CELIAC DISEASE AND ORAL HEALTH: WHAT DENTISTS NEED TO KNOW
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Celiac disease, with a prevalence around 1% of the general population, is the most common genetically induced food intolerance in the world. Triggered by the ingestion of gluten in genetically predisposed individuals, this enteropathy may appear at any age, and is characterized by a wide variety of clinical signs and symptoms. Gastrointestinal presentations include chronic diarrhea, abdominal pain, weight loss or failure to thrive in children. Extra-intestinal manifestations, including dermatitis herpetiformis, anemia, short stature, osteoporosis, arthritis, neurologic problems, unexplained elevation of transaminases, and even female infertility are also common.

One manifestation that tends to be overlooked is celiac disease’s effects on oral health. In fact, celiac disease can lead to delayed tooth eruption, dental enamel defects, and recurrent oral aphthae. Our last two IMPACT newsletters have outlined typical intestinal and common extra-intestinal manifestations for readers. This article will focus on oral symptoms of celiac disease, by definition extra-intestinal, but generally less common and less discussed in the literature and among physicians.

ORAL MANIFESTATIONS OF CELIAC DISEASE
The long list of clinical signs and symptoms associated with celiac disease includes oral manifestations such as dental enamel hypoplasia, aphthous ulcers, and delayed eruption of teeth. Dental enamel hypoplasia, a nutritionally related defect of the enamel, presents in varying expressions such as pits, lines and grooves on the teeth. Its prevalence has been reported to range from 10% to 97% (Pastore et al., 2008, Wierink et al., 2007, Avsar & Kalayci, 2008, Acar et al., 2012), and it appears to be more prevalent in children with celiac disease, compared with adults. This defect, more common in patients with celiac disease, can be so pronounced, it is vital to educate dentists and oral hygienists about them.

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disease compared to the general population (Rashid et al.), is thought to be secondary to nutritional deficiencies and immune disturbances during the period of enamel formation in the first seven years (Cheng et al.) of life. Another enamel defect that can be associated with celiac disease is partial or complete loss of the enamel. In fact, a large epidemiological study in Italian children (Martelossi et al., 1996) found that dental enamel defects can sometimes be the only symptom of celiac disease in children. Therefore, such defects can be a useful screening tool. Dentists must be made aware of them and should refer children with them for follow up with a pediatrician or pediatric gastroenterologist.

Aphthous ulcers, such as canker sores, can also be present in children and in adults with celiac disease. At this time it is unclear if these are associated with enamel defects—more research is needed on this question—and their prevalence in celiac disease patients is variable (Campisi et al., 2008). Oral ulcers are neither characteristic nor specific to celiac disease since aphthous ulcers can also be associated with other medical conditions such as inflammatory bowel disease and Behçet’s disease. However, it should be noted that in celiac patients, these ulcers often regress once the patients are on a gluten-free diet (Campisi et al., 2007).

Another oral manifestation of celiac disease is delayed tooth eruption. This symptom has been reported in up to 27% of patients with celiac disease (Campisi et al., 2007).

However, this is a non-specific sign, possibly related to malnutrition. It needs to be assessed in conjunction with the rest of the oral exam, the dental clinician should be aware and suspicious about the possibility of celiac disease.

A study in Israel assessed oral health, bacterial colonization and salivary buffering capacity of children with celiac disease at diagnosis and on a gluten-free diet (Shteyn et al., 2013). All the children were examined by pediatric dentists, and saliva samples were collected for bacterial and pH analysis. A higher prevalence of enamel hypoplasia (66%) was found in the celiac children. However, the plaque index was significantly lower in the celiac children on a gluten-free diet, which correlated with oral health behavior related to teeth brushing and frequency of eating between meals. In fact, the celiac children on a gluten-free diet brushed their teeth and used fluoride significantly more often than other children in the study.

