Original Research Article

Clinical and pathological correlation in benign breast diseases in women

Bhavuk Kapoor[1]*, Parul Vaid[2], Mayank Kapoor[3], Bharat B. Kapoor[4], Sharda Kapoor[5]

[1]Department of Neurosurgery, GMC Jammu, Jammu and Kashmir, India
[2]Department of Obstetrics and Gynecology, SMGS Hospital GMC Jammu, Jammu and Kashmir, India
[3]Department of Medicine, AIIMS, Rishikesh, Uttarakhand, India
[4]Department of Anesthesia and ICU, GMC Jammu, Jammu and Kashmir, India
[5]Former Divisional Nodal Officer, RBSK Jammu Division, Jammu and Kashmir, India

*Correspondence:
Dr. Bhavuk Kapoor,
E-mail: kapoorbhavuk@yahoo.in

ABSTRACT

Background: Benign breast diseases are a common problem presenting in a day to day surgical practice. A combination of three tests i.e. clinical examination, radiological imaging and pathological examination is commonly used to accurately diagnose breast diseases. This study was aimed to know the clinico-pathological correlation in diagnosing benign breast diseases in women.
Methods: A study of 30 female patients of benign breast disease was conducted by clinical examination and comparing its accuracy with the pathological findings.
Results: The highest incidence of benign breast diseases was in the age group of 30-39 years (33.3%). The most common presenting symptom was lump (53.3%) in the breast. The most common quadrant involved was the upper outer quadrant (60%). Fibroadenoma (53.3%) was the most common lesion in this study. The clinical examination in cases of fibroadenoma had sensitivity and specificity of 87.5 % and 92.8% respectively. In cases of fibrocystic disease, clinical examination had sensitivity and specificity of 85.7 % and 91.3% respectively.
Conclusions: Overall clinical breast examination had a sensitivity of 90% and specificity of 98% in this study. Hence, combination of all three diagnostic modalities i.e. clinical, radiological and pathological examination should be used. But in rural areas where radiological and pathological facilities are not available, clinical examination can also give us a fair amount of idea in diagnosing benign breast diseases.

Keywords: Benign breast disease, Breast Lump, Clinical and pathological correlation, Fibroadenoma

INTRODUCTION

There has been an increasing interest in benign breast diseases in the past decade. These are four to five times more common than malignant disorders. Benign disorders of the breast are usually seen in the reproductive period of life, are thought to be largely hormone induced and there is a dramatic fall in the incidence after menopause due to cessation of clinical ovarian stimulation.[1] Nearly 80% of breast biopsies depict a benign pathology.[2] The most common symptoms of benign breast diseases are pain, lumpiness or a lump.

The clinical and pathological features of various benign breast diseases are

Fibrocystic disease

Common in women in the age group of 20-50 years and presents bilaterally.[3] Signs and symptoms are more

prevalent during the premenstrual phase of the cycle and there is cyclic bilateral breast pain, increased engorgement and density of the breasts, excessive nodularity, rapid change in the size of cystic areas and increased tenderness. Cysts are well circumscribed, soft to firm, mobile and may be tender.

Histological examination shows picture of fibrosis, cyst formation and epithelial hyperplasia. There is an overall increase in glandular tissue due to budding and multiplication of the acini. There is hyperplasia of the epithelium, acini and the lining ducts. Dense white fibrous trabeculae replace the fat and elastic tissue.

Fibroadenoma

Adolescents and women in their twenties are mostly affected and is usually discovered accidentally while bathing. Fibroadenoma does not change in size with menstrual cycle and does not produce breast pain or tenderness. Macroscopically the cut surface is white to brown in colour and it may bulge and glisten. Microscopically the histology depicts cellular fibroblastic stroma enclosing glandular and cystic spaces lined by epithelium.

Phyllodes tumor

It is a mesenchymal tumor of the breast. It is a rare condition with an incidence of 1 in 1000. Develops in the third or fourth decade of life. Clinically these are large, mostly unilateral, rapidly growing, round, firm, mobile and painless masses on examination. They may involve the entire breast and produce skin ulceration. Microscopically elongated epithelium lined clefts are seen. Myxoid nature is common and presents as areas of necrosis. The stroma shows a sarcoma like picture.

