

## Relationship between levels of Thyroid Peroxidase and Anti Thyrogobuilne in iraqi wemon with Breast Cancer and Autoimmune Thyroid Disease

By

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### Abstract:

**Background:** The relationship between thyroid dysfunction and breast cancer is debated. To clarify this association issue, aimed current study to Assessment level of Thyroid Peroxidase (Anti TPO) and Anti Thyrogobuilne (Anti Tg) in iraqi wemon with Breast Cancer and Autoimmune Thyroid Disease as well as study the carrelated between them.**Paetint and Methods:**From Oncology Teaching Hospital Baghdad , collected about 100 sera from women during the period January 2020 – June 2021 , The ages ranged from (19-70) years of Iraqi women.used CL900i for determine the level of Anti TPO and Anti TG .**Results :**higher percentage in patients who have thyroid autoimmune with breast cancer patients as (No.= 16; 45.7%) in age group ( $\geq 60$ ) years, while (No.= 12; 34.2%), in age group (40-49) years ( $< 0.01$ ) HS,high level AntiTPO inboth Thyroid autoimmune and Breast cancer patients as  $(16.19 \pm 12.77)$  and level of AntiTg for Breast Cancer with thyroid Autoimmune as (25.31%), compared to Controllower level Anti Tg.**Conclusion:** There is a relationship between levels anti thyroid peroxidase (anti TPO) and Anti Tg with Thyroid autoimmune disorder and Breast cancer.

**keywords:** Thyroid Peroxidase (Anti TPO); Anti Thyrogobuilne (Anti Tg; Breast Cancer; Autoimmune Thyroid Disease

## Introduction:

The relationship between BC and thyroid disease is a matter of controversy. Thyroid function, thyroid antibodies, and clinically relevant thyroid diseases were investigated in several series of patients with breast carcinoma<sup>(1)</sup>, so the relationship between thyroiditis and prognostic factors for breast cancer such as ER and stage has been investigated. study by Mitra *et al.*, 1976 showd, a higher frequency of thyroiditis was described in more advanced stages of breast cancer<sup>(2)</sup>. in addition to the reported high prevalance of autoimmune thyroiditis among breast cancer patients, the incidence of breast cancer among patients with chronic thyroiditis has been investigated. In a study conducted by Ito and Maruchi<sup>(3)</sup>, those investigators reported that there was an increase in risk for breast cancer among patients with Hashimoto's thyroiditis.the Thyroid Peroxidase, also called thyroperoxidase (TPO) or iodide peroxidase, is an enzyme expressed mainly in the thyroid where it is secreted into colloid. also Thyroglobulin Antibody (ANTI TG) as an adjunct in the diagnosis of autoimmune thyroid diseases: Hashimoto disease, postpartum thyroiditis, neonatal hypothyroidism, and Graves's disease Thyroglobulin autoantibodies bind thyroglobulin (Tg), a major thyroid-specific protein. Tg plays a crucial role in thyroid hormone synthesis, storage, and release<sup>(4)</sup>.

The presence of anti-Tg, which occurs in 15% to 30% of thyroid cancer patients, could result in misleading Tg results. In immunometric assays, the presence of thyroid antibody can lead to false-low measurement; whereas it might lead to false-high results in competitive assays<sup>(5)</sup>

### Paetint and Methods:

From Oncology Teaching Hospital Baghdad , collected about 100 sera from women during the period January 2020 – June 2021 , The ages ranged from (19-70) years of Iraqi women.breast cancer in women were diagnosed by biopsy after histopathology examination and mammograms women with autoimmune thyroid gland were diagnosed with a thyroid function screening test called thyroid autoantibody, which are TG, ANTI TG, TPO, and TSHR testing, x ray, CT- scan, biopsy test and sign of clinical autoimmune thyroid disease.

Assay Anti TPO and Anti TG by CL900i : anti – TPO and Anti TG assay is a three– step immunoenzymatic assay to determine the level of anti TPO (Mindry,human/ chain).

### Results

**Table (1): Distrbution wemon with Breast Cancer and Autoimmune thyroid disease according to age.**

Age groups(year)		wemon with Breast Cancer and Autoimmune Thyroid Disease (35)	Control (30)	Test of sig.
(20-29)	No.	2	6	MCP < 0.01  (HS)
	%	5.8	20	
(30-39)	No.	5	6	
	%	14.3	20	
(40-49)	No.	12	12	
	%	34.2	40	

