ORIGINAL ARTICLE

# Celiac Disease: Correlation of Clinical Presentation, Endoscopic Findings with Tissue Transglutaminase IgA Level

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## ABSTRACT

**Objective:** To observe the various clinical presentations and endoscopic findings in patients with Ceiliac disease (CD) and its correlation with the tissue transglutaminase IgA level.

**Study Design:** Cross sectional, observational study.

**Place and Duration:** Department of Pathology, Isra University Hospital Hyderabad, from July 2013 to December 2013.

**Material & Methods**: Endoscopy was carried out in 96 patients after taking base line investigations and during endoscopy the naked eye examination was done to see any abnormality. The clinical presentation was noted as per proforma.

**Results:** The result shows that, commonly CD patients presented with gastrointestinal symptoms seen in 64 (66.7%) cases, whereas 26 (27.1%) presented with Non gastrointestinal symptoms of CD and 6 (6.2%) with asymptomatic (silent) disease. Out of 96 cases, 42 (43.8%) cases had decreased and flat intestinal folds in CD patients and mean ± S.D of tTGA level was 55.08±35.71 U/ml; whereas decreased and serrated folds in 36 (37.5%) of cases, nodularity of mucosa in 2 (2.1%) of cases, marbal appearance in 5 (5.2%), normal appearance of mucosa in 3 (3.1%) and edematous mucosa in 2 (2.1%) of cases.

**Conclusion:** Patients with CD commonly presents with clinical gastrointestinal symptoms with decreased and flat folds on endoscopy. However there was non significant correlation among serum tissue transglutaminase IgA level, clinical presentation and endoscopic findings.


**Keywords:** Celiac disease, Endoscopy, Serological markers, tTGA

## INTRODUCTION:

Celiac disease (CD) is an autoimmune disorder of small bowel also known as gluten-sensitive enteropathy, celiac sprue and non-tropical sprue[1-4]. It is recently defined by the European Society for Pediatric Gastroenterology, Hepatology and Nutrition as; "An immune mediated systemic disorder elicited by gluten and related prolamines in genetically susceptible individuals and characterized by a variable combination of gluten-dependent manifestations, CD specific antibodies, HLA-DQ2 or HLA-DQ8 haplotypes, and enteropathy"[5-6].

It affects approximately 1% of the worldwide population[7]. CD is very common in western world but it is not uncommon in other parts of the world like Asia, Eastern Europe and Africa[8]. While the frequency of CD among health individuals is approximately 0.5-1.0% after getting their serologic screening results[4-9]. Its estimated prevalence in children in the age range of 2.5-15 years is 1 in 80 to 300 children[10] and 1 in 96 in North Indian communities. CD is more common than is recognized in India[11].

The symptoms are diverse which may be absent at times. As a result CD shows an iceberg


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phenomenon, some with typical presentation are easily diagnosed where as others remain undetected[12].

Clinically CD presents with a diversity of symptoms and signs of malabsorption, including chronic diarrhea, abdominal distention, fatigue, weight loss, growth disturbances, and iron, folic acid, and other vitamin deficiencies[13].

Classical endoscopic features of CD include, scalloping configuration of duodenal folds, fissures, reduced or absent Kerckring's folds, the "mosaic" pattern and micro nodular pattern of the mucosa[14-15]. Thus present study was designed to observe the various clinical presentations and endoscopic findings in patients with CD and its correlation with the tissue transglutaminase IgA level.

## MATERIAL AND METHODS:

The present study was conducted at the department of pathology, Isra University Hyderabad. From a total of 768 cases. 96 patients regardless of age and gender having increased tissue transglutaminase Ig A level were included over a six month period, from July to December 2013. Informed consent was obtained from all the study participants and study was approved by the Institutional Ethical Committee.

**Inclusion Criteria:**

- Endoscopic duodenal biopsies received in the histopathology lab at Isra University and from Asian Institute of Medical Sciences (AIMS), Hyderabad.
- Patients with history of malabsorption and with clinical suspicion of CD.
- Patients with increased level of tissue transglutaminase Ig A.
- Asympotomatic (silent) cases having increased level of tissue transglutaminase Ig A level with associated conditiones like diabetes mellitus type 1, thyroiditis & Down syndrome.

**Exclusion Criteria**

- Endoscopic biopsies without any history of malabsorption and normal enzyme tissue transglutaminase Ig A level were not included.
- Endoscopic biopsies revealed any granulomatous or neoplastic pathology.

Endoscopy was done after taking base line investigations and during endoscopy the naked eye examination was done to see any abnormality. Endoscopic findings of duodenal mucosa such as; normal appearance,marble appearance, nodularity of mucosa, edematous mucosa, decreased and flat folds or decreased and serrated folds were noted. Patient's whole blood (03 ml) was collected for the measurement of tTGA level. The tTGA level was performed using the BioSystems Reagents and Instruments commer-cial kits.

The data was collected and filled in according to clinicopathological proforma. All the variables were analyzed by chi square test (X2-test) using SPSS version 21.

## RESULTS:

Mean age of the patients was 32.35 ± 12.98 years with range of 9 to 70 years. The result shows that the maximum number of cases 54 (56.3%) were found between 26-50 years of age with mean ±S.D of tTGA was 60.58 ± 35.54 U/ml, 35 (36.5%) patients were found between 9-25 years and 7 (7.3%) patients were 51-70 years of age with p value of 0.266 (Table-1)

The result shows that, commonly CD patients had presented with gastrointestinal symptoms (Diarrhea, abdominal pain, bloating & constipation) in 64 (66.7%) of cases, whereas 26 (27.1%) presented with Non gastrointestinal symptoms of CD & 6(6.2%) with asymptomatic (silent) disease (The patients with CD associated conditions such as diabetes mellitus type 1, thyroiditis and Down syndrome). The mean ± S.D of tTGA level of patients with gastrointestinal symptoms, non gastrointestinal symptoms and asymptomatic (Silent) patients was 57.67±41.38 U/ml, 80.46±125.61 U/ml and 34.68±38.40 U/ml respectively. There was no significant difference between various clinical presentations in this finding (Table 2).

