Section: General Surgery

Original Research Article

A PROSPECTIVE OBSERVATIONAL STUDY OF HYPOTHYROIDISM IN BENIGN BREAST DISEASE IN A TERTIARY CARE HOSPITAL

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Abstract

Background: We want to study the prevalence of Hypothyroidism in patients with Benign Breast Disease. **Materials and Methods:** it was a prospective observational study conducted on Bening Breast Disease patients, who attended the Surgical OUTPATIENT, Department of General Surgery, P.E.S. Institute of Medical Sciences & Research, Kuppam, from January 2021 to June 2022. **Result:** This study highlights the association between benign breast diseases and hypothyroidism. In this study, the most common age group involved is 21-30 years. The most common symptom involved among patients with benign breast diseases is a lump followed by pain and discharge. In this study, the duration of symptoms is 7-9 months. In this study bilateral lump was found in 9 subjects right sided lump was found in 20 patients whereas left sided lump was found in 26 patients. All the patients had the consistency of their lump as firm. Among all the investigations USG and FNAC are found as more sensitive investigations than mammograms. The most common benign lesion in this study is fibroadenoma followed by fibroadenosis and fibrocystic disease. Regarding management of benign breast diseases is excision is done in 26 cases that are in cases of fibroadenoma whereas conservative management is followed in 34 cases. In this study, 25 patients had a TSH value of greater than 4.2 and a t4 value greater than 4.5 in 43 subjects, which states that the association of hypothyroidism is significant with benign breast diseases. **Conclusion:** This study reinforces the link between thyroid dysfunction and benign breast disease. Therefore, patients with benign breast disease should be evaluated for hypothyroidism, and simple treatment of hypothyroidism could lead to a significant clinical improvement in those people.

INTRODUCTION

In females, the mammary glands play a psychological and physical role. The majority of the workload in breast clinics is caused by benign breast disease. The ANDI (Aberration of Normal Development and Involution) classification is comprehensive and groups all these physiological changes, growth, development, and involution processes. Six conditions are listed here, including two developmental conditions (adolescent hypertrophy and fibro adenoma), two cyclical conditions (mastalgia and cyclical nodularity), and two involutionary conditions (cyst formation and sclerosing adenosis). NIS (Sodium Iodide Symporter) expression was shown to be much higher in cancerous breast tissue as compared to normal breast tissue, with fibro adenoma exhibiting the highest levels. High concentrations of NIS, peroxidase, and deiodinase are present in both healthy and diseased breast tissue, demonstrating that the breast tissue is actively involved in iodine metabolism. At some periods of life, breast tissue actively participates in iodine uptake as a result of sodium iodide symporter activity. Thyroid replacement medication can help people with benign breast disease who are hypothyroid. A prospective study was carried out to look at thyroid dysfunction in patients with benign breast disease.

Aims and Objectives: This study aims to assess the prevalence of Hypothyroidism in patients having Benign Breast disease.

MATERIALS AND METHODS

Study Design: Prospective study
Study Period: January 2021 - June 2022
Study Locality: PESIMSR

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Study Population: All patients fulfilling the inclusion criteria and who attend OPD in the Department of General Surgery
Sampling Method: purposive sampling
Study type: Prospective study
Sample size: 60
Inclusion& Exclusion Criteria:
Inclusion Criteria

- All female patients were found to have benign breast disease.
- Age between 18 and 70 years

Exclusion Criteria

- All diagnosed cases of breast malignancy.
- Patients with breast abscess.
- Patients with blood-stained nipple discharge.
- Patients with suspicious lesion on mammography or cytology requiring core or open biopsy.
- Pregnant females.
- Patients on oral contraceptives, ovulation induction, hormone replacement therapy.
- Patients already on Thyroxine supplementation.
- Patients on antipsychotic and antidepressant drugs

Source of Data
This study will be carried out in the Department of General Surgery, PES MEDICAL COLLEGE attached to PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh

Study Design: prospective study
Study Period: Jan 2021 to June 2022
Study Population: All patients fulfilling the inclusion criteria who present to general surgery OPD, PESIMSR.
For inferential statistics, the Chi-square test and T-test will be used. The Data will be entered into the MS EXCEL 2007 version and further analyzed using STATA14.
The descriptive data were analyzed as follows: Categorical data were analyzed using percentages and the continuous data were analyzed using mean and standard deviation. For inferential statistics, the Chi-square test and T-test will be used.
The present study of 60 cases of Benign Breast Disease was conducted during the period of January 2021 to JUNE 2022. Both outpatient and inpatient basis patients diagnosed with Benign Breast Disease (i.e. Fibroadenoma, Fibroadenosis, and fibrocystic breast disease) were selected and TSH & T4 levels estimation was done. This study mainly focuses on the PREVALENCE OF HYPOTHYROIDISM IN BENIGN BREAST DISEASE. 30 patients out of 60 patients selected for the study were of the age group 21-30 yrs which is the commonest age group and age more than 40 yrs being the least common age group which was seen in 4 patients selected for the study.

RESULTS

Table 1: Age

Age	No. of subjects	Percentage
< 20 years	7	11.7%
21-30years	30	50%
31-40years	19	31.7%
> 40 years	4	6.7%
Total	60	100%

LUMP: All the patients selected for the study had complaints of lumps.

Table 2: Pain

Pain	No. of subjects	Percentage
Absent	33	55%
Present	27	45%
Total	60	100%

Table 3: Discharge

Discharge	No. of subjects	Percentage
Absent	49	81.7%
Present	11	18.3%
Total	60	100%

Duration: 7-9 months being the most common duration of symptoms associated with fibroadenosis and fibrocystic disease

Table 4: duration

Duration	No. of subjects	Percentage
<3 months	16	26.7%
4-6 months	15	25%
7-9months	17	28.3%
10-12months	7	11.7%
>12 months	5	8.3%
Total	60	100%

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Table 5: left breast lump

Left breast LUMP	No. of subjects	Percentage
2cm	12	34.3%
3cm	20	57.1%
4cm	3	8.6%
Total	35	100%

Table 6: Right Breast Lump

Right breast lump	No. of subjects	Percentage
2cm	13	41.9%
3cm	16	51.6%
4cm	2	6.5%
Total	31	100%

Table 7: Consistency

Consistency	No. of subjects	Percentage
FIRM	60	100%
Total	60	100%

Table 8: USG

USG	No. of subjects	Percentage
FCS	10	16.7%
FDN	26	43.3%
FDS	14	23.3%
NIL	10	16.7%
Total	60	100%

Table 9: Mammo

MAMMO	No. of subjects	Percentage
FCS	3	5.0%
FCS-B/L	2	3.3%
FDS	5	8.3%
NIL	50	83.3%
Total	60	100%

Table 10: FNAC.

FNAC	No. of subjects	Percentage
FCS	14	23.3%
FDN	26	43.3%
FDS	20	33.4%
Total	60	100%

FNAC: Among 60 subjects 26 had fibroadenoma, 20 had fibroadenosis, 14 had fibrocystic disease

Table 11: TSH

TSH	No. of subjects	Percentage
<4.2	35	58.3%
>4.2	25	41.7%
Total	60	100%

TSH: The normal reference range of TSH is 0.51-4.30 out of 60 subjects 25 had more than 4.2Uiu /m

Table 12: T4

T4	No. of subjects	Percentage
<4.5	17	28.3%
>4.5	43	71.7%
Total	60	100%

T4: Normal reference range of T4 is 4.6-12ug/dl out of 60 subjects 17 patients had value less than 4.5 ug/ml

Table 13: Management

Rx	No. of subjects	Percentage
Conservative	34	56.7%
Excision	26	43.3%
Total	60	100%

Management: Among 60 subjects excision was done for 26 patients with fibroadenoma whereas patients with fibroadenosis and fibro cystic disease were conservatively managed

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Table 14: Result -TSH

TSH	FNAC			X^2 value	'p' value
	FTS	FDN	FDS		
<4.5	6(42.9%)	20(76.9%)	9(45.0%)	6.5392	0.038
>4.5	8(57.1%)	6(23.1%)	11(55.0%)		
Total	14(100%)	26(100%)	20(100%)		

Result: its association with Clinical diagnosis among the subjects

Table 15: Result -T4

T4	FNAC			X^2 value	'p' value
	FTS	FDN	FDS		
<4.5	1(14.3%)	5(34.6%)	11(30.0%)	6.0901	0.048
>4.5	12(85.7%)	17(65.4%)	14(55.0%)		
Total	13(100%)	22(100%)	25(100%)		

Result- its association with Clinical diagnosis among the subjects

When compared with TSH and T4 values 25 patients had hypothyroidism without having symptoms.