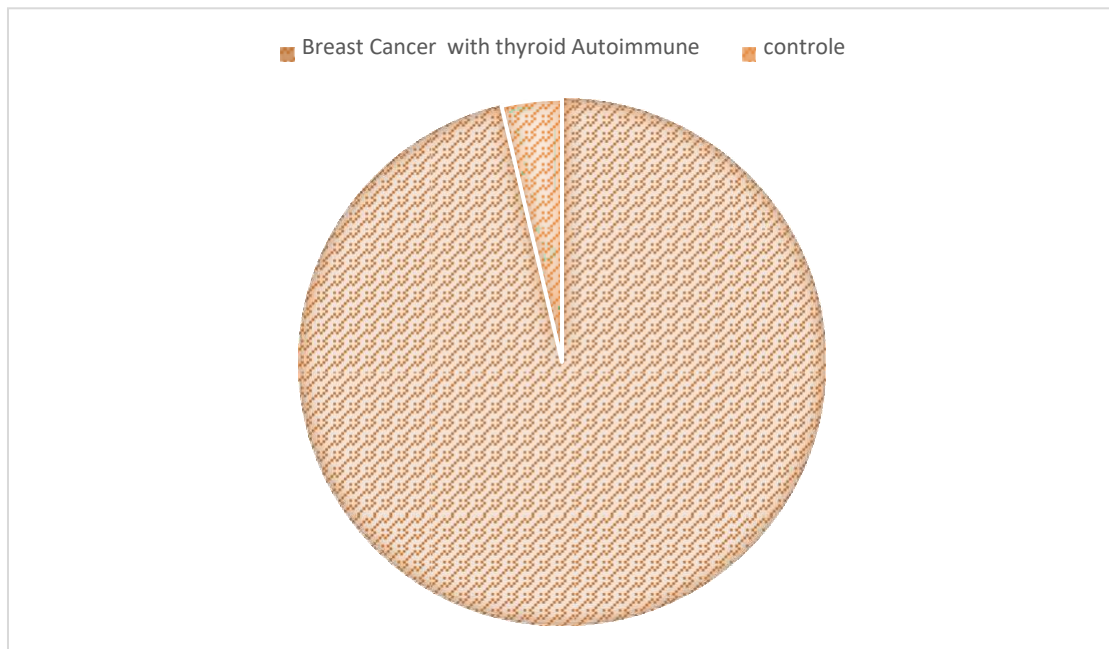
(≥60)	No.	16	6
	%	45.7	20
Total	No.	35	30
	%	100 %	100 %

Table (1) showed Association between Age groups (year) and Breast Cancer with Autoimmune Thyroid disorder, higher percentage in patients who have thyroid autoimmune with breast cancer patients as (No.= 16; 45.7%) in age group (≥60) years, while (No.= 12; 34.2%), in age group (40-49) years ( $< 0.01$ ) HS

**Table (2): Level of AntiTPO between Breast cancer with Thyroid autoimmune and Control**

Type of disorder	No.	Mean± Std.
Breast cancer with Thyroid autoimmune	35	16.19±12.77
Control	30	1.66±0.76

results in this table showed high level AntiTPO in both Thyroid autoimmune and Breast cancer patients as (16.19±12.77) compared to control (1.66±0.76).



**Fig. (1): Mean Value of AntiTg for Breast Cancer with thyroid Autoimmune compare to Control.**

results in Figure (1) showed level of AntiTg for Breast Cancer with thyroid Autoimmune as (25.31%), compared to Control lower level Anti Tg.

#### **Discussion:**

Current study showed higher percentage in patients who have thyroid autoimmune with breast cancer patients as (45.7%) in age group ( $\geq 60$ ) years, while (34.2%), in age group (40-49) years, the incidence of breast and thyroid cancer may be related, and that in particular women with thyroid cancer may be at a moderately increased risk of developing breast cancer before age 45 years<sup>(6)</sup>.

Some endocrine stimuli identified in thyroid products that exert a simultaneous action on the breast and the various thyroid antibodies, which could also interact with receptors on breast tumours, have been postulated to be responsible for the coincidence of mammary and thyroid gland disorders<sup>(7)</sup>.

Results of our study showed high anti TPO level in breast cancer and Thyroid autoimmune (P<0.01) HS, which correspond with by Jiskra and co-workers, who showed increased levels of Anti-TPO Abs and anti thyroglobin antibodies (Anti Tg Abs) were significantly higher in women with breast cancer as compared to those women with colorectal malignancies and women without cancer<sup>(8)</sup>.

In another study by Turken and colleagues, although no significant difference was seen in mean Anti Tg Abs between women with BC and healthy (controls), the mean Anti-TPO Abs levels were significantly higher in patients with BC. Higher frequency of autoimmune thyroiditis and goiter was also found in patients with BC<sup>(9)</sup>.

Gogas and colleagues also found higher incidence of thyroid autoimmunity in patients with BC<sup>(10)</sup>, Studies by Rasmusson *et al.*,<sup>(11)</sup> have also supported the hypothesis of relationship between thyroid autoimmunity and breast cancer, in some studies BC patients with increased TPO Abs had favorable outcome<sup>(12)</sup>. Jiskra and colleagues suggested that increased iodine intake in breast tissue stimulates thyroid autoantibodies and has a favorable influence on patient's survivals and response to treatment<sup>(8)</sup>.

**Conclusion:** There is a relationship between levels anti TPO and Anti Tg with Thyroid autoimmune disorder and Breast cancer.

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