More frequently, 42 (43.8%) cases had decreased and flat folds in CD patients and mean ± S.D of tTGA level was 55.08±35.71 U/ml with some extent of other endoscopic findings including; decreased and serrated folds in 36 (37.5%) cases, nodularity of mucosa in 2 (2.1%)

marbal appearance in 5(5.2%) cases, normal appearance of mucosa in 3(3.1%) & edematous in 2(2.1%) cases along with mean ± S.D of tTGA level of each endoscopic findings (Table 3).

**Table-1:** tTGA levels in Celiac Disease Patients distributed in different age groups

| AGE=32.35 ± 12.98 | | | p-value |
|---|---|---|---|
| Age (year) | Frequency (%) | tTGA (Mean ± S.D) | |
| 9-25 | 35 (36.5) | 60.58 ± 35.54 | 0.266 |
| 26-50 | 54 (56.3) | 55.33 ± 41.24 | |
| 51-70 | 7 (7.3) | 122.87 ± 245.98 | |
| Total | 96 (100 | ------- | |

**Table-2:** Serum tTGA levels in Celiac Disease patients with different clinical presentations

| Clinical Presentation | Frequency (%) | tTGA (Mean ± S.D) |
|---|---|---|
| Clinical disease | 64 (66.7) | 57.67 ± 41.38 |
| Atypical disease | 26 (27.1) | 80.46 ± 125.61 |
| Asymptomatic (silent) disease | 6 (6.2) | 34.68 ± 38.40 |
| Total | 96 (100) | ----- |

**Table-3:** Serum tTGA levels in Celiac Disease patients with different Endoscopic findings

| Endoscopic Findings | Frequency (%) | tTGA (Mean ± S.D) |
|---|---|---|
| Decrease & Flat folds | 42 (43.8) | 55.08 ± 35.71 |
| Decrease & Serrated folds | 36 (37.5) | 80.0 ± 111.56 |
| Nodularity of mucosa | 8 (8.3) | 51.62 ± 35.15 |
| Marbal appearance | 5 (5.2) | 40.50 ± 33.99 |
| Normal appearance | 3 (3.1) | 33.53 ± 26.13 |
| Endematous mucosa | 2 (2.1) | 29.3 ± 24.46 |
| Total | 96 (100) | |

## DISCUSSION:

Celiac disease is one of the major causes of morbidity and mortality particularly in children, but it can be diagnosed at any age[16]. It can lead to many short and long term complications including; anemia, kidney stones, gall stones, bone diseases and vitamin deficiencies, if it remain untreated and undiagnosed. The diagnosis and prevention of complication can be achieved by early serological markers and taking endoscopic small intestinal D2 biopsies. There are numerous symptoms and complications of CD appearing at various age groups[4]. In Pakistan few studies had been done, most of which were in children age group having the mean age of 6.7 years that ranged from 1 to 17 years with 45% male and 55% female cases, these results for gender distribution are compatible with results of our study, and few studies from India are available on adult CD and has found a higher incidence among people over age 55 years and it is unclear that prevalence increases with age whether it is due to late diagnosis or late consultation[19,20], While in this study mean age of the patients was 32.35 ± 12.98 years with range of 9 to 70 years and maximum number of cases 56.3% was found between 26-50 years of age.

In current study we detect 96 cases of CD from screening of 768 cases and the prevalence of CD was found 0.8%, which confirms the findings of various national and international studies[7-10]. It can lead to many short and long term complications including; anemia, kidney stones, gall stones, bone diseases and vitamin deficiencies, if it remain untreated and undiagnosed. The diagnosis and prevention of complication can be achieved by early serological markers and taking endoscopic small intestinal D2 biopsies. There are numerous symptoms and complications of CD appearing at various age groups[4].

In the present study patients with celiac disease commonly presented with typical clinical gastrointestinal symptoms such as diarrhea, abdominal pain, bloating and constipation in 66.7% of cases, 27.1% presented with Non gastrointestinal symptoms of CD and 5.2% with asymptomatic (silent) disease (The patients with CD associated conditions such as family history, diabetes mellitus

type 1, thyroiditis and Down syndrome). In a recent study conducted by Balamtekin N et al[21] on 220 patients of CD; found that 59% of cases with gastrointestinal symptoms, 36% had non gastrointestinal symptoms, and 7% were asymptomatic. This is in accordance with the findings of our study. In contrast to our findings few other studies have reported asymptomatic presentation of CD and showed majority of cases remained undiagnosed[22,23]. Nejad MR et al[24] in year 2009 reported that 13% of self-referred pat-ients to a general practice suffer from GI symp-toms.

Emami MH et al[4] found no relationship between typical clinical presentations of CD with anti-tTGA levels. Hence the mode of presentation did not influence the sensitivity of anti-tTGA. Barker CC et al[25] also concluded in their study that increased tTG-IgA level would be enough for diagnosis of CD in symptomatic patients.

## CONCLUSION:

Patients with CD commonly presents with gastrointestinal symptoms with decreased and flat folds on endoscopy. However there was non significant correlation among serum tissue transglutaminase IgA level, clinical presentation & endoscopic findings.

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