularity in the breast, around three quarter of these cases are benign in nature.[1] Various classifications have been proposed for benign breast disease but none of them is completely satisfactory because of discordance between clinical, radiological, and pathological features of these conditions.

The most comprehensive classification proposed by Hugh"et al termed as Aberration of normal development and involution 'ANDI'.[2] This classification provides an overall framework of benign conditions of breast which encompass both pathogenesis and degree of abnormality. It is a bidirectional network based on fact that most benign breast diseases arise from normal physiological process. Earlier it was labeled as fibroadenosis of breast in which patient presenting nodularity and breast lump were usually subjected to a biopsy. In fact, if breast nodularity is due to normal physiology and histological changes, it is not put on a high risk for breast cancer most of time, but some of the presentations have atypical proliferative changes which are associated with an increased risk for breast cancer.

2. MATERIAL AND METHODS

This prospective study was carried out in the Department of Surgery at J.L.N Medical College and hospital, Ajmer, Rajasthan a tertiary care hospital in India. A total of 100 consecutive female patients who presented with benign breast conditions classified under focal breast nodularity attending the surgery department From January 2013 to January 2015 were enrolled in the study. Patient parameters were recorded on a predesigned case record form.

After clinical assessment, imaging and pathologic evaluation was done as indicated. Ultrasonography (USG) of the breasts is advocated in all patients and Mammography was advised for women considered to be at a high risk for breast cancer and for suspicious lesions. Fine-needle aspiration cytology (FNAC) was advised to patients presenting with

nodularity/discrete lump in the breast in all 100 patients. TRUCUT biopsy advocated in non-conclusive reports in FNAC, and excisional biopsy sent in patients whose report showed proliferative changes with atypia.

2.1. Inclusion criteria

All women presenting with focal brest nodularity.Nodularity defines as incresed density of breast tissue, which causes the breast to feel lumpy in nature and usually felt as an ill defined glandular thickening to clinician with no well defined border.

2.2. Exclusion criteria

Discrete breast lump which can either be benign ie. three dimensional smooth mass with regular border, mobility, solid and cystic in consistency or malignant ie . hard , fixity to the skin and chest wall or fungation over the mass in the breast or axilla.

Treatment options offered

- Mastalgia and cyclical nodularity:- reassurance, drug therapy with NSAIDs, evening primrose oil capsules (3gm/day), danazol (400mg/day).
- Non proliferative & proliferative without atypia: re assurance and follow-up after every 3 months. Proliferative changes with atypia: surgical excision after patient's consent.

OUTCOME MEASURES

Primary

Spectrum of pathology changes in categories of nonproliferative, proliferative without atypia and proliferative with atypia. Imaging abnormalities and their possible correlation with pathological changes.

Secondry

Number of cases which turned out to be malignant.

3. RESULTS

The mean age of distribution was 36.80 year with ranging from 19 to 65 years. All patients presented with complaints of breast lump (100%) followed by pain in breast 76(76%). Pain was sudden in onset in 16 patients while insidious in 60 patients. Pain was dull aching in 44 patients, pricking pain present in 22 patients and feeling of heaviness present in 10 patients. [table 1]. Average duration of pain was 3.5 months with ranging from 15 days to more than

09 month. Pain was associated with menstrual cycle in 30 patients. Average duration of nodularity was 12 months with range from 10 days to 34 months. Average size of nodularity was 3.2 cm × 3.2 cm, with range from 1 cm × 1 cm to 5.5 cm × 5 cm. [table 2] Most commonly left breast was affected. Upper outer quadrant was most commonly involved. Serous nipple discharge was presented in 08 patients. Sixteen patients were affected with oligo-menorrhea. Past history of nodularity was present in 13 patients. In Ultrasonography 68 patients showed hypo-echoic mass including increased echogenecity of fibro-glandular tissue, anechoic mass, dilated ducts and calcification, 32 patient's reports showed cyst in form of anechoic lesion, dilated ducts. Mammography was done in 02 suspected patients, in which reports showed microcalcification BIRADS-4. Fine Niddle Aspiration Cytology (FNAC) were done in all 100 patients, of which 72 patients reported as nonproliferative, 21 patients reporteted as proliferative breast disease without atypia and 04 patients reported as proliferative breast disease with atypia. FNAC were inconclusive in 03 patients.[table 3] Trucut biopsy was done in these 07 patients, in which 02 patients were reported as nonproliferative , 01 patient was report as proliferative disease without atypia, 04 patients were reported as proliferative disease with atypia . Excisional biopsy was done in 04 patients, who labelled as proliferative breast disease with atypia on FNAC or TRUCUT biopsy. Two patients were reported as proliferative breast disease with atypia, 01 patient was reported as fibroadenoma and 01 was patient reported as papillary carcinoma on excisional biopsy. Out of 30 patients of cyclic mastalgia, 16 patients gave good response with reassurance and NSAID, remaining 14 patients treated with Evening primrose oil, out of them 10 patients had good pain relief. Remaining 04 patients treated with Danazol, complete relief occurred.[table 4] Out of 46 patients with noncyclic mastalgia, 16 patients gave good response with reassurance and NSAID, remaining 30 patients treated with Evening primrose oil, out of them 18 patients had good pain relief. Remaining 12 patients treated with Danazol, complete relief occurred. 70 patients had no increase or change in nodularity during follow up examination.[table 5]