Fat necrosis

It occurs due to direct blunt trauma to the breast parenchyma. It is a firm, tender, indurated, ill-defined mass that may have an area of surrounding ecchymosis. Pathologically the central focus of necrotic fat cells is surrounded by lipid filled macrophages and an intense neutrophilic infiltration. Eventually the focus is replaced by scar tissue or is encysted and walled off by collagenous tissue.

Intraductal papilloma

These occur within a major duct in the subareolar region. The clinical presentation is bloody or serous nipple discharge. Pathologically, these have stalks covered with epithelium and a fibrovascular core attached to the wall.

Mastitis

It refers to inflammation of the breast parenchyma. Clinically the breast will be indurated, red and painful.

Nipple retraction may also be evident. The patient may have systemic symptoms such as pain and fever. Pathologically features of neutrophilic or granulomatous inflammation are seen. Gram stain shows the type of microorganism involved.

Galactocele

It is a benign breast lesion that commonly occurs in lactating women. Patients typically present with a painless breast lump occurring over weeks to months. Lesion can be single or multiple and can be unilateral or bilateral. Analysis of material aspirated from galactocele shows variety of proportions of proteins, fat and lactose. Macroscopically the milk within the galactocele may appear white with usual viscosity.

Duct ectasia

It is more common in females in the age group of 50-60 years. Clinical features are nipple discharge, nipple retraction, pain and palpable mass. Pathological features include chronic periductal inflammatory changes with fibrosis.

A combination of three tests i.e. clinical examination, radiological imaging and pathological examination called as Triple assessment test is used to accurately diagnose breast diseases. Approximately 95% of symptomatic breast lesions are diagnosed by triple assessment.[4]

The objective of this study were to evaluate the efficiency of clinical examination in diagnosing patients of benign breast diseases by comparing it to the pathological diagnosis.

METHODS

This study was conducted in the postgraduate department of general surgery in Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu over a period of one year from November 2013 to October 2014.

Total thirty female patients of benign breast diseases were included in this study.

Inclusion criteria

- All female patients diagnosed clinically as having benign breast diseases were included in this study irrespective of their age after obtaining their written consent and on guidelines as per the institute's ethical committee.

Exclusion criteria

- Cases which were proved as having malignant breast disease were excluded from this study
- Women who had been treated for breast malignancy earlier were excluded from this study.

Patients included in this study were subjected to

Detailed history and clinical examination - general physical, systemic and local examination of both breasts.

USG of both breasts and/or mammography of both breasts - both views in each breast: cranio-caudal view and medio-lateral oblique view.

FNAC of benign breast lesion and/or Histopathology of benign breast lesion.

Clinical breast examination

Clinical breast examination was done after taking informed consent from the patient. Full exposure of both breasts was done in every patient in presence of a female nurse. Both breasts including axilla were examined and the findings noted down as per the Proforma.

Fine needle aspiration cytology

FNAC was done using 21G or 23G, 1.5 inches needle attached to 20cc syringe mounted on Franzen's handle. The needle was inserted into the lesion and by capillary suction, sufficient material was obtained. Because of the thinness of the needle, there was no need for prior local anaesthesia. The aspirated material was expressed onto slides and compressed with another slide. Slides were examined by the pathologist and the cytological diagnosis was given.

Statistical analysis

At the end of the study, statistical calculations were performed using the SPSS 16.0 software.

RESULTS

In this study, the highest incidence of benign breast diseases was in the age group of 30-39 years (33.3%).

The most common presenting symptom was lump (53.3%), followed by lump and pain (23.33), pain (13.3%) and nipple discharge (10%).

Table 1: Quadrant involved.

Quadrant	No. of cases	Percentage
Upper outer	18	60%
Upper inner	3	10%
Lower outer	2	6.66%
Lower inner	3	10%
Central	4	13.33%

Table 1 shows that the upper outer quadrant was the most common quadrant involved (60%).

As shown in Figure 1, highest number of cases of benign breast disease were of fibroadenoma (53.3%), followed by fibrocystic disease (23.3%) and duct ectasia (10%).
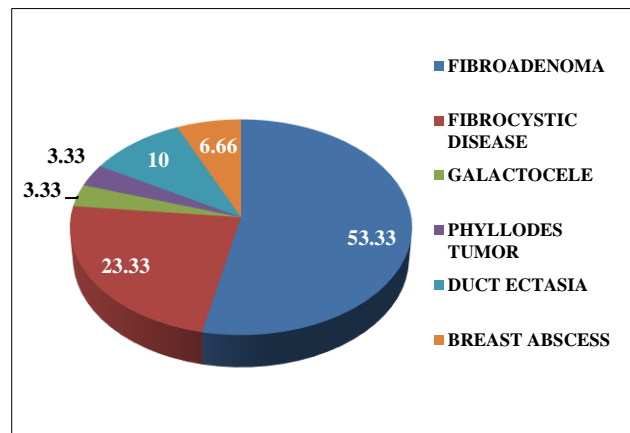

Figure 1: Disease pattern of benign breast disease.

