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Research Article

Clinical Features and Outcome of Celiac Disease in Children

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ABSTRACT

To study various clinical manifestations and outcome of celiac disease in children presenting at the pediatric Gastroenterology department of KEM Hospital, Pune. To assess the effect of gluten free diet in children previously diagnosed as celiac within past 6 years. Celiac Disease (CD) is a chronic, immunologically determined form of enteropathy affecting the small intestine in genetically predisposed children and adults. It is precipitated by the ingestion of gluten-containing foods such as wheat rye,barley etc

Keywords: Celiac disease; Children; Bacteria

INTRODUCTION

The prevalence of celiac disease is globally 1%, but large variations among countries have been shown.The prevalence of celiac disease in this north Indian community is 1 in 96.Celiac disease is more common than is recognized in India. Although awareness about celiac disease in India is increasing, the prevalence of CD in the Indian subcontinent is still not clear but is likely to be progressively increasing. In one of the past study, the selective serological screening of 198 symptomatic schoolchildren out of 4347 subjects in Punjab, North India, yielded a CD prevalence of at least 1 in 310 in the overall sample. In a recent report from Ludhiana, Soodet al. reported prevalence of celiac disease to be 1 in 310 after a questionnaire based survey of 4347 school children (aged 3-17 years).

The prevalence of the disease in South India and Western India is largely unknown. This study was taken up to analyze clinical manifestations and outcome of children with celiac disease presenting at KEM Hospital Pune.

MATERIALS AND METHODS

Subjects

All children diagnosed as CD and satisfying inclusion criteria .

PART 1- Presented to KEM Hospital, Pune during the study period.

PART 2- Diagnosed as CD since 2010 and who were on our Celiac registry & were on regular follow up .

Study period

Prospective -Newly diagnosed patients of celiac from 1st march 2015 to 28thfeb 2016

Retrospective-Previously confirmed patients of celiac from 2010 onward

Study design

Observational descriptive study of the following

Inclusion criteria: Children attending Gastroenterology Department of K.E.M Pune with clinical features suspected* of celiac disease and biopsy confirmed.Consented or 1to 15 yrs

*CD was suspected in the following - Chronic or intermittent diarrhea,failure to thrive or faltering growth (in children),persistent or unexplained gastrointestinal symptoms including nausea and vomiting,recurrent abdominal pain,cramping or distension,sudden or unexpected weight loss,unexplained iron-deficiency anemia,type 1 diabetes mellitus

Exclusion criteria: Age<1 or>15 yrs, No consent, Not confirmed as celiac

Retrospective study: All cases of confirmed celiac disease and who were regularly attending OPD and diagnosed after 2010 were studied.

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Methodology of study

An informed consent was taken from parents. Detailed history, Clinical Examination, Anthropometry, Investigations, Immunology were done for each patient. Flowchart proposed by WHO and world gastroenterology association was used as shown in Figure 1.

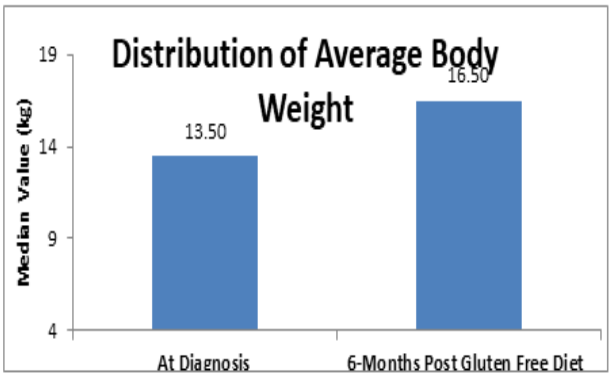

Figure 1: Flowchart used for the diagnosis of celiac disease

Biopsy technique: Endoscopic visualization of the intestinal mucosa along with 4 biopsy specimen taken,three from the second part of the duodenum distal to the papilla,and one from duodenal bulb.

Histology: Biopsy samples examined by expert histopathologist in NABL accredited KEM lab.

Diagnostic criteria used: Marsh criteria

Treatment

Treated symptomatically If biopsy positive for celiac disease GFD was started by dietician.

Specialized Dietetic therapy: A list of gluten free foods prepared in native language.Compliance was assessed on follow up.

Follow up

Patients in prospective study were followed up during 1st ,3rd and 6th month for weight assessment and improvement following GFD.Compliance assessed during each follow up using a validated questionnaire(7)

Retrospectively hospital records reviewed for complete follow-up data, no loss to follow up.Weight, height improvement and compliance was assessed during a single one time follow up.

Statistical methods

The entire data was statistically analyzed using Statistical Package for Social Sciences (SPSS version 12,Inc.Chicago,USA) for MS Windows.

RESULTS

Both these sets of patients are analyzed separately and together.The following results were observed.

Demographics

Values are n (% of cases). P-value by Chi-Square test. P-value <0.05 is considered to be statistically significant. NS: Statistically Non-Significant.

