



SCREENING OF PATIENTS WITH AUTOIMMUNE THYROID DISORDER FOR THE SEROPREVALENCE OF CELIAC DISEASE.

General Medicine

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ABSTRACT

Aim: To screen patients with Autoimmune Thyroid Disorder for the seroprevalence of Celiac Disease. **Material And Methods:** A total of 53 consecutive patients with AITD attending the Out-patient Department of Endocrinology, & the Department of Medicine, Gauhati Medical College and Hospital, Guwahati, Assam, were screened for the presence of tissue transglutaminase antibodies (immunoglobulin A tissue transglutaminase) over a 12 months period from April 2021 to April 2023. Those with IgA tTG levels above 15 U/L were considered positive for Celiac Autoimmunity. **Results And Discussion:** Of the 53 cases of AITD screened, 4 (7.5%) cases were found to be serologically positive (Anti-tTG positive) for celiac disease. Of 4 (7.5%), 3 (75%) females were positive for CD and 3 (75%) belonged to the age group of 61 to 75 years. **Conclusion:** In contrast to the general population, AITD patients have a substantially higher prevalence of CD, forming the basis for screening patients with AITD for the presence of CD.

KEYWORDS

Autoimmune thyroid disorder, Celiac disease

INTRODUCTION:

Autoimmune thyroid disease is an organ-specific autoimmune illness characterized by the development of circulating autoantibodies and reactive T lymphocytes against one or more thyroid antigens. The three common types of thyroid autoantibodies are thyroglobulin (TG), thyroid peroxidase (TPO), and thyroid-stimulating hormone receptor (TSHR). (1)

Association of other autoimmune diseases with AITD as part of polyglandular autoimmune syndromes is well known. Celiac disease is one such immune-mediated enteropathy that is strongly linked to other autoimmune diseases, including autoimmune thyroid disease. Consumption of a protein complex called gluten, which is present in wheat and closely related cereals such as barley, rye, and oats, causes persistent inflammation and damage to the small intestine mucosa in celiac disease. (2)

Among adult patients with autoimmune thyroiditis, the prevalence of CD has been reported to be 3.3-4.8 times more than in the general population. (3)

Because celiac disease is often asymptomatic or quiet, many cases are discovered through familial or random screening. Immunoglobulin A (IgA) serological assays for anti-endomysial (EMA) and tissue anti-transglutaminase (TTG) antibodies are among the screening tests. These serological assays are extremely sensitive and specific, although small intestine biopsy is the gold standard in diagnosis. They enable the screening of a large number of people because they are useful and minimally invasive.

AIMS AND OBJECTIVES:

The aim of my study was to screen patients with Autoimmune Thyroid Disorder for the seroprevalence of Celiac Disease.

MATERIAL AND METHODS:

The study was conducted at Gauhati Medical College and Hospital, Assam with due approval of the Institutional ethical committee, Gauhati Medical College and Hospital (GMCH). After obtaining written informed consent, a total of 53 consecutive patients with AITD (hypothyroid/hyperthyroid/ euthyroid) attending the Out-patient Department of the hospital were recruited.

The baseline characteristics of the patients (age, sex, history, anthropometry, goiter, and general physical examination) were noted down.

Hypothyroidism was defined as a TSH value above 10 mIU/ml with

low free T4 estimated by chemiluminometry (CLIA).

Hyperthyroidism was defined as a TSH below <0.1 mIU/ml with raised freeT4 & free T3 estimated by chemiluminometry (CLIA).

AITD was confirmed by measuring anti-thyroid peroxidase (anti-TPO) and TSH receptor antibody (TSHR -Ab) levels in patients with thyroid dysfunction by electro chemiluminescence method.

Anti TPO Ab levels above 34 IU/ml and TSHR Ab levels above 1.75 U/L were taken positive.

The study excluded patients below 15 years of age, those not willing to participate, patients with negative anti-TPO antibody status, patients with critical illnesses and patients diagnosed as thyroid malignancies.

The above patients then underwent screening for Celiac disease through estimation of immunoglobulin A tissue transglutaminase (IgA-tTG) antibody levels done using Bio-Rad enzyme linked immunosorbent assay system. Those patients with IgA tTG levels above 15 U/L were considered positive for Celiac disease.

