

Giardiasis Presenting as Isolated Short Stature: A Case Report

Shalini Agarwal¹, Mansi Faujdar²

Received on: 27 May 2023; Accepted on: 21 June 2023; Published on: 07 July 2023

ABSTRACT

A 6-year-old girl was brought with complaints of poor weight gain and poor appetite for the past 2 years. Her weight and height lay below the 5th percentile for age as per the World Health Organization (WHO) growth chart. The mid-parental height lay between the 75th and 95th percentile, and thus, the child was evaluated for pathological short stature. She was found to have microcytic hypochromic anemia and positive celiac serology [anti-tissue transglutaminase (tTG) antibody >70 AU/mL]. Celiac disease was suspected, and an endoscopic duodenal biopsy was done, which showed a large number of *Giardia* organisms with lymphoid nodules formation. Antimicrobials were started for giardiasis, and no dietary restrictions were done. On the 3-month follow-up, weight and height increased, appetite improved, and celiac serology was negative (anti-tTG antibody <3 AU/mL).

Keywords: Celiac disease, Giardiasis, Short stature.

Annals of Pediatric Gastroenterology and Hepatology ISPGHAN (2023); 10.5005/jp-journals-11009-0130

BACKGROUND

Giardia lamblia (also known as *Giardia intestinalis/duodenalis*) is one of the most common intestinal parasitic infections in both children and adults worldwide. Giardiasis is characterized by malabsorptive diarrhea, abdominal bloating/cramping, and weight loss¹ and resolves with treatment. Infection can lead to intestinal inflammation,² impaired systemic cellular immunity,³ and lingering symptoms, even for several years.⁴ Child growth, rather than incident diarrhea, might be a more relevant outcome for estimating the burden of endemic pediatric giardiasis.⁵

We report a case of giardiasis which presented as short stature.

CASE DESCRIPTION

A 6-year-old girl was brought to the Outpatient Department with complaints of poor growth and anorexia for the past 2 years. There were no overt gastrointestinal complaints. On examination, her weight and height were below the 5th percentile for age as per the World Health Organization (WHO) growth chart. As per her parent's height, her target expected height was between the 75th and 97th centile, and thus, the child was evaluated for pathological short stature.

She was found to have a hemoglobin of 8.9 gm/dL, and peripheral blood film showed microcytic anemia. The thyroid functions, urine and stool examination, and bone age estimation were unremarkable. Her celiac serology tissue transglutaminase (tTG) immunoglobulin (Ig) A antibody came out positive >70 AU/mL (normal value of <8 AU/mL). Serum IgA was normal for age. To confirm celiac disease, an endoscopic duodenal biopsy was performed.

The biopsy revealed fragments of duodenal mucosa showing increased infiltration of lymphoplasmacytic cells in the lamina propria with the formation of lymphoid nodules with mild blunting and rounding of villi suggestive of partial villous atrophy. A large number of *Giardia* organisms were seen along the mucosal surface in the form of teardrop-shaped structures with flagella.

A diagnosis of giardiasis was thus made. The patient was given 7 days of metronidazole and 3 days of nitazoxanide and advised an

¹Department of Pediatrics & Neonatology, Santokba Durlabhji Memorial Hospital, Jaipur, Rajasthan, India

²Department of Pathology & Transfusion, Santokba Durlabhji Memorial Hospital, Jaipur, Rajasthan, India

Corresponding Author: Shalini Agarwal, Department of Pediatrics & Neonatology, Santokba Durlabhji Memorial Hospital, Jaipur, Rajasthan, India, Phone: +91 7690075241, e-mail: shalinixagarwal@gmail.com

How to cite this article: Agarwal S, Faujdar M. Giardiasis Presenting as Isolated Short Stature: A Case Report. *Ann Pediatr Gastroenterol Hepatol* 2023;5(2):25–26.

Source of support: Nil

Conflict of interest: None

unrestricted gluten diet, considering no classical histopathological features of celiac disease.