Table 1: SHOWS NATURE OF PAIN IN PATIENTS

S. No.	Character of pain	No. of Patient (out of N = 76)	Percentage
1	Dull aching pain	44	60%
2	Pricking pain	22	30%
3	Feeling of heaviness	10	10%

Table 2: SHOWS SIZE OF NODULARITY

S. No.	Size	Number of Patients (n=100)	Percentage
1	< 2cm	32	32%
2	2.1cm- 5.0cm	64	64%
3	>5cm	4	4%

Table 3: SHOWS FNAC FINDINGS

FNAC FINDINGS	Number of patients (N=100)	Percentage
Non proliferative	72	72%
Proliferative without atypia	21	21%
Proliferative with atypia	4	4%
Inconclusive	3	3%

Table 4: RESPONSE TO TREATMENT IN CYCLICAL MASTALGIA

S. No.	Treatment modality	No. of Patients	Response seen in	Rate response
1	Reassurance and NSAIDs	30	16	54%
2	Evening primrose oil	14	10	72%
3	Danazol	4	4	100%

Table 5: RESPONSE TO TREATMENT IN NON CYCLICAL MASTALGIA

S. No.	Treatment modality	Patient given therapy	Response	Percentage
1.	Reassurance and NSAIDs	46	16	35%
2.	Evening primrose oil	30	18	60%
3.	Danazol	12	12	100%

5. DISCUSSION

The spectrum of benign breast diseases as per the ANDI framework in this study showed that benign breast disorders accounted 100 female patients with focal breast nodularity were studied for clinical, pathological and radiological assessment. The mean age for the patients was 36.80 years with age ranging from 19 to 65 years. Maximum patients were in the age group of 30 to 40, similar age range were found in various studies.[3,4] Various studies on Benign Breast Disease in the past had a lower mean age for the patients, this probably reflects the fact that benign changes are more commonly seen in young females and advancing age is a risk factor for more proliferative lesions in the breast. This is supported by a study where fibrocystic disease (49%) cases constituted the largest group of benign lumps in females above 40.[5] Pain was one of the chief complaints in 76 (76 %) patients. Thirty patients had cyclical mastalgia and forty six patients had non cyclical mastalgia. The incidence of

mastalgia in various Indian studies has also been reported to be 60-70%.[6] The overall incidence of mastalgia in western literature is reported to be 40% out of which 67% cases are due to cyclical mastalgia and rest are non cyclical mastalgia.[7] However in our study the incidence of non cyclical mastalgia was higher than cyclical mastalgia. In this study patients with mastalgia were treated by reassurance and NSAIDs for a period of one week. Out of the 76 patients we observed a good pain relief in 32 patients i.e. a response rate of 43.47%. It has been shown in western literature that >80% of cases of mastalgia can be managed by simple reassurance alone.[8] However, in our study lower response to reassurance alone was seen. Forty four patients were started on evening primrose oil for a period of two weeks, Response rate to Evening primrose oil was 69.23%. Ten patients who were started on Evening primrose oil in cyclical mastalgia group had pain relief. Thirty patients in non cyclical mastalgia were given Evening primrose oil, 18 had pain relief i.e. response rate of 60%. We got a response rate of 72% in cyclical mastalgia. In western studies, response rate is lower for non cyclical mastalgia when compared with cyclical mastalgia.[8] We also got the results similar to western studies. In our study we got a total response rate of near 70%, thus we infer that evening primrose oil can be used in patients with mastalgia. In our study 12 patients with non cyclical mastalgia and 4 patients of cyclic mastalgia were started on danazol and all 16 patients had good pain relief.

