

## Original Research Article

## Prevalence of Hypothyroidism in Patients with Benign Breast Disease and Effect of Thyroxine Supplementation in Intractable Mastalgia-A Prospective Study at A Tertiary Care Centre

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### Abstract

**Introduction:** Benign breast diseases (BBD) constitute a heterogeneous group of lesions including developmental abnormalities, inflammatory lesions, epithelial and stromal proliferation, and neoplasms. Benign breast lesions deserve attention because of their high prevalence accounting for 36% of all breast diseases, their impact on women's life and due to cancerous potential of some histological types. **Materials and Methods:** This is a prospective study conducted in the Department of General Surgery, JSS Hospital, Mysuru from January 2018-June 2019. Those patients with symptomatic benign breast disease who attended Surgical OPD were screened for their thyroid function. Among those, patients with intractable mastalgia and fibroadenosis with deranged thyroid function were started on low-dose thyroxine supplementation and were followed up at a regular interval of 2 months, for a total of 6 months. **Results:** In our study, the prevalence of hypothyroidism in BBD was found to be 36%. BBD symptoms were alleviated in 71% of the hypothyroid patients with only thyroxine replacement. The final clinical outcomes of hypothyroid patients with mastalgia were significantly better than that of their euthyroid counterparts (0.001); 3.22 % of patients with BBD were found to be in a hyperthyroid state, which was clinically insignificant. **Conclusion:** Given the significant prevalence of hypothyroidism in benign breast disease at our centre, it is to be made mandatory to screen all benign breast disease patients for thyroid function. However, further larger studies are required to throw light on whether bringing such patients to a euthyroid state by thyroxine supplementation can prevent mastectomy in intractable mastalgias and also can prevent a small number of benign breast lesions turning to malignancy. Also, further studies are needed to establish a causal relationship between thyroid supplementation and symptom regression.

**Keywords:** BBD, stromal proliferation, neoplasms.

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### Introduction

Benign breast diseases (BBD) constitute a heterogeneous group of lesions including developmental abnormalities, inflammatory lesions, epithelial and stromal proliferation, and neoplasms. Benign breast lesions deserve attention because of their high prevalence accounting to 36% of all breast disease, their impact on women's life and due to cancerous potential of some histological types. Recent studies have indicated the association of thyroid hormonal abnormalities in benign proliferative breast lesions with prevalence ranging from 30-40% [1,2]. Mastalgia, an entity of BBD, is resistant to medical treatment in 6% of cyclical and 26% non-cyclical patients<sup>3</sup> which neither completely improved with mastectomy. As per recent studies, there is a significant prevalence of hypothyroidism in patients with benign breast disease, hence we wanted to estimate the same at our centre to know whether to make it as mandatory to screen all the women with BBD for hypothyroidism. Mastalgia, an entity of BBD, is resistant to medical treatment in 6%

Mastalgia, an entity of BBD, is resistant to medical treatment in 6% of cyclical and 26% non-cyclical patients[3] which neither completely improved with mastectomy. Hence, this study intended at finding an alternate solution in such patients[4].

#### Objectives

##### Primary

- To find out the prevalence of hypothyroidism in patients with benign breast disease, at our hospital.

##### Secondary

- Outcome in terms of symptomatic relief after thyroxine supplementation in patients with intractable cyclical/ noncyclical-mastalgia and fibroadenosis.
- Whether bringing such patients to a euthyroid state by thyroxine supplementation can prevent mastectomy in intractable mastalgias.

#### Material and Methods

This is a prospective study conducted in the department of surgery, JSS Hospital, Mysuru from January 2018-June 2019.