Table 2: Breast pathology as per symptoms.

Diseases	Lump	Lump + pain	Pain	Discharge
Fibroadenoma	14	2	0	0
Fibrocystic disease	1	2	4	0
Galactocele	1	0	0	0
Phyllodes tumor	0	1	0	0
Duct ectasia	0	0	0	3
Breast abscess	0	2	0	0

Table 3: Clinical diagnosis as compared with pathological diagnosis.

Pathological diagnosis (cases)	Clinical diagnosis					
	Fibroadenoma	Fibrocystic disease	Galactocele	Phyllodes tumor	Duct ectasia	Breast abscess
Fibroadenoma (16)	14	-	-	-	-	-
Fibrocystic disease (7)	-	6	-	-	-	-
Galactocele (1)	-	-	1	-	-	-
Phyllodes tumor (1)	-	-	-	1	-	-
Duct ectasia (3)	-	-	-	-	3	-
Breast abscess (2)	-	-	-	-	-	2

As shown in Table 2, most common symptom of fibroadenoma was lump in the breast (14 cases). In four cases of fibrocystic disease, presentation was pain in the breast.

In Table 3, study can observe the efficacy of clinical diagnosis as compared with pathological diagnosis. Clinical diagnosis was same as pathological diagnosis in 14 out of 16 cases of fibroadenoma.

Table 4: Statistical analysis of clinical diagnosis.

Diseases	Measure						
	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	+ LHR (Likelihood ratio)	- LHR (Likelihood ratio)	Kappa (%)
Fibroadenoma	87.5%	92.8%	93.3 %	86.6%	12.25	0.13	80%
Fibrocystic disease	85.7%	91.3%	75%	95.4%	9.85	0.15	73.3%

In Table 4, study can observe the sensitivity and specificity of clinical diagnosis in different benign breast conditions. The clinical examination in cases of fibroadenoma had sensitivity and specificity of 87.5% and 92.8% respectively. In cases of fibrocystic disease, clinical examination had sensitivity and specificity of 85.7% and 91.3% respectively.

DISCUSSION

Benign breast diseases include a heterogeneous group of conditions. The diagnosis of benign breast diseases is essential to relieve the patient's fear of harboring a malignancy.

Study compared the accuracy and other statistical parameters of clinical examination and pathological examination, evaluated either individually or in combination, in diagnosing benign breast diseases in female patients.

It was found that the incidence of benign breast disease was more in the age group of 30-49 years (63.3%) which was in accordance with the study conducted by Jabbo NS, in which incidence of benign breast diseases was more in the age group of 30-49 years (56.92%).[5] Studies conducted by Bartow SA et al, London SJ et al and McDivitt RW et al concluded that the incidence of benign breast lesions begins to rise during 2nd decade of life and peaks in the 4th and 5th decades.[6-8]

Median age in this study was 36 years which was also seen in other study, in which the median age was 35.39 years.[5] The common presenting symptom in this study was breast lump (53.3%). This was also observed in other study, in which breast lump was the most common symptom having incidence of 49%.[9] Study conducted by Jabbo NS also had breast lump as the most common symptom, having incidence of 54.5%.[5]

The upper outer quadrant of the breast was involved in 60% of the cases in this study. This was in accordance with the studies conducted by Gupta et al and Iyer et al, in which the upper outer quadrant was the most commonly involved part of the breast.[10,11]

Fibroadenoma was the most common breast lesion (53.3%) in this study. This was also observed in the other studies, in which fibroadenoma was the predominant lesion having an incidence of 61.4% and 57% respectively.[5,12] Tiwari P, also observed fibroadenoma as the predominant lesion in benign breast disease.[13]

In this study, common presentation of fibroadenoma cases was lump in the breast (87.5%). Common presentation of fibrocystic disease was pain in the breast (57.5%). Only case of galactocele presented as lump in the breast. In only case of phyllodes tumor, presentation was lump and pain in the breast. In all cases of duct ectasia, nipple discharge was the presenting complaint. Cases of breast abscess presented with lump and pain in the breast.