RESULTS:

- Of a total of 53 (48 females and 5 males) patients with AITD screened, 4 (7.5%) turned out to be positive for CA.
- 3 (75%) females and 1 (25%) male were positive for CA.
- Of the 4 serologically positive patients, 3 (75%) belonged to the age group of 61 to 75 years.
- The mean Anti TPO antibody titer was higher in women as compared to men in our study.
- The mean BMI of patients with celiac disease seropositivity was found to be 25.4 ± 4.57 and that of the celiac disease seronegative group was found to be 25.23 ± 4.57 indicating similar BMI levels in both groups.
- Only 1 (25%) case seropositive for CD presented with diarrhea.
- Amongst the cases found to be celiac disease seropositive, 75% were found to have Hashimoto's Thyroiditis and 25% had Grave's Disease.
- None of our patients had been screened for CA despite being diagnosed with AITD previously.

DISCUSSION:

Among autoimmune disorders, increased prevalence of CD has been found in patients with AITD, type 1 diabetes mellitus, autoimmune liver diseases, and inflammatory bowel disease.

It has been hypothesized that the exposure to gluten in patients with

CD triggers off autoimmunity against other tissues in the body. In an elaborate study by Ventura et al., it was observed that the prevalence of autoimmune disorders in CD is related to the duration of exposure to gluten. With progressively increasing age at diagnosis, the likelihood of the patient having concomitant autoimmune disorders was higher. (4)

The association of CD with AITD is especially important as management of the former also affects that of the later. CD and AITD also share common genetic predisposition. Human leukocyte antigen DQ2 and DQ8 are over-represented in CD and Graves' disease and to some extent in Hashimoto's thyroiditis. (5) Also, both CD and AITD are reported to be associated with the gene encoding cytotoxic T lymphocyte-associated antigen 4. (6,7)

Of the 53 cases of AITD, 4 (7.5%) cases were found to be serologically positive (IgA Anti-tTg positive) for celiac disease. Similar findings were reported in following studies, *Larizza et al, 2001* *Sari et al, 2009*, *De Martino et al, 2014* & *Ventura et al, 2014*.

A higher female preponderance of 75% (3) is seen in the serologically positive cases of celiac disease. Both Celiac disease and Autoimmune thyroiditis are found to be more common among women. Similar findings were reported in studies by *Collins et al, 1994* & *Ravaglia et al, 2003*.

Amongst the 4 serologically positive Celiac disease patients, 3 (75%) belonged to the age group of 61 to 75 years. *Ravaglia et al, 2003* similarly reported an increased prevalence of celiac disease in aged patients.

The mean BMI did not differ between subjects with positive and negative serological tests for celiac disease, and both groups had a mean BMI greater than 25 kg/m², which classified them as overweight. Similar findings were reported in *Ventura et al, 2014* & *William dickey et al, 2006*.

Only 25% of the serologically positive celiac disease cases presented with diarrhea. Similar finding is seen in a study by *Ventura et al, 2014* where 20% of the serologically positive celiac disease patients presented with diarrhea.

Of the celiac disease seropositive cases, 75% were found to have Hashimoto's Thyroiditis indicating a higher risk of developing celiac disease than Grave's Disease. *Valentino et al, 1995* reported a similar finding.

Limitations:

Confirmatory tissue diagnosis could not be obtained in all CA positive patients.

Future Prospects:

Nutrient absorption (Vit B12, folate) and hemoglobin levels in AITD patients with and without CD, when compared, would be able to further establish the effects of CD on the same. With institution of Gluten Free Diet, both nutrient and thyroid medication absorptions should improve. Also, larger studies looking at differences in biopsy-confirmed CD cases to study impact of CA on AITD would be of interest.

CONCLUSION:

The seroprevalence of celiac disease in patients with autoimmune thyroid disease was 7.5% which is much greater than in the general population. This forms the basis for screening patients with AITD for the presence of CD. Most patients belonged to the age group of 61 to 75 years. A higher female preponderance was seen and majority were found to have Hashimoto's Thyroiditis. Diarrhea as a symptom was uncommon in these patients.

Further, a larger study recruiting more patients with a longer follow up is necessary for a better understanding of the disease and to arrive at a better conclusion.

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