



FROM THE NATIONAL DIGESTIVE DISEASES INFORMATION CLEARINGHOUSE

Celiac Disease Awareness Campaign • www.celiac.nih.gov

A service of the National Institute of Diabetes and Digestive and Kidney Diseases, NIH

Fall 2009

A Changing Environment and the Increasing Prevalence of Celiac Disease

Research studies in the United States and Europe show that celiac disease is significantly more common now than it was a few generations ago. Recent research by Joseph Murray, M.D., professor of medicine at the Mayo Clinic in Rochester, MN, and colleagues shows that this shift reflects an actual increase in prevalence, not merely a new awareness of the disease and more accurate diagnostic tools. Murray and colleagues' research—reported briefly in the Spring/Summer 2009 issue of *Celiac Disease News*—compared blood samples collected 50 years ago from more than 9,000 young adults, mostly men, at Warren Air Force Base in Wyoming with current samples from age-matched men. The investigators found that celiac disease is four times more common today than a half-century ago. The increase cannot be a result of changes in the genetic factors that underlie celiac disease, Murray explained. "Of course, human genetics will change in response to the environment, but that change is extremely slow. It's far more probable that the increase is due to an environmental change, and the most likely factor is a change involving the grain in our diets," Murray said. "Consumption of wheat has increased steadily over the past 50 years, but it still is less than what it was a century ago, so the issue is not simple consumption," Murray noted. "It more likely involves the wheat itself, which has undergone extensive hybridization as a crop and undergoes dramatic changes during processing that involves oxidizers, new methods



of yeasting, and other chemical processes. We have no idea what effect these changes may have on the immune system."

A second environmental factor that may be contributing to the increase in celiac disease is what is known as the "hygiene hypothesis,"

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Awareness Campaign Website Is Silver Award Winner



The National Institutes of Health Celiac Disease Awareness Campaign website received a silver award in the Spring/Summer 2008 Web Health Awards competition organized by the Health Information Resource Center, a national clearinghouse for consumer health programs and materials.

The Web Health Awards program recognizes the best web-based health-related content for consumers and professionals. The awards, given out biannually, are based on a website's content and the program evaluates whether the site is informative, complete, current and regularly updated,

clear, and relevant to the target audience. The award program's goal is to provide a seal of quality for electronic health information.

For more information about Web Health Awards, visit www.healthawards.com. ■

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"Human genetics will change in response to the environment, but that change is extremely slow."

Joseph Murray, M.D.
Professor of Medicine,
Mayo Clinic

explained Murray. This theory proposes that the developing immune system has to be stimulated by exposure to infectious agents, bacteria, or parasites in order to develop properly. An increasingly clean environment reduces the number of factors that challenge and stimulate the developing immune system, making infants and children more susceptible to immune disorders and allergic diseases. The hygiene hypothesis

may account, in part, for the increases observed not only in celiac disease, but in other allergies and immune disorders. "Diet and hygiene both may play a role in the increase. There no doubt are multiple environmental factors that interact to trigger the onset in people who are genetically predisposed," Murray said. "The increasing prevalence makes it more important that health care providers and patients are alert to the possibility of celiac disease." ■

CELIAC DISEASE News



Celiac Disease News, an email newsletter, is sent to subscribers by the National Digestive Diseases Information Clearinghouse (NDDIC). The newsletter features news about celiac disease, special events, patient and professional meetings, and new publications available from the NDDIC and other organizations.

If you would like to subscribe, send an email to celiac@info.niddk.nih.gov. Please visit www.celiac.nih.gov/Newsletter.aspx to read or download a PDF version of the newsletter.

To meet the need for comprehensive and current information about celiac disease, the NDDIC, a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), launched the Celiac Disease Awareness Campaign. The Awareness Campaign is