The age distribution of cases studied did not differ significantly between group of cases studied retrospectively and prospectively (P-value>0.05) as shown in Figure 2.

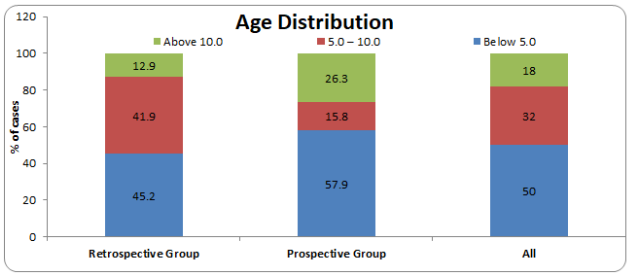

Figure 2: Age distribution of the cases studied with Celiac Disease (n=50).

The distribution of all clinical features did not differ significantly between Retrospective and Prospective group of cases studied (P-value>0.05 for all) as shown in Figure 3.

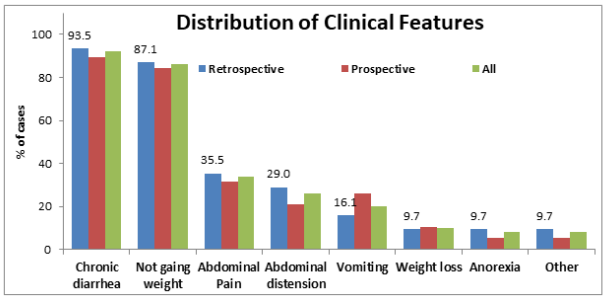

Figure 3: Clinical features of the cases studied with Celiac Disease (n=50)

Values are n (% of case), P-value by Wilcoxon's Signed Ranks Test (Non-parametric test for pair-wise comparisons). P-value<0.05 is considered to be statistically significant. ***P-value<0.001.

60% of study population had weight for age between 3rd to 50th centile. There is significant change in the weight for age centile at diagnosis and at 6-months post GFD (P-value<0.001). The weight for age centile have significantly improved at 6-months post GFD compared to centile at diagnosis (P-value<0.001).

BMI was calculated in study population aged more than 5 years which gave us 25 patients. So n= 25 was used. There is significant change in the BMI centile at diagnosis and at post GFD follow-up (P-value<0.001). The BMI centile have significantly improved at post GFD follow-up compared to centiles at diagnosis (P-value<0.001).

DISCUSSION

Prospectively studied and retrospectively studied groups of patients were analyzed separately and together. Among 50

biopsy-proven CD children and adolescents, various age-related characteristics were detected.

Demogrsphic data

Age: In this study majority patients belonged to age group <5yrs (50%), followed by age group 5-10 yrs (32%). The mean ± standard deviation (SD) of age of the entire group was 5.9 ± 3.7 years as in a study by Poddar et al.(6)where the mean age at diagnosis 6.3 to 8.6.Lower age at diagnosis suggest improved awareness for celiac disease among pediatricians and improved availability of serological tests.(8)

Gender: Amongst the study population, 56 were males and 44 females, which was similar to study in west.In another study by Singh et al. there was female predominance.

Clinical manifestations: Regarding the clinical manifestations, chronic diarrhea was the most common clinic manifestation(92%) overall in all age groups which was similar to study done by and where chronic diarrhea was observed 88% and 86% respectively.Monique et al.(11)in his study showed the most common presenting symptom in younger children (those <5 years) was diarrhea (59%), followed by irritability (34%) and weight loss (38%).In older children (≥ 5 years),the most common presenting feature was abdominal pain (55%) followed by diarrhea (26%).In our study not gaining weight was noted in 86%.In our study abdominal pain was seen in 17% and 13% of study population had abdominal distension which was mainly seen in school aged and adolescence.In our study constipation was seen in 2% of children .This observation was similar to that reported. In our study 10% of children had vomiting while vomiting was seen in 24 % of children in study.

In our study failure to thrive (Weight for age≤ 3rd centile) was 38% which was similar to study by where it was 27% in which it was 50% as against in which failure to thrive was seen in 91% of study population.Similarly stunting(Height for age ≤3rd centile) was seen 14% of patients and wasting(Weight for height ≤3rd centile) calculated in age groups less than 5 years was seen in 44% of patients. 48% of study population(calculated in age more than 5 years) had BMI between 5th -10th centile.

Gluten free diet and follow up: Weight for height BMI(calculated for all >5yrs) improved from 56% patients below 10th centile to 100% patients above 10th centile (P value <0.001), following GFD during follow up (which ranged from 1year to 5 year post GFD during the study period depending upon when GFD was started from year 2010 onwards).This sort of improvement was similar to study [15].

CONCLUSION

In our study 92% patients had improvement in symptoms and improvement in overall health post GFD. Remaining 8% were those who were non compliant with GFD and still had persistence of symptoms and similar growth parameters during follow up.

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