Case Report 4

Celiac Disease in an Adoptive Child with Recurrent Giardia Infection

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Abstract

Celiac disease (CD) is an inflammatory disease of the small intestine. A complete management and differential diagnosis of such disease includes food intolerances, intestinal infections, and irritable bowel syndrome.We describe an 8-years-old adoptive girl from Congo with negative medical history. Patient followed for recurrent abdominal pain and diarrhea associated to Giardia infection, unresponsive to antiparasitic therapy. Persistence of symptoms despite antiparasitic therapy, prompted us to perform: 1- Blood screening of Celiac disease, which was negative; 2- Genetic evaluation of celiac disease, which revealed the presence of HLA-DQ2 heterodimer; and 3- Esophagogastroduodenoscopy, which showed duodenal villous atrophy and crypt hyperplasia, associated with Helicobacter Pylori infection. The child was treated in accordance with international recommendations using a Gluten-free diet and specific antibiotics, which lead to the resolution of the symptoms. Our patient's clinical history seems peculiar, considering that, recurrent Giardiasis may mimic the symptoms of Celiac disease and may simulate clinical and histological picture of active Celiac disease. Early diagnosis may help prevent the complications of untreated celiac disease.

Key Words: Recurrent Giardiasis, Celiac Disease, Intestinal Parasitosis

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Background

Giardia lamblia is one of the most common intestinal parasites in the world, and it contributes to diarrhea and nutritional deficiencies in children in developed regions. Human infection may range from asymptomatic shedding of Giardia lamblia cysts to symptomatic giardiasis, which can present nausea, abdominal pain, acute or chronic diarrhea, malabsorption, and failure to thrive. [1, 2]

Celiac disease (CD) is an inflammatory disease of the small intestine with a prevalence of roughly 0.5%-1%. Its symptoms arise in response to gluten consumption by genetically predisposed persons (HLA-DQ2/8). Celiac disease can occur at any age with gastrointestinal or extra-intestinal manifestations, but most cases are oligosymptomatic. A comprehensive differential diagnosis includes food intolerances, intestinal infections, and irritable bowel syndrome, among other conditions. [3] CD is increasing in frequency, with significant geographical differences. Although few cases have been observed to date in the Oriental and Sub-Saharan Africa, where there is a significant prevalence of HLA DQ2 and wheat consumption is of the same order as that in Western Europe. CD may therefore become more common in the future in these countries. [4]

Even if it is known that environmental agents can precipitate mucosal damage of latent CD, it is also true that giardiasis can mimic or in some case be mistaken for the clinical and histological presentation of active CD. [5] Several articles have shown the clinical value of antigliadin (AGA) and transglutaminase antibodies (anti-tTG) to reveal occult disease in patients with giardiasis. [6] Biopsy is not the first choice for mass screening in order to discriminate CD from giardiasis. Serologic tests, such as AGA, antiendomysium and anti-tTG antibodies are therefore useful tools. [7] The following presentation describes an atypical case of recurrent giardiasis in an adopted child of African origin with latent celiac disease.

Case presentation (Table 1).

We present an 8-years-old adoptive girl from Congo by an Italian Family in October 2009 when she was 4-y-old. Her medical history was negative for any particular disease except for few episodes of upper respiratory tract infections during the first years of life.

Two weeks after her arrival in Italy the patient presented with persistent crying for recurrent colicky abdominal pain and diarrhea. At first physical examination at admission we observed: abdomen soft, non-tender, normal bowel sounds, absence of visceromegaly; normal breath sounds on auscultation; normal cardiac examination; black ethnic skin with presence of molluscs on the back and the buttocks; good appetite with weight and height respectively of 15 Kg (15° centile) and 95 cm (5° centile).

Table 1: Clinical features, anthropometry, investigations and therapies.

	Clinical features	Anthropometry		Investigations	Therapy
		Weight (Kg)	Length (cm)		
Admission (October 2009)	1- Recurrent abdominal pain; 2- Diarrhea; 3- Failure to thrive; 4- Molluscs on	15	95	1- Blood examination resulted normal except slight anemia (Hb 10.7 g/dl). HIV and Toxoplasma serology were negative; Immune for EBV and CMV; 2- Parasitological stool test	1- Metronidazole 2- Folic acid 3- Probiotics 4- Molluscs removed

	the back and the buttocks			resulted positive for Giardia; Occult blood test in faeces, fecal calprotectin and elastase test were negative 3- Abdominal ultrasound was normal.	
4-5 months to admission (February-March 2010)	Abdominal pain and diarrhea	16	96	1- Parasitological stool test resulted positive for Giardia; 2- Screening for celiac disease resulted negative; 3- Genetic test for celiac disease revealed the presence of heterodimer for DQ2 and negative for DQ8.	1- Metronidazole 2- Probiotics
12 months to admission (October-November 2010)	Abdominal pain and diarrhea	17.7	110	1- Parasitological stool test resulted positive for Giardia	1- Gluten free diet 2- Albendazole and Metronidazole
17 months to admission (April 2011)	Improvement of gastro-intestinal symptoms	23	119	1- Blood examination were normal 2- Parasitological stool test resulted negative for Giardia 3- Clinical examination resulted normal	1- Gluten free diet
2 years to admission (November 2011)	Slight abdominal pain for reintroduction of gluten in the diet 3months before	24	119	1- EGDS 2- Positive HP research 3- Clinical examination resulted normal	1- Gluten free diet 2- Amoxicillin and Clarithromycin
3 years to admission (March 2013)	No symptoms	35	140	1- Clinical examination	1- Gluten free diet

Management and Outcome (Table 1).