DISCUSSION

The prevalence of benign breast disease and its effects on women's lives are both significant. One in every two women is thought to experience BBD at some point in their lives. There are numerous risk factors that have been linked to BBD. Benign breast disease results from an imbalance or inappropriate target gland response to changing tide of hormonal stimulation. In our study 60 patients diagnosed as having benign breast disease were included from a period of January 2021 to June 2022. Patients were diagnosed as having benign breast disease after Triple Assessment of the patient (thorough clinical examination, ultrasound/mammography & FNAC).[1,2] Each subject underwent a bilateral breast physical examination. During the examination, lumps, discharge, or bleeding from the nipple were noted. The location, size, form, edges, mobility, adherence to the skin or underlying structures, and pain of each lump were all noted. Along with the breast exam, the axilla and supraclavicular fossae were checked on both sides for lymphadenopathy and any indications of distant metastases.[2] Standard procedures for mammography were followed, including taking a craniocaudal view of each breast and obtaining the lateral oblique view and a view with the tube inclined at 45 degrees to the horizontal axis. In order to successfully obtain these views during mammography, the breast must be lifted sufficiently and compressed between the compression plate and film to have evenly distributed breast tissue, as this makes it simple to detect any changes. The nipple should also be seen in profile, the anterior surface of the pectoralis major should be visible, and the breast must be lifted sufficiently and compressed. Malignant diseases are indicated by irregular borders, micro-calcifications, increased density, loss of breast architecture, and skin retraction, whereas benign disorders are indicated by well circumscribed masses with regular borders. In this investigation, high-definition ultrasonography of the breast (HDUSG) was employed. The ipsilateral arm should be raised over the patient's head when they are lying supine or in an oblique position. A transverse, sagittal, radial, or radial and anti-radial scan of the breast is required. As the retro-areolar area is obscured by nipple artefact on ultrasonography, the transducer is utilized in a variety of planes to assess it.[2] Age group: Most common age group involved in this study is 21-30 years which is 30 out of 60 subjects. In Iliahet al study 21-40 years age group is the common age group involved which is consistent with the present study.[3] In sangma and mima et al,[4] study 21-30 years is the most common age group involved.[5-10] In Bartow et al the most common age group involved are 30-49 years.[6] In the study done by Najeeb S. Jabbo (2010), the age range of 30-49 years (56.92%) had a higher frequency of benign breast illnesses.[11-15] According to research by BartowSA19 and colleagues in 1987, London SJ and colleagues in 1992, and McDivittRW and colleagues in 1992, the incidence of benign breast lesions rises throughout the second decade of life and peaks in the fourth and fifth decades.[7-19]

Clinical features: Lump being the commonest feature among all the patients, mastalgia in 27 patients & nipple discharge in 11 patients out of 60 selected for this study. In bhavuk et al study Breast lump (53.3%) was the most frequent presenting symptom.[9,20] This was also noted in another study, where a breast lump was the most prevalent symptom with a 49% incidence. The frequency of this lump in a study by aishamemon et al,[10] study is 66.3% which is quite higher from others that is 36% In Jamal et al,[1] study conducted in Saudi-Arabia ,25.5% by Chaudhry et al,[11] in India, 29.2% by Thekwaba in Nigeria, but it is near to studies in Italy 43.2% by Ciatto, in USA 47% by Donegan et al and 42% in Nigeria by Adesunkanmiet al By tanwar et al study there is pain in 37.64 % of subjects whereas discharge was in 14.70% when compared to this study there is a pain in 45%of subjects and discharge in 18%of subjects which is consistent.[13-17] In other studies by Leis Hp et al, there is nipple discharge in only 9% of subjects.[16]