Recent studies on mastalgia indicate that tamoxifen is the current drug of choice for mastalgia with least side effects and better results when compared with Evening primrose oil, danazol and Bromocriptine.[9] It has also been indicated in recent studies that Evening primrose oil has only placebo effect in management of mastalgia. Patients with nodularity were managed based on cytopathological findings. Four cases had proliferative changes with atypia; all of these cases underwent surgical management. Ninty six patients with nonproliferative changes and proliferative changes without atypia were kept on regular follow-up. One patient on follow-up underwent excision biopsy, which was reported as invasive ductal carcinoma. She underwent Modified radical mastectomy and had an uneventful postoperative period and follow-up. Three patients reported reduction in nodularity during the study period. Ultrasound was done in all patients in our study. Well defined hypoechoic mass were the most common sonographic abnormality in the 68(68%) cases in our study followed by cyst which were present in 32(32%) cases. Increased echogenic fibroglandular tissue occurs in 22% out of 68%. A study in the west, where 205 benign breast masses underwent sonographic imaging, had cysts in 31% of patients on sonography.[10] Fibrocystic disease,

clinically presenting as nodularity with or without pain, has varying sonographic appearance. The findings of fibrocystic change at sonography are nonspecific and include multiple cysts of varying sizes, dilated ducts, and echogenic foci representing fibrous tissue that may cause posterior sound attenuation. Hypoechoic lesion can be seen in both malignant and benign breast lesions, but well defined hypoechoic lesions usually suggest a benign aetiology.[10] In our study two patients had microcalcification. These two patients had proliferative breast disease with atypia. Microcalcification on sonography is associated with proliferative lesions and malignancy. This demonstrates a good correlation between sonography and cytopathological changes. FNAC was done in all patients with nodualrity. Most common lesion detected was a nonproliferative disease, which was seen in 72 patients. Twenty one patients had proliferative disease without atypia and 04 patients had proliferative disease with atypia. Three patients had an inconclusive report on FNAC. We performed TRUCUT biopsy for all inconclusive FNAC reports and for all patients with proliferative breast disease with atypia. Out of the 3 inconclusive reports on FNAC, two patients had a nonproliferative breast disease on TRUCUT biopsy. One patient which was inconclusive on FNAC was reported as proliferative breast disease without atypia on TRUCUT biopsy. Four patients reported as proliferative breast disease with atypia. We had complete concordance between results of FNAC and TRUCUT biopsy. We had 4 patients with Proliferative Breast Disease with atypia on FNAC and TRUCUT biopsy reports. One patient underwent excision biopsy after FNAC and TRUCUT Biopsy report of atypia was reported as a fibroadenoma on histopathology. This can be understand by some studies, where radiation-induced changes, granulomatous mastitis, and fibroadenoma have been reported as cause of false positive FNAC results.[11,12] However concordance between FNAC and TRUCUT Biopsy reported in our study is higher than some previous studies, One reason for this could be a small sample size of patients. Excisional biopsy was done in 4 patients in our study. All 4 patients had a previous cytopathological report as proliferative breast disease with atypia. Two patients had a proliferative breast disease with atypia on Excisional biopsy, which correlated well with the TRUCUT biopsy. One patient was diagnosed with proliferative disease with atypia on TRUCUT biopsy, excision biopsy reported as papillary carcinoma. One case was reported as fibroadenoma on excision biopsy, her FNAC report was suggestive of atypia. In this study we categorized pathological changes into three categories.

- Nonproliferative breast disease
- Proliferative breast disease without atypia

- Proliferative disease with atypia.

Nonproliferative changes were the most common finding seen in 72(72%) cases out of 100 patients. Proliferative changes without atypia were seen in 21 (21%) patients and proliferative changes with atypia were seen in 4(4%) patients. A study conducted at mayo clinic between 1967 to 1991, had findings similar to our study. They followed 9087 women for a median of 35 years and histological findings were non proliferative lesions in 67 percent of women, proliferative lesions without atypia in 30 percent, and atypical hyperplasia in 4 percent.[13] Love et al in 1982 classified patients of fibrocystic disease into proliferative and non proliferative breast disease and concluded that the nodularity/lumpiness be considered as 'non disease'.[14] Further studies on nodularity, changed this conception. In 1985, Dupont and Page reviewed 10,366 biopsies of benign lesions and reported that compared with women without proliferative changes the relative risk of subsequent breast cancer was 1.9% among those with proliferative changes and 5.3% among those with atypical hyperplasia.[15] A more recent study that evaluated the clinical utility of the subcategory "proliferative lesion with atypia" on breast FNAC samples reported that atypia was associated with significantly increased likelihood of malignancy compared with proliferative lesion without atypia.[16] The presence of a proliferative lesion with atypia in women clinically presenting with focal nodularity points to a group of patients who have histological changes, which puts them at a higher risk for developing breast cancer and hence requires more detailed assessment. Probably these lesions account for the belief that fibrocystic disease places women at higher risk for breast cancer. In our study we have classified pathological findings into a narrowed spectrum of proliferative and non proliferative breast disease for the patients with focal nodularity.[17]

CONCLUSION

Focal breast nodularity is commonly seen in reproductive age group. It is classified as aberration of normal process of development and involution. Ultrasonography is a good diagnostic modality for breast nodularity. Nonproliferative and proliferative breast disease without atypia can be safely kept on conservatively on outpatient basis .Proliferative disease with atypia managed surgically and should undergo excisional biopsy.

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