Considering the recent adoption, with a negative medical history for parasitic disease or food Intolerance we perform blood tests initially showing only mild anemia with a Hemoglobin (Hb) of 10.7 g/dl (normal value 11.5–15.5 g/dl).

Serum ferritin and iron, immunological markers (humoral and cellular immunity), electrolytes, urea, creatinine, liver function tests, uric acid and RAST were within normal limits. HIV and Toxoplasma serology were negative; she was immune for Epstein-Barr virus (EBV) (VCA and EBNA) and cytomegalovirus (CMV).

Abdominal ultrasound examination was normal. Occult blood was negative, fecal calprotectin and elastase were negative. Stools were microbiologically negative on three consecutive samples.

Due to the presence of a mild anemia, the recommended therapy comprised of folic acid

in association with Mebendazole for three days since anti-parasitic prophylaxis were not performed in Congo and results of parasitological stool tests were not ready. Subsequently, molluscs were removed.

Seven days later, we confirmed the diagnosis of Giardiasis; then she started therapy with Metronidazole (4 ml every 8 hours for 7 days) and probiotics (Genefilus f19 for 3 weeks). At the following control the parasitological stools examination resulted negative.

Two weeks later, her mother presented persistent diarrhea and weight loss (6 kg in 2weeks: from 42 to 36 kg) with positivity to Giardia at parasitological stool tests. She was treated with Metronidazole and probiotics with clinical improvement.

Four months later (February 2010), for recurrence of the same symptoms (second episode) and a new positivity of Giardia in both mother and daughter, a second cycle of Metronidazole and probiotics was performed with significant improvement of symptoms. During such episodes we also performed screening for celiac disease (anti-tTG, AGA IgG/IgA and Endomysium IgA antibodies), which were all negative. Genetic test for celiac disease revealed the presence of heterodimer for DQ2 though negative for DQ8 and the presence of DQA1*05-DQB1*02.

On October 2010, for the third time in one year, both presented a new episode of Giardiasis with diarrhea and abdominal pain not associated with any other symptom. So after gastroenterological evaluation the child was treated with Albendazole (200 mg, 2 tablets twice a day for three days, to be repeated after 15-30 days), and the mother with Metronidazole (250 mg, 3 tablets three times a day for 10 days and after 1 week 3 tablets three times a day for three days).

During this episode, due to the recurrence of gastrointestinal symptoms, failure to thrive (weigh 17,7 kg – 30° centile, height 110 cm – 25° centile), genetic predisposition to celiac disease, and above all several cycles of treatment with Albendazole. Metronidazole and probiotics performed without any clinical improvement, after gastroenterological evaluation the child was put on a gluten-free diet (GFD) with a successive clinical improvement of length-weight parameters in the following five months (weigh 23 Kg – 95° centile-, height 119 cm – 97° centile). Lab tests, which included screening for celiac disease and blood hemoglobin level (Hb 12.9 g/dl, normal value 11.5 – 15.5 g/dl), were normal.

Due to the clinical improvement, gluten was reintroduced in the diet and after 3 months esophagogastroduodenoscopy (EGD) was performed showing duodenal villous atrophy with crypt hyperplasia. The gastric mucosa was characterized by a non-atrophic chronic inflammation at level of the antrum with the presence of Helicobacter Pylori “HP” (Warthin-Starry stain procedure), treated with Amoxicillin and Claritromycin resulting negative upon performing a Breath Test C13. Such morphological findings were compatible with celiac disease (staging 3b of Marsh scale) associated with an HP infection.

The patient is actually under close observation for CD. At the last control (February 2013) auxological evaluations evidenced a weight of 35 Kg (75° centile) and height of 140 cm (90° centile) and her mother gained weight (44 kg).

Discussion and Conclusion

Our patient’s history seems peculiar, considering the confounding factors that delayed the diagnosis of CD: 1- The child being of “Congolese” origin, a Country where infectious diseases are more common than autoimmune inflammatory diseases; 2-The positivity for Giardia in both daughter and mother; 3-The negative serology for CD.

Giardiasis may mimic the clinical and histological patterns of active CD (5) and in some cases, it could unmask a latent CD status. [8] Intestinal parasites are not only important causes of acute diarrheal illnesses, but they also cause chronic diarrhea and malabsorption. [9] Recent studies have shown that Giardiasis can be characterized by a wide range of duodenal abnormalities. [6, 7, 8] Villous atrophy, intraepithelial lymphocytosis, infiltration of the lamina propria by granulocytes, lymphocytes and plasma cells, and nodular lymphoid hyperplasia have all been related to giardiasis. [10]

In our case, considering the failure of several cycles of antiparasitic treatment and the histological feature compatible with CD, GFD was started, despite the fact that serological screening for CD was negative.

Furthermore, CD may be associated with H. pylori infection, but in our case, except of recurrent abdominal pain, no specific symptom was significantly associated with H. pylori infection. However, given that the symptoms disappeared after initiating gluten-free diet suggests that recurrent abdominal pain in this case was not related to the presence of H. pylori. Such data is in agreement with previous findings, [11, 12] that confirm that H. pylori does not affect the clinical presentation of CD.

This case report may be helpful for clinicians involved in the care of adoptive children of foreign origin, because it highlights the importance of how accurate clinical screening and management of the child's health are fundamental in the identification of needed interventions and therapies of such patients.

In conclusion, patients with persistent giardiasis and failure to thrive should be tested for anti-tTG and HLA to reveal a potential association with CD. [6 - 8] Furthermore, such early diagnosis is more important to prevent the complications of untreated celiac disease, such as malabsorption, somatic and psychosocial retardation, osteoporosis, extra intestinal manifestations, autoimmune disease and tumours.

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