**Study design** - Prospective study

**Study setting** - JSS Hospital, Mysuru

**Study design** - January 2018-June 2019

**Sample size** - Series of 84 patients

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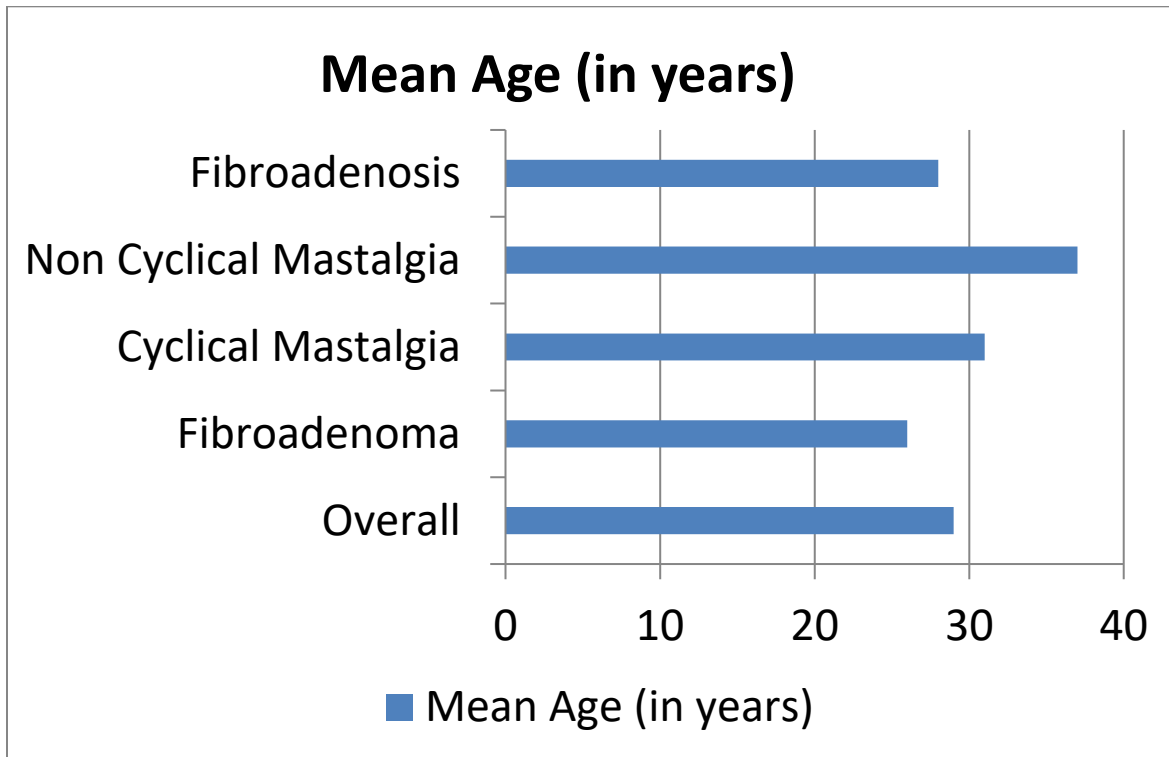
**Method**

Those patients who attended Surgical OPD with breast pain, breast lump were subjected to either fine-needle aspiration cytology(FNAC) or Sonomammogram or both. After confirming the diagnosis of BBD, those patients were screened for thyroid function. Among those, patients with intractable cyclical/non-cyclical mastalgia and fibroadenosis and deranged thyroid functions were started on low-dose thyroxine supplementation and were followed up at a regular

interval of 2 months, for a total of 6 months. Patients with pain were assessed for reduction in pain on the Visual Analogue Scale(VAS). Patients with lump were assessed for reduction in the size of their lump using a sonomammogram.

**Results**

The mean age of the overall patients included in the study was  $29 \pm 2$  years, and the mean age for different constituents of BBD shown in Fig 1.



**Fig 1: Mean age for different constituents of BBD**

The overall prevalence of hypothyroidism was 36.9% (mastalgia 53%, lump/lumpiness 39%) as shown in Fig.2. The rate of hypothyroidism and the mean serum TSH concentration were significantly higher among patients with mastalgia than among those

with lumpiness ( $P = 0.003$ ). 3.22 % of patients with BBD were found to be in hyperthyroid state which was clinically insignificant.

The average of TSH concentrations in that 36.9% of women was 11.6mIU/l, whereas it was 3.4mIU/L in the remaining group of patients as shown in Fig.3.



