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Case Report

Asymptomatic Celiac Disease in Children with Trisomy 21 at 26 Months of Age or Less

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Abstract:

We report three cases of asymptomatic celiac disease identified in children with Down syndrome after being screened at around twenty-four months of age. These cases raise the question as to what age is screening for celiac disease indicated in a child with Down syndrome and no symptoms.

Key Words: Down syndrome, Malabsorption, Sprue.

Introduction

Individuals with Down syndrome have an increased risk of celiac disease. We report three children with Down syndrome found to have celiac disease after being screened at around twenty-four months of age, consistent with the 1999 recommendations of the Down Syndrome Medical Interest Group(1). Since that time guidelines for screening have continued to evolve. In 2005, the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition published guidelines for celiac disease screening in children with Down syndrome at around 3 years of age, with repeat testing at intervals for those who screen negative (2). But, in 2006, the American Gastroenterology Association (AGA) Institute Technical Review on the Diagnosis and Management of Celiac Disease did not recommend routine screening of asymptomatic persons in an at-risk group(3). In the 2011 updated health supervision guidelines, American Academy of Pediatrics Committee on Genetics recommended screening only children with symptoms of celiac disease (4).

Case Study 1

An 11-month- old white female was referred to the Down Syndrome Clinic for medical and developmental evaluation. She had no additional health problems identified and anticipatory guidance was provided. Her family history was negative for celiac disease. At 23 months of age, she returned for follow-up with no gastrointestinal symptoms. On physical examination, her height was at the 30th percentile and weight at the 20th percentile on the Down syndrome growth chart.

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Laboratory tests to screen for celiac disease were elevated (Table.1).

Table 1: Descriptive laboratory data for cases (abnormal values in bold).

	Case 1	Case 2	Case 3
Age referred to GI (months)	23	24	17
Age biopsy diagnosis of CD (months)	26	29	25
Screen labs (norms)			
IgG tTG (<20Au)	12	NA	NA
EMA (<20Au)	NA	7	QNS
IgA – AGA (<20Au)	40	38	129
IgG - AGA (<20Au)	120	103	> 400
IgA (14-123 mg/dl)	87	114	NA
Repeat labs (norms)	26 mo	29 mo	24 mo
IgA tTG (<5Au)	0-2	29	NA
IgG tTG (<20Au)	56	8	4
EmA (<20Au)	not detected	NA	NA
IgA – AGA (<45 Au)	335	202	87
IgG – AGA (<45 Au)	378	350	147

AGA= antigliadin, EMA = antiendomysium,
GI = Gastroenterology tTG = tissue transglutaminase

At 26 months of age, endoscopy revealed flat duodenal mucosa with no fuzzy areas seen. Biopsy revealed a mild chronic inflammation with mild bunting of the mucosal villi. Three months after institution of a gluten-free diet, she had gained 1.36 kg. Her mother reported that she was happier and more energetic.

Case Study 2

A 24-month-old white female was referred to the Down Syndrome Clinic for evaluation of motor delays and hypotonia. Her history included repair of a hernia and an atrialventricular canal defect being treated with captopril. She had no gastrointestinal symptoms and her family history was negative for celiac disease. On physical examination, her height was at the 45th percentile and weight was at the 68th percentile on the Down syndrome growth chart. Laboratory tests to screen for celiac disease were elevated (Table.1). At 29 months of age, endoscopy revealed a nodular duodenal mucosa and no fuzzy appearance. Biopsy revealed moderate villous blunting with increased chronic inflammation in the lamina propria and mucosal epithelium consistent with celiac disease. She has done well on a gluten-free diet.

Case Study 3

A 17-month-old white male was referred to the Down Syndrome Clinic for medical and developmental evaluation. He had a history of surgical repair of duodenal atresia, an atrial septal defect, and ventilatory tube placement. Hypothyroidism was treated with levoxyl. Constipation with large, firm stools and difficulty defecating was thought to be due hypothyroidism and was being treated with lactulose. He was being followed by Endocrinology Service for micropenis. On physical examination, his height was at the 50th percentile and weight at the 96th percentile on the Down syndrome growth chart. Early screening for celiac disease was done in light of the constipation (Table.1). At 25 months of age, biopsy revealed severe villus flattening with marked acute and chronic inflammation. On the gluten-free diet, his mother reports less constipation and diarrhea.

Discussion

Children with Down syndrome are at-risk for many medical disorders such that an organized approach to management is indicated. Congenital heart disease and vision and hearing disorders are very common, so all children with Down syndrome are evaluated for these (4). Screening of children and adolescents with Down syndrome from multiple countries identifies biopsy proven celiac disease in 3% -9% (5-11). This is probably an under

identification as studies do not routinely include children already identified with celiac disease. Also, not all children with positive screens have a biopsy. This could be due to some children with Down syndrome and positive screens being asymptomatic and therefore, not pursuing a biopsy (7).

There has been a lot of discussion about screening for celiac disease in all children with Down syndrome whether they are symptomatic or asymptomatic. In our three asymptomatic children with DS, on the gluten free diet, one gained weight and was much happier and energetic and a second child had less constipation and diarrhea. So, were they really asymptomatic? Another issue is the cost of screening with one study estimating a cost of $500,000 of screening and biopsies per life-year gained (12).

Untreated celiac disease is associated with the development of symptoms such as weight loss and poor weight gain, abdominal discomfort, bloating, large stools, constipation, and diarrhea. Long term complications of untreated celiac disease include anemia, intestinal lymphoma, and osteoporosis (13). Initiation of treatment prior to identified symptoms might prevent the development of these problems. One prospective 10-year follow-up study of 32 children aged 2 to 4 years with celiac disease and Down syndrome reported good compliance (14). They determined that 66% had health improvement without a deterioration of health-related quality of life. They stated that delaying treatment for children without symptoms after a positive screening test may be an option but needs long-term follow-up study (14).

In summary, our three asymptomatic patients who had positive screens at 17, 23, and 24 months of age and positive biopsies at 26, 29, and 25 months of age with possible unidentified symptoms raises the question of whom and when to screen for celiac disease in this at-risk population. First screens are positive in 3%-8% of children with Down syndrome (5-9) and an additional 3.5% are two years later in one study(8). Clearly, further studies on when to first screen, what tools to use, and when to do follow-screens are needed as well as the efficacy of long-term use of the gluten-free diet in children with Down syndrome whether they be symptomatic or asymptomatic.

Conflict of interests: We have no potential conflict of interest, real or perceived.

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