In this study, clinical examination correctly diagnosed 14 cases (87.5%) of fibroadenoma, the remaining 2 cases (12.5%) were not diagnosed as fibroadenoma clinically. Clinical examination of cases of fibroadenoma had a sensitivity of 87.5% and specificity of 92.8%. It had a positive predictive value of 93.3% and a negative predictive value of 86.6%. The positive likelihood ratio was 12.25 and the negative likelihood ratio was 0.13. Kappa value for diagnosis of fibroadenoma by clinical examination was 80%. This was in accordance with the study by Mima MBS et al, in which the sensitivity of clinical diagnosis in cases of fibroadenoma was 92%.[14] In another study, clinical diagnosis in cases of fibroadenoma had sensitivity of 95.4%.[11]

In this study, clinical examination correctly diagnosed 6 cases (85.7%) of fibrocystic disease, the remaining one case (14.2%) was not diagnosed as fibrocystic disease clinically. Clinical examination of cases of fibrocystic disease had a sensitivity of 85.7% and specificity of 91.3%. The positive predictive value was 75% and the negative predictive value was 95.4%. The positive likelihood ratio was 9.85 and the negative likelihood ratio

was 0.15. Kappa value for diagnosis of fibrocystic disease by clinical examination was 73.3%. This was in agreement with the study by Mima MBS et al, in which the sensitivity of clinical diagnosis in case of fibrocystic disease was 81.8%.[14] In study conducted by Iyer et al, clinical diagnosis in cases of fibrocystic disease had sensitivity of 100% which was not in agreement with this study.[11]

In this study, in cases of galactocele, phyllodes tumor, duct ectasia and breast abscess, the clinical examination had a sensitivity and specificity of 100% each, positive predictive value and negative predictive value of 100% each and kappa value of 100% each. These observations could be because of the small number of patients in these groups of disorders. In study conducted by Iyer et al, clinical diagnosis in cases of galactocele and phyllodes tumor had sensitivity of 100% which was in accordance with this study and sensitivity was 81.8% in case of breast abscess which was not in accordance with this study.[11]

The sensitivity and specificity of FNAC as compared to histopathology was 100% in this study. Study conducted by Jabbo NS, showed that sensitivity of FNAC was 85% and specificity was 95%.[5] Handa and Harsh M showed that the sensitivity of fine needle aspiration procedure in breast diseases was 95.6% and specificity was 100%. Their results indicated that Fine needle aspiration breast biopsy was a diagnostically accurate procedure and it decreased the necessity of open surgical biopsy for definitive diagnosis.[15]

In another study, it was concluded that FNAC is an excellent method for diagnosing breast lesions with a sensitivity ranging between 89% and 98% and specificity between 98% and 100%.[16] So, study must not unnecessarily subject the patient to excision biopsy for diagnosis of benign breast lesion as FNAC, which is less traumatic and is acceptable to the patient can also give equivalent results. However, in suspicious cases excision biopsy should be done.

Overall clinical breast examination in cases of benign breast diseases in this study had a sensitivity of 90% and specificity of 98% as compared with pathological examination. This was in agreement with the study by Mima MBS et al, in which the overall sensitivity of clinical diagnosis was 91.9%.[14] All the three means of examination i.e. clinical, radiological and pathological should be combined to achieve 100% diagnostic accuracy. But in rural areas where radiological and pathological facilities are not available, clinical examination can also give us a fair amount of idea in diagnosing benign breast diseases.

CONCLUSION

This study includes thirty patients of benign breast diseases. In these cases initial clinical examination followed by radiological examination and pathological examination was conducted.

In this study, overall clinical breast examination had a sensitivity of 90% and specificity of 98%. If radiological findings were taken into consideration, the combination of clinical and radiological examination had an overall increased sensitivity and specificity.

Hence, combination of all three diagnostic modalities i.e. clinical, radiological and pathological examination is essential to give reassurance to the patient about the benign nature of her disease, remove her anxiety of harbouring malignancy and also helps in diagnosing the pattern of benign breast lesions. But in rural areas where radiological and pathological facilities are not available, clinical examination can also give us a fair amount of idea in diagnosing benign breast diseases.

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