Duration of Symptoms: The most common duration in this study is 7-9 months followed by 4-6 months .in Bhavuk et.al the most common duration

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of symptoms is 1-6 months which is consistent with the present study Lump: In this study left side lumps are more common of size 2-3cms in upper outer quadrant compared to Bhavuk et al study 60% of subjects lump in the upper outer quadrant and it is consistent with the other study by Iyer et al.[9,18]

Evaluation: All the patients were evaluated clinically radiologically and pathologically by history and examination, USG, mammogram, and FNAC and then managed accordingly.

Mallikarjuna et al has depicted that FNAC has a specificity of 91.67% for fibroadenoma links' et.al had an accuracy of 60.4% whereas Hand uma et al reported that 98.3%efficacy for FNAC All the FNAC reports were indicative of the benign nature of lesions.[19-21] This clinical diagnosis is well correlated with histopathological diagnosis. Lesions: In this study considering FNAC there were 26 cases of fibroadenoma 20 cases of fibroadenosis and 14 cases of fibrocystic disease. In a study, n Kaur et.al 22fibroadenoma is the most common lesion which is consistent with the study. In Iliah et al study, the most frequent benign breast disease is fibroadenoma, which accounts for 55 cases, followed by fibroadenosis, which has 23 cases. 9 of the patients were breast abscesses, while 7 of the cases involved cyclical mastalgia. Galactocele was discovered in 2 cases, and duct ectasia, lipoma, benign breast cysts, and antibioma were all discovered in 1 case each 2. In Sangmamb et al study,[4] Fibroadenoma is most common 48%, Fibrocystic changes accounts for 18%, Breast abscess12%, Mastalgia10%, Nipple discharge, Intraductal papilloma – 2, Mammary duct ectasia 8%, Accessory breast 5%, Mastitis 5%, Galactocele 4%, Proliferative disease with atypia 3%, Proliferative disease with florid hyperplasia 1%, Invasive ductal carcinoma 1%.[3] In Jabbo NS ET al 5 study, out of 144 patients, the number of patients according to final pathology. Fibroadenoma 61.4% is most common, Fibrocystic disease 9.6%, Duct ectasia 8.78%, Lipoma 4.88%, Abscess 3.50%, Mastitis 4.88%, Fat necrosis 3.5%, Adenoma 2.6%, Phylloides tumor 1.75%. All the above studies have shown that fibroadenoma is the most common which is consistent with the present study.

Correlation aith Thyroid Function Tests: TSH & T4 level estimation was and 40 % of patients had overt hypothyroidism without any symptoms suggestive of Hypothyroidism irrespective of the clinical feature of benign breast disease out of which 6 cases were Fibroadenoma, 11 cases were Fibroadenosis and 8 cases were Fibrocystic breast disease. This was consistent with the study by Faruq et al which had hypothyroidism among 14.9% of their subjects.[22,23] Anil C, Guney T, and Gursoy A38in their study they studied the correlation between benign breast disease and thyroid pathology from a different angle among people with nodular Goiter and Hashimoto's thyroiditis, they studied the prevalence of benign breast disease which was significant. In their study, Sidoni A., Fama F ET al discovered that 6.7% of women who had been referred for thyroid ultrasound had also received mammary ultrasound.[24,25] Breast lesions were observed, and 2/3 of the patients had cystic lesions, while 1/3 had solid lesions. In a study by George et al,[26] they divided subjects into 2 groups one with benign breast diseases and one without benign breast diseases and the prevalence of hypothyroidism is studied among them which proved that there is an association between hypothyroidism and benign breast diseases which were found to be significant. Dimitri et al observed in their study a higher percentage of enlarged thyroid glands were found in groups of benign breast disease when compared to women with no breast diseases. The association of benign breast disease and hypothyroidism was found to be statistically significant by Panchagan et al Identical conclusions were drawn in studies by Humphrey LJ et al and Backwinkel et al that hypothyroidism is associated with breast disease.[14,15,27,28]

Dimitri et al observed in their study a higher percentage of enlarged thyroid glands were found in groups of benign breast disease when compared to women with no breast diseases.[27]