**DIAGNOSING CELIAC DISEASE**

The dental symptoms discussed above are certainly not adequate to diagnose celiac disease. The diagnosis of celiac disease should encompass clinical presentation, serological markers, and other relevant data. However, because oral symptoms can be so pronounced, it is vital to educate dentists and oral hygienists about them. If they notice such symptoms in patients, whether pediatric or adult, they should refer to a physician, ideally a gastroenterologist, for further evaluation.
FEED YOUR GUT WITH FIBER!

There are many different factors that affect a gut and keep it healthy. In the last issue of IMPACT, the Dietitian’s Corner column discussed fermentable carbohydrates or FODMAPs. This month we will delve into fiber and its importance to overall health.

There are two types of fiber: soluble and insoluble. The best way to visualize soluble fiber would be to think of oats in water; they become viscous, with a sticky texture. They absorb water, and are thus soluble. This viscous texture is helps lower bad cholesterol or LDL levels by attaching to the cholesterol and eliminating it in the system. In the same respect, more fiber can also increase HDL or healthy cholesterol which also helps to salvage the LDL cholesterol particles. It also helps resolve issues such as diarrhea and constipation. Most fiber supplements are made of soluble fiber. Soluble fiber is also found in beans, the insides of apples, and bananas. Insoluble fiber is fiber that does not change shape in water, such as celery, apple or potato skins, and seeds. These fibers bulk up stool and also promote bowel movements and feelings of satiety or fullness. Most fruits and vegetables have a combination of soluble and insoluble fiber. Supplements, however, usually contain only soluble fiber.

Fiber provides prebiotics, which is necessary to feed the good bacteria known as probiotics, that live in the gut. You may have heard the term microbiome which is the environment in our GI tract that impacts overall health. This is a substrate or “food” for the good bacteria, otherwise known as probiotics, within the colon. Fiber is also very important for heart health and managing blood sugars. Fiber does not get absorbed within the gastrointestinal tract. In fact, it bulks up the stool and gets excreted with it.

It is important to increase fiber slowly; a person who goes from eating 10 grams of fiber one day to 25 grams the next would become quite gassy, bloated and uncomfortable. It is a good idea to track fiber intake to determine the amount of fiber consumed. Gradually increase fiber and be sure to increase water intake along with it. Inadequate water intake can increase symptoms and in some cases can cause constipation. Water helps to soften bowel movements and aids in moving fiber through the digestive tract.

It is best to obtain fiber from real food and minimize reliance on supplements. Fiber is found in fruits, vegetables, beans, nuts, seeds, whole grains. The goal is to consume about 25 to 35 grams of fiber daily. Certainly, adding a supplement can be helpful for some people, but there are many other nutritious and beneficial components that one gets when consuming an apple or banana versus just taking a pill with fiber.
Spring Flours 2017 was another magical evening at the Chicago Cultural Center. Guests enjoyed the most wonderful tastings from 20 of Chicago's finest restaurants and bakeries. We thank all the wonderful food purveyors who made the evening so unique, as well as our sponsors and our volunteers.

Please click here to see photos from this spectacular event. cureceliacdisease.org/spring-flours-gluten-free-gala/

Thank you to our generous sponsors

Nicolas, Jill and Paul Meister  The Maclean Family  Hilda & Jeffrey Piel  GCM Grosvenor

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Although Jason Hirsh and his family are new to celiac disease, they have wasted no time getting involved. Jason's eight year old son created an awareness-raising video, and he and his family joined us at Spring Flours. Most people would have stopped there, but Jason went on to train for an Ironman race with the express intent of raising funds for The University of Chicago Celiac Disease Center. Last weekend, he swam, biked and ran 70.3 miles, to complete the race, and his friends, family and colleagues supported him with over $6,000 of contributions for The University of Chicago Celiac Disease Center. Congratulations to Jason, and a heartfelt thank you to all who supported him in this cause.

