

Diagnosis of Cystic Fibrosis and Celiac Disease in an Adult: One Patient, Two Diseases, and Three Reminders

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This case report describes the uncommon occurrence of celiac disease and cystic fibrosis in an obese adult patient. Apart from its rarity, the case serves to highlight the elusive nature of these 2 diseases when presenting with atypical clinical features in an adult. *Key words: celiac disease, cystic fibrosis, obese.* [Respir Care 2005;50(5):644–645. © 2005 Daedalus Enterprises]

Introduction

Celiac disease is an immune-mediated enteropathy triggered by dietary gluten (present chiefly in wheat, barley, and rye) in genetically susceptible individuals. Its prevalence is approximately 0.4% in the United States, Europe, and North Africa. Iron deficiency anemia is often a presenting sign. A positive test for anti-endomysial antibody carries a sensitivity of 85–98% and a specificity of 97–100% for celiac disease.

Case Summary

A 42-year-old man had been diagnosed with iron deficiency anemia (hemoglobin 9.2 g/dL, mean corpuscular volume 62 femtoliters, red cell distribution width 18.2%; ferritin 8 ng/mL) in another clinic, after which a test for occult blood, a gastrointestinal endoscopy, and a colonoscopy were performed, all with normal findings. He received iron supplementation and his hemoglobin improved.

In addition he described a recurring productive cough and frequent bulky stools, both of several years duration.

The patient was a land surveyor, married, and father to 7-year-old twins. He did not smoke or consume alcohol and denied any chronic illnesses.

His height and weight were 1.82 m and 112 kg, respectively (body-mass index 33.8 kg/m²), and he had marked abdominal obesity, with a waist circumference of 137 cm.

His blood pressure was 140/85 mm Hg, with a heart rate of 76 beats/min and a respiratory rate of 16 breaths/min.

A post-nasal drip was noticed. The physical examination was otherwise unremarkable. A radiograph performed 3 months earlier revealed bilateral maxillary-sinus opacities.

Levels of glucose, creatinine, urea, serum electrolytes, liver enzymes, thyroid-stimulating hormone, and vitamin B₁₂ were all in the normal range. The folic acid level was low (3.1 nmol/L), and so was the total cholesterol (134 mg/dL).

The iron deficiency and low folic acid and cholesterol levels suggested intestinal malabsorption, and a test for anti-endomysial antibody (immunoglobulin A type) was ordered. The result was positive, at a titer of 1:80; a jejunal biopsy confirmed the diagnosis of celiac disease. A gluten-free diet was instituted.

In order to determine the duration of the patient's anemia, he was asked to bring in any past medical documentation he possessed. He brought in an 8-year-old file from a fertility clinic, the study of which revealed 3 points of interest. The first was a result of a complete blood count (hemoglobin 12.2 g/dL, mean corpuscular volume 73 femtoliters, red cell distribution width 17%) compatible with longstanding iron deficiency. The second was a diagnosis of obstructive azoospermia, which led to surgical retrieval of spermatozoa, successful in vitro fertilization, and the birth of twins. The third was the result of the clinic's routine screening for cystic fibrosis, which was positive for cystic fibrosis transmembrane conductance regulator mutations W1282X and the ribonucleic acid splicing variant IVS8–5T/5T (5T allele).

The patient had now been on a strict gluten-free diet for 3 months. His hemoglobin was 13.3 g/dL and he felt stronger, but his weight increased dramatically, by 16 kg, be-

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cause of the increased intestinal absorption, and he reported symptoms consistent with obstructive sleep apnea. His productive cough continued. A chest radiograph was interpreted as normal and a sinus radiograph revealed bilateral maxillary sinusitis.

The presence of azoospermia and chronic sinusitis in a patient with cystic fibrosis mutations led to the performance of a sweat test. The result was highly positive, with a sodium chloride concentration of 86 mEq/L and 83 mEq/L on 2 separate occasions. On spirometry, his forced expiratory volume in the first second was 51% of predicted, with a 17% increase after β agonist inhalation. A sputum culture yielded normal flora.

The level of pancreatic elastase in a stool specimen was 473 $\mu\text{g/g}$ of stool (normal $> 200 \mu\text{g/g}$), ruling out pancreatic insufficiency.

On the basis of sino-pulmonary disease and obstructive azoospermia in a patient with transmembrane conductance regulator mutations and a highly positive sweat test, a diagnosis of cystic fibrosis was made.

Discussion

Obesity of the degree reported in this patient is a rare finding in celiac disease patients.¹ Diagnosis of cystic fibrosis in adults, although much more uncommon than celiac disease, is increasingly being made, and adult disease is usually milder than the pediatric form.² The Rosenstein diagnostic criteria for cystic fibrosis (persistently elevated concentrations of electrolytes in sweat plus characteristic clinical findings, which include typical gastrointestinal or pulmonary disease and perhaps obstructive azoospermia or a family history) were fulfilled in this patient.³ The combination of the 2 diseases is indeed a rarity, with only 15 cases reported in the literature⁴ and none in an obese adult.

Apart from its uniqueness, the case offers 3 reminders.

The first is that cystic fibrosis presents atypically in adults and is probably under-diagnosed. The 5T allele, for example, carries a variable phenotype, including asthma-like symptoms and chronic sinusitis.⁵ Therefore, a sweat test should be considered when an adult presents with a suspicious constellation of clinical findings (eg, respiratory symptoms and infertility).

The second, always to be kept in mind, is that curing one disease can exacerbate another. In this case the gluten-free diet, through its positive effect on intestinal absorption, led to marked weight gain and symptoms of obstructive sleep apnea in a patient with limited respiratory reserve. Thus, a holistic view of the patient's health status should always be maintained.

The third is the role of the primary physician as integrator of data derived from specialist settings and their interpretation in the context of the patient's clinical course. In an era of highly specialized medicine, this role is more important than ever.

The patient is currently feeling better and is under joint care of a cystic fibrosis clinic, a dietitian, and his family physician.

REFERENCES

1. Czaja-Bulsa G, Garanty-Bogacka B. Obesity in an 18-year-old boy with untreated celiac disease. *J Pediatr Gastroenterol Nutr* 2001; 32(2):226.
2. Blau H, Livne M. Cystic fibrosis in adults: a changing scene. *Isr Med Assoc J* 2003;5(7):491-495.
3. Rosenstein BJ. Interpreting sweat tests in the diagnosis of CF. *J Respir Dis* 1990;11:519-528.
4. Venuta A, Bertolani P, Casarini R, Ferrari F, Guaraldi N, Garetti E. Coexistence of cystic fibrosis and celiac disease. Description of a clinical case and review of the literature. *Pediatr Med Chir* 1999;21(5 Suppl):223-226.
5. Kerem E, Rave-Harel N, Augarten A, Madgar I, Nissim-Rafinia M, Yahav Y, et al. A cystic fibrosis transmembrane conductance regulator splice variant with partial penetrance associated with variable cystic fibrosis presentations. *Am J Respir Crit Care Med* 1997;155(6): 1914-1920.