

Endoscopic Findings in Children with Short Stature: A Single Center Experience

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ABSTRACT

Objective: This study was conducted to evaluate the diverse findings of endoscopy in patients that might assist in their diagnosis. Celiac disease was of special concern as it is a well known cause of short stature which can be its only presentation.

Methods: A retrospective review of thirty two (32) records of children referred to the pediatric gastrointestinal clinic in Prince Ali Bin Al-Hussein Hospital in Al-Karak with short stature was done. It was conducted over six month's period. All patients were subjected to full history, physical examination and the following investigations: complete blood count, kidney function test, liver function test, thyroid function test, tissue transglutaminase antibodies and abdominal ultrasound. Upper gastrointestinal endoscopy was done to all patients whom we were not able to reach for a diagnosis, mainly to rule out celiac disease.

Results: There were 32 children included in this study, 14 female and 18 male with a mean age of 7.75 years, ranges from 2.5-13 years. Normal gross endoscopy was noticed in the majority of patients (25 patients, 78%), most of them had normal histopathological reports (19 patients, 79%). Nevertheless, four patients out of 25 (16%) were diagnosed to have celiac disease based on the histopathology report. Abnormal endoscopy was noticed in only six patients out of 32 patients, showing D2 effacement and scalloped folds. Two of them were diagnosed to have celiac in histopathological reports (33%). One patient only (9%) has the combination of short stature and diarrhea. Five patients were having positive tissue transglutaminase antibodies (15%), but only two of them were proved have celiac disease (40%). Total number of patients with celiac disease in this study was six (18.75%), regardless of their gross endoscopic appearance.

Conclusion

Short stature is a common health problem and a well-known feature of celiac disease which should be excluded to prevent serious and long term complications. Investigations should be performed to rule out organic causes including intestinal biopsy which is the gold standard for diagnosis and should be performed in every child with no apparent endocrine causes.

Key words: Short stature, celiac disease, endoscopy, histopathology.

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Introduction

Short stature is a common health problem encountered by pediatrician, its causes range

from genetic or constitutional short stature to pathological causes like gastrointestinal diseases.

Short stature is defined as a standing height that

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is more than two standard deviations below the mean for age and sex in a genetically relevant population.⁽¹⁾ It is a pathological and psychological issue that leads family to seek medical help. It is documented that around 20-30% of patients with celiac disease could present with short stature only.^(1,2)

Celiac is an autoimmune disorder of the small intestine that occurs in genetically predisposed people of all ages from middle infancy onward. It is caused by intolerance to gluten and dietary proteins present in wheat, rye and barley.^(3,4)

Performing endoscopy to rule out celiac disease in patients with short stature is important. In our study, though we focus on this issue, we emphasize other endoscopic findings in short stature that might or might not affect growth and stature.

Methods

A retrospective review of 32 records of children referred to the pediatric gastrointestinal clinic in Prince Ali Hospital in Al-Karak with short stature was done. It was conducted over a six months period between August 2011 and February 2012. All patients were subjected to full history and physical examination.

The following investigations were done to all patients to exclude organic causes: complete blood count, kidney function test, liver function test, thyroid function test, tissue transglutaminase antibodies and abdominal ultrasound.

Upper gastrointestinal endoscopy was done to all patients whom we were not able to reach for a diagnosis, mainly to rule out celiac disease, and before being labeled to have genetic or constitutional short stature.

Results

There were 32 children included in this study, (14 females and 18 males) with a mean age of 7.75 years, ranges from 2.5-13 years.

Normal gross endoscopy was noticed in the majority of patients (25 patients, 78%), most of them had normal histopathological reports (19 patients, 79%).

Nevertheless, four patients out of 25 (16%) were diagnosed to have celiac disease by histopathology report. One of those 25 patients

was diagnosed to have giardiasis (4%) and another with *H. pylori* gastritis (4%) while the rest were normal (19 patients, 79%).

Abnormal endoscopy was noticed in six patients only out of 32 patients, showing D2 effacement and scalloped folds. Two of them were diagnosed to have celiac disease in histopathological reports (33%), one was diagnosed to have *H. pylori* gastritis and another with lymphonodular hyperplasia, and the other two were normal (Table I). One patient showed antral nodularity and was diagnosed to have *H. pylori* gastritis (3%).

Table I: Number of celiac disease patients in regard to endoscopic findings.

Endoscopic finding	No. of patients	Celiac
Scalloping of folds	6	2 (33%)
Normal	25	4 (16%)
Antral nodularity	1	0

Other relevant associated symptoms, that are related to celiac were followed in this study like diarrhea which was noticed in three of the patients, in addition to their short stature, but it was not the chief complaint to parents; one of them only showed to be celiac (9%).

Tissue transglutaminase antibodies are important serological diagnostic tool for celiac which were followed as well. Five of the patients were having positive tissue transglutaminase antibodies (15%), two of them were proved to be celiac by histopathology report (40%).

Total number of patients with celiac disease in this study were six (18.75%), regardless their gross endoscopic appearance (Table II).

Table II: Histopathological findings in patients with short stature

Histopathology	Normal gross endoscopy (25 patients)	Abnormal gross endoscopy (7)
Normal	19	2
Celiac	4	2
<i>H. pylori</i>	1	2
Lymphonodular hyperplasia	0	1
Giardiasis	1	0

None of the mentioned causes except for celiac explained short stature so were considered as coincidental findings.

Discussion

Celiac disease is a chronic gastrointestinal disorder in which ingestion of gluten leads to damage of the small intestinal mucosa by an autoimmune mechanism in genetically susceptible individuals.^(3,4) Its prevalence has been ranged from 1-130 to 1-681 in general population according to the population being studied.^(3,5,6,7) It is believed to be the most common chronic intestinal inflammatory disease, being more prevalent among Western Europeans and least among people of purely African-Caribbean, Chinese or Japanese background.^(5,7)

Celiac has wide spectrum of gastrointestinal and extraintestinal manifestation including: chronic diarrhea, impaired growth, recurrent abdominal pain, anemia, low bone density and psychiatric and behavioral disturbances.^(5,7,8)

Most of the published studies were focusing on the prevalence of Celiac disease among children with short stature. Our study, though acting the same, it emphasizes other endoscopic findings in short stature as well, regardless whether they would or would not affect their growth.

As expected, the most common finding in our study was normal gross endoscopy. Not surprisingly, 16% showed Celiac disease in histopathology reports, as its well established that normal endoscopy does not rule out Celiac and biopsies should be obtained.⁽³⁾ Here, the incidence of Celiac disease was matching others around the world.^(1,2,9,10,11,12) Noticeably, all had the same ethnic background and come from developing areas. Other reports that showed higher incidence⁽¹³⁾ or lower incidence⁽⁵⁾ were from different backgrounds confirming the diversity of Celiac disease.

Celiac disease has different serological markers that help in diagnosis. Most importantly is tissue transglutaminase that was documented to be 80-100% sensitive to detect Celiac disease.^(3,14)

This was not the case in our study as only 15% of our patients were having positive tissue transglutaminase which was much less than others,^(1,14) with only two of them being diagnosed as Celiac disease. This can be explained by the fact that it was done to patients with short stature only and not those with suspicion of Celiac regardless the presentation.

The endoscopic findings and their correlation to Celiac disease were the main concern in many

studies which includes decrease in duodenal folds scalloping, mucosal fissure and mosaic appearance.⁽⁷⁾ Some emphasizes that they can't be the only indicator as they are not specific nor sensitive⁽⁷⁾ while others were appreciating these findings as highly sensitive and specific.^(3,15,16,17)

Its worth to mention, though not included in our study, that Celiac disease is known to have patchy pattern in small intestine involvement in both adult and children. All recent data determines the importance of obtaining biopsies not only from the D2 but also from the duodenal bulb to enhance the yield of the diagnosis.⁽⁴⁾

Lastly, some limitations were encountered in this study like the relatively small size of the sample which might encourage larger prospective studies in the future.

Conclusion

Short stature is a common health problem and a well-known feature of Celiac disease which should be excluded to prevent serious and long term complications. Investigations should be performed to rule out organic causes including intestinal biopsy which is the gold standard for diagnosis and should be performed in every child with no apparent endocrine causes.

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