1. Ilaiah et al3 in 2017conducted a study regarding benign breast diseases in which 100 female patients were selected and followed up with breast lumps in which the commonest age group is 21-40 years and lumps of about 2 and 5 cm involving the outer upper quadrant, And among them 70 cases were managed surgically that is 55 were fibroadenoma and 12 were fibroadenosis with this study most common age group is 21 to 30 years, lump was about 2 to 3 cm involving upper outer quadrant and among 60 cases 26 where managed surgically
2. Aisha Memon et al,[10] 2007 conducted a study on benign breast lumps on 800 females with complaints of breast lumps among them 500 were around the 15 to 25 age group 294 were benign breast lumps among them 195 were Fibroadenosis which were compared to this study most common benign disease 26 among 60 subjects.
3. In a study by Uma Krishnaswamy432003 on benign Breast diseases, Mastalgia is the most common complaint in urban India, whereas in our study lump is the most common complaint followed by pain and discharge.
4. Compared to a study by Bhavuk Kapoor et al,[9] in 2020Jammu and Kashmir regarding clinical pathological radiological correlation in Benign breast diseases on 30 female patients which lump most common presentation in the upper outer quadrant among which fibro abdomen is the most common presentation is similar to the present study.
5. Aamer Mehmood et al 2003 conducted a study on the khariancantton role of cytological grading in the management of benign breast lump, in which 75 patients were studied at 13-75 years

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were peak incidence in 3rd. decade, 45 were diagnosed as fibro adenoma which is the most common lesion with fine needle aspiration which is similar in this study and has a specificity of 96% for fnac in diagnosing benign breast diseases.[29,30]

6. Zahid Mehmood et al,[31] in 2009 studied the spectrum of breast problems in Lahore which had 242 subjects, most common age group having breast disease or 30-49 years. Pain was the most common symptom and m/C benign best breast disease is fibroadenoma which is similar to the present study
7. George et al,[26] in 2019 studied benign breast disorders and their Association with thyroid disorders in Pondicherry which comprised 17 to 25 years as the most common age group, fibroadenosis is the most common benign breast disease followed by fibroadenoma and duct ectasia. Most of the patients having Fibroadenosis are hypothyroid. This states that there is a significant association between hypothyroidism and benign breast diseases.

In this study out of 60 patients selected with benign breast disease, 25 patients had hypothyroidism among which 11 had fibroadenosis, 6 had fibro adenoma, and 8 had fibrocystic disease which is statistically significant. All the patients were evaluated by a thorough history and clinical examination of breasts and thyroid. Patients were asked to grade their mastalgia in three categories absent, mild, and severe (which disturbs daily activity). Patients were also asked about the subtle symptoms of hypothyroidism like weight gain, menorrhagia, mood changes, muscle cramps, feeling unwell, and fatigability. Hypothyroidism was seen in 25 cases out of which 8 cases were fibrocystic breast disease, 11 cases were fibroadenosis and 6 cases were fibroadenomas. Hence looking at the prevalence of hypothyroidism in the patients selected for the study there could be an association between thyroid dysfunction and benign breast disease with benign breast disease. Prevalence of hypothyroidism in our study was 40% Both normal and pathological breast tissue exhibit high concentrations of sodium iodide symporter(NIS), peroxidase, and deiodinase indicating active involvement of breast tissue in iodine metabolism. There are no guidelines regarding monitoring of Thyroid function during the workup of Benign breast disease cases. Our study is to look for the prevalence of hypothyroidism in benign breast disease.

CONCLUSION

Pharmacological intervention can relieve symptoms of benign breast illness, which may be caused by end-organ hypersensitivity to normal amounts of circulating hormones or environmental variables. High levels of sodium iodide symporter (NIS), peroxidase, and deiodinase are seen in both diseased and normal breast tissue, showing active involvement of breast tissue in iodine metabolism. This study reinforces the link between thyroid dysfunction and benign breast disease. Therefore, patients with benign breast disease should be evaluated for hypothyroidism, and simple treatment of hypothyroidism could lead to a significant clinical improvement in those people.

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