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Original Research Article

Celiac disease in children with failure to thrive and our experience in a tertiary care hospital of Kashmir in north India

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ABSTRACT

Background: Celiac disease (CD) is an autoimmune gastrointestinal disease caused by intolerance to gluten. Celiac disease is an important cause of failure to thrive in children. In addition to intestinal and extra intestinal clinical features, the diagnosis of CD is based up on histological findings in duodenal or jejunal biopsies, which may present in various forms.
Methods: The study was a prospective observational, cohort study, including all children between 2-18 yrs. of age presented with failure to thrive fulfilling criterias of study. The patients with increased levels of IgA anti tTGA were selected for upper gastrointestinal endoscopy and duodenal biopsy. The aim of study is to study the prevalence and clinical profile of CD in children with failure to thrive.
Results: A total of 66 cases of failure to thrive/short stature were enrolled, with prevalence of 24.2% of CD. Male: Female ratio was 1:1 in children with CD. Clinical features include weight loss (62.5%), irritability (37.5%), anemia (37.5%), diarrhea (37.5%). On biopsy cases 87.5% cases of failure to thrive had Marsh grading of grade 3 and 12.5% had Marsh grade 2.
Conclusions: Failure to thrive patients with diarrhea and anemia should be evaluated upfront for celiac disease.

Keywords: Anti-gliadin antibodies, Failure to thrive, Histopathological examination, Weight loss

INTRODUCTION

Celiac disease (CD) is an autoimmune gastrointestinal disease caused by intolerance to gluten and dietary proteins present in wheat, rye, and barley.[1] The disease usually manifests in childhood and symptoms include diarrhoea, abdominal Pain, and failure to thrive. Celiac disease is an important cause of failure to thrive in children. Extra intestinal manifestations are the consequence of the malabsorption syndrome, haematological manifestations consist of anemia because of iron and folic acid malabsorption and in the cases with ileal lesions with malabsorption of vitamin B12. Bone, endocrine and neuropsychiatric diseases may be present. Several autoimmune diseases can be associated with celiac disease including autoimmune thyroid disease, type 1 Diabetes Mellitus, multiple sclerosis, autoimmune hepatitis, Addison disease etc.[2,3]

The diagnosis of CD is based up on histological findings in duodenal or jejunal biopsies, which may present in various forms. At one end of the spectrum is a mucosa with normal architecture and an increase in intraepithelial lymphocytes and at the other end, the classic flat mucosa, villous atrophy and crypt hyperplasia.[4] Among different serological tests for screening of CD, such as anti-gliadin

antibodies (AGA) and endomysial IgA antibody (EMA), the tissue transglutaminase antibodies (tTGA) have proved to be a very specific indicator to identify patients with CD.[5] In several studies, the sensitivity and specificity of these tests compared with biopsy-proven disease were 94 to 98%.[6] The aim of the study is to look for the prevalence and clinical profile of celiac disease among children aged 2-18 yrs. referred to the tertiary care hospital with failure to thrive/short stature.

METHODS

The study was a prospective observational, cohort study conducted from October 2022 to march 2024 conducted in the Department of paediatrics at SKIMS medical college bemina, a tertiary care hospital catering to Pediatric population of whole Kashmir valley, Ladakh and some parts of Jammu in India. All children fulfilling inclusion criteria with failure to thrive were enrolled for the study after proper consent from guardians and ethical approval from ethical committee of the institute.

Failure to thrive (children <5 yrs. of age): Failure to thrive was defined as the weight below the 3rd centile, failure to gain weight over a period of time or a change in rate of growth that has crossed two major centiles over a period of time as per WHO charts.

Short stature (children > 5 yrs of age): Height below 3rd percentile or less than 2 standard deviations below the median height for that age & sex.

Inclusion criteria

All children with failure to thrive between 2-18 yrs. of age were included.

Exclusion criteria

Patients below 2 yrs of age, patients where guardians did not give consent, patients already on gluten free diet, patients with obvious/known reason for failure to thrive/short stature like nutritional deficiencies, chronic illness (CHD, cystic fibrosis etc), and patients with immunodeficiency were excluded.

Baseline investigations were done in all patients and other investigations were advised according to individual requirements. Immunoglobulin A level, and immunoglobulin A anti tissue transglutaminase antibody by ELISA were done in all patients. The patients with increased levels of IgA anti tTG were selected for upper gastrointestinal endoscopy and duodenal biopsy, for which a separate consent was taken from parent/guardian. Biopsy was sent for histopathological examination and was graded as per modified Marsh classification. Marsh grade 2 and above was considered diagnostic of celiac disease.

RESULTS

A total of 66 cases of failure to thrive/short stature were enrolled during this time period. Among them 16 patients were positive for celiac disease with prevalence of 24.2%. Among the studied cases 44 were males and 22 were female with male female ratio of 2:1. Male: Female ratio was found by 1:1 among positive cases as depicted in Table 1.

Table 1: Gender distribution of cases diagnosed CD with failure to thrive/short stature.

Gender	N	Percentage
Male	8	50
Females	8	50

Clinical features include weight loss (62.5%), irritability (37.5%), anemia (37.5%), diarrhea (37.5%), abd. distension (25%) , abdominal pain and vomiting (12.5% each) as major symptoms as depicted in Table 2.

Table 2: Clinical profile of patients of CD with failure to thrive/short stature.

Clinical profile	N	Percentage
Weight loss	10	62.5
Diarrhea	6	37.5
Irritability	6	37.5
Anemia	6	37.5
Abd. distension	4	25
Abd. pain	2	12.5
Vommiting	2	12.5

Among celiac serology positive cases 87.5% cases of failure to thrive/short stature had Marsh grading of grade 3 and 12.5% had Marsh grade 2 on histopathological examination as depicted in Table 3.

Table 3: Marsh grading of celiac positive cases among failure to thrive/short stature.

Grading	N	Percentage
2	2	12.5
3a	4	25
3b	4	25
3c	6	37.5

DISCUSSION

The study was conducted over a period of 18 months in the Department of paediatrics at SKIMS medical college bemina, a tertiary care hospital. The patients of failure to thrive/short stature were enrolled in this period for the study. In our study the prevalence of celiac disease in short stature children was found to be 24.8%. The findings were similar to findings of Rana et al who showed a 24% prevelance of Celiac disease in these patients.[7]

Hence screening the patients with failure to thrive or short stature and introduction of gluten free diet among those found positive for celiac disease at the earliest will help in preventing many serious complications like local malignances, other autoimmune disoders,strictures and ulceration etc.

No gender predilection was found for celiac disease among these children. No sex predominance has been found in earlier studies conducted by Ransford et al.[8]

Patients of failure to thrive presented with diarrhea (37.5%), irritability (37.5%), and anemia (37.5%) as major clinical symptoms. A study done by Poddar et al observed iritability (63%), anemia (45%) and diarrhea (84%) as major clinical symptoms in these patients.[9] Varaition of results in our study may be because of small number of failure to thrive/short stature cases were studied.

Two celiac positive case of failure to thrive/short stature showed Marsh grade 2 and rest 14 showed Marsh grade 3 on duodenal biopsy in our study showing concordance with study done by Ikram et al on celiac disease in children presenting with failure to thrive where 24 serology positive celiac cases had marsh grade 3 on HPE.[10]

This study has some limitations. Study period was short and histopathological reports were dependent on expertise of the pathologist.

CONCLUSION

Failure to thrive/short stature patients with diarrhea and anemia should be evaluated for celiac disease as it is one of its important causes and should be investigated upfront after first line investigations.

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