Jason Hirsh with his children, Jackson and Raya.
The University of Chicago Celiac Disease Center is required to raise its own funding, for all research and programming, every year. Our partners are an important part of this effort. We are pleased to partner with the companies listed below, and we thank them for their support.

If your company is interested in partnering with us, please email us at cureceliacdisease.org/contact-us.

INTERNATIONAL CELIAC DISEASE SYMPOSIUM 2017: Visit www.icds2017india.com for more information about this year’s international celiac conference, or to register for it. If New Delhi is too far, do not despair. The Celiac Center will be posting from it through Facebook and Instagram.

DR. JABRI, PROFESSOR OF MEDICINE AND PEDIATRICS AT THE UNIVERSITY OF CHICAGO, RECEIVES TEACHING AWARD

Dr. Bana Jabri, professor in the departments of medicine, pathology, and pediatrics at The University of Chicago Medical Center, member of the Committee on Immunology, co-director of The University of Chicago Digestive Disease Research Core Center and Director of Research at The Celiac Center, received one of four Llewellyn John and Harriet Manchester Quantrell Awards, believed to be the nation’s oldest prize for undergraduate teaching. In addition to her ground-breaking discoveries in celiac research, Dr. Jabri is an inspiring teacher and mentor to so many young scientists, and we are thrilled to see her efforts recognized in this way.

For more information about the award, and to hear her thoughts on teaching, please visit sciencelife.uchospitals.edu/2017/06/07/biological-sciences-faculty-honored-for-excellence-in-teaching-and-mentoring/.

CELIAC EDUCATION DAY, OCT. 21, 2017: We will again offer a free blood screening, educational sessions, including one featuring this year’s chief sponsor, the Celiac Disease Foundation, and its celiac patient advocacy program, and a vendor fair. Please check www.cureceliacdisease.org in the coming months for more information. The program is free, but the screening portion of it does require preregistration, which will open around September 25.

CELIAC EDUCATION DAY : 2016

DR. JABRI, RECEIVING THE QUANTRELL AWARD, AT THE UNIVERSITY OF CHICAGO 2017 COMMENCEMENT
In May 2016, my former colleague Diane McKiernan and I created the Chicago Celiac Group. Diane and I had realized that Chicago no longer had a support group for those with celiac disease. We decided to form a group that would be more social than just a support group. That way, we could meet up with others and enjoy drinks and delicious gluten-free food. Our goal was to work with restaurants and help them highlight their gluten-free options.

Our idea has evolved into a resounding success. Over the past year, we have met so many people at our events, and we all realize that we can learn from each other. And we have had a wonderful time doing it. In the past year we have visited four great restaurants together, Burger Bar, Bar Takito, Hub 51, in Chicago, and we ended the year at DaLuciano’s in suburban River Grove.

Many restaurants in the Chicago area are highly sensitive to the needs of celiac patients, especially those that participate in our annual Spring Flours gala (see article above), but Da Luciano’s deserves a particular shout-out. DaLuciano’s is family-owned and operated, and created its first gluten-free menu options in 2002, when multiple family members were diagnosed with celiac disease. Today, it has an extensive gluten-free menu that is prepared in a separate, dedicated gluten-free kitchen.

For our summer send-off on May 12, we feasted on Da Luciano’s garlic bread, salad, fried mozzarella, vodka pasta, chicken parmesan and cannoli (see photo). The cannoli had the same crispy, crunchy shell as a gluten-containing cannoli, and it made my night!

Dr. Guandalini and his wife, Greta, joined us for a fun evening, and we were delighted to meet the restaurant owners as well, when they came out to greet our group. The Chicago Celiac Group is so fortunate to have so many great options to enjoy, and Da Luciano’s, with the kind, hard-working and knowledgeable Libreri family behind it, leads the pack. We thank them for their support of the celiac community, as well as their generous and unfailing donation of gluten-free cookies to our Celiac Education Day every year.

If you are interested in joining our Chicago Celiac Group, please contact me at Lori.Welstead2@uchospitals.edu.