**Fig 2: Overall prevalence of hypothyroidism**

**Fig 3: Average TSH levels in patients with BBD**

BBD symptoms were alleviated in 71% of the hypothyroid patients with only thyroxine replacement. The final clinical outcomes of hypothyroid patients with mastalgia were significantly better than that of their euthyroid counterparts (0.001); 3.22 % of patients with

BBD were found to be in hyperthyroid state which was clinically insignificant. Thyroid status in each component of BBD has been tabulated in Table.

Table 1: Thyroid status in each component of BBD

Benign_Breast_Disease	Thyroid status					
	Euthyroid		Hyperthyroidism		Hypothyroidism	
	Count	Column N %	Count	Column N %	Count	Column N %
Breast Cyst	4	7.5%	0	.0%	0	.0%
Cyclical Mastalgia	8	15.1%	0	.0%	7	23.3%
Duct Ectasia	2	3.8%	0	.0%	0	.0%
Duct Papilloma	2	3.8%	0	.0%	0	.0%
Fibroadenoma	23	43.4%	1	100.0%	5	16.7%
Fibroadenoma with Apocrine Cystic Changes	1	1.9%	0	.0%	0	.0%
Fibroadenomatoid Hyperplasia	2	3.8%	0	.0%	1	3.3%
Fibroadenosis	1	1.9%	0	.0%	7	23.3%
Nipple Discharge	2	3.8%	0	.0%	0	.0%
Non Cyclical Mastalgia	5	9.4%	0	.0%	9	30.0%
Sclerosing Fibroadenosis	3	5.7%	0	.0%	1	3.3%

### Discussion

The vast majority of the lesions that occur in the breast are benign. Much concern is given to malignant lesions of the breast because breast cancer is the most common malignancy in women in Western countries; however, benign lesions of the breast are far more frequent than malignant ones<sup>5</sup>.

With the use of mammography, ultrasound, and magnetic resonance imaging of the breast and the extensive use of needle biopsies, the diagnosis of benign breast disease can be accomplished without surgery in the majority of patients. Because the majority of benign lesions are not associated with an increased risk for subsequent breast cancer, unnecessary surgical procedures can be avoided[6].

The term "benign breast diseases" encompasses a heterogeneous group of lesions such as simple cyst, benign proliferation, lump, duct ectasia, sclerosing fibroadenosis that may present a wide range of symptoms like pain, lump in the breast, or may be detected as incidental microscopic findings.

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

Recent studies have found that a patient with a benign breast disease was 18 times more likely to be having thyroid dysfunction as compared to a patient in the control group and this association was found to be statistically significant. Also, a patient with benign breast disease was 24 times more likely to have hypothyroidism than euthyroid counterparts[7]. Recent studies have found the association of thyroid hormonal abnormalities in benign proliferative breast lesions with prevalence ranging from 30-40%[8]. In our study, the same prevalence was found to be 36%, which was in par with average prevalence compared to other studies and literature. In literature, it was found that 6% of patients with cyclical mastalgia and 26% of patients with non-cyclical mastalgia were not amenable to medical line of treatment such as analgesics, primrose oil etc., who finally ended up in mastectomy.

In our study, 7% of patients with cyclical mastalgia and 22% of patients with non-cyclical mastalgia had a prior history of failed medical line of management and among them, 41% of patients were found to be in hypothyroid state and were started on low dose thyroxine supplementation. 71% of patients had symptomatic relief which was found to be statistically significant. The remaining 28% of patients ended up in mastectomy for symptomatic relief. Among 10 euthyroid patients with intractable mastalgia, 90% of patients underwent mastectomy[9].

**Conflict of Interest: Nil**

**Source of support: Nil**

### Conclusion

Because of significant prevalence of hypothyroidism in benign breast disease at our centre, it is to be made mandatory to screen all benign breast disease patients for thyroid function.

However, further larger studies are required to throw light on whether bringing such patients to euthyroid state by thyroxine supplementation can prevent mastectomy in intractable mastalgias and also can prevent a small number of benign breast lesions turning to malignancy.

Also, further studies are needed to establish a causal relationship between thyroid supplementation and symptom regression.

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