On 1 month follow-up, there was a significant improvement in anorexia. On 3 month follow-up, weight increased from 12.6 to 13.5 kg, and height increased from 106 to 108 cm. The appetite improved significantly.

Interestingly, the repeat celiac serology from the same lab was negative on an unrestricted diet (anti-tTG antibody <3 AU/mL), suggesting a possible false positive celiac serology reported in giardiasis.

Here, duodenal biopsy helped us to document the absence of classical histological changes of celiac disease, and it also confirmed giardiasis.

DISCUSSION

The prevalence of short stature among Indian children is 38.8 and 36.9% in boys and girls, respectively.⁶ The causes of growth retardation in order of frequency are protein-energy malnutrition, chronic systemic disease, chronic anemia, skeletal disorders, short constitutional stature, endocrine disorders, intrauterine growth retardation, and chromosomal disorders.

Prevalence of *Giardia* infection in India in patients with diarrhea range from 0.4 to 70%, and asymptomatic cyst passage is around

50%.⁷ Children between 6 months and 5 years of age are the most susceptible.⁸ More specifically, significant impairments in weight-for-age and weight-for-height scores have been associated with Giardiasis infection during the first two years of life.⁸

Our patient had tTG IgA antibody positive. However, the biopsy did not confirm it to be celiac disease; rather, it showed a large number of giardia organisms with infiltration of lymphoplasmacytic cells in lamina propria. Thus, diagnosis of *Giardia* was possible on biopsy, and it was responsible for false positive tTg in our case. Other causes of false positive tTg include autoimmune diseases like type 1 diabetes, autoimmune liver disease, arthritis, etc. Conventionally diagnosis of giardiasis is based on collecting three stool samples over several days for better yield. We had done a stool examination once, which was normal.

Our case report highlights the important role of a biopsy in the confirmation of celiac disease and also guides us that diagnosis of celiac should not rely solely on the tTG IgA antibody.

CONCLUSION

Giardiasis can present as isolated short stature. Giardiasis is also a cause of false-positive celiac serology. This case highlights the important role of a duodenal biopsy in confirming or ruling out celiac disease.

REFERENCES

1. Painter JE, Gargano JW, Collier SA, et al. Giardiasis surveillance – United States, 2011–2012. *MMWR Suppl* 2015;64(3):15–25.
2. Hanevik K, Hausken T, Morken MH, et al. Persisting symptoms and duodenal inflammation related to *Giardia duodenalis* infection. *J Infect* 2007;55(6):524–530. DOI: 10.1016/j.jinf.2007.09.004
3. Hanevik K, Kristoffersen E, Svard S, et al. Human cellular immune response against *Giardia lamblia* 5 years after acute giardiasis. *J Infect Dis* 2011;204(11):1779–1786. DOI: 10.1093/infdis/jir639
4. Hanevik K, Wensaas KA, Rortveit G, et al. Irritable bowel syndrome and chronic fatigue 6 years after giardia infection: a controlled prospective cohort study. *Clin Infect Dis* 2014;59(10):1394–1400. DOI: 10.1093/cid/ciu629
5. Bartelt LA, Platts-Mills JA. *Giardia*: a pathogen or commensal for children in high-prevalence settings? *Curr Opin Infect Dis* 2016;29(5):502–507. DOI: 10.1097/QCO.0000000000000293
6. Almutairi R. Short stature in children. *Int J Med Dev Ctries* 2018;2(1):9–15. DOI: 10.24911/IJMDC.2.1.3
7. Laishram S, Kang G, Ajampur SS. Giardiasis: a review on assemblage distribution and epidemiology in India. *Indian J Gastroenterol* 2012;31(1):3–12. DOI: 10.1007/s12664-012-0161-9
8. Lengerich EJ, Addiss DG, Juranek DD. Severe giardiasis in the United States. *Clin Infect Dis* 1994;18(5):760–763. DOI: 10.1093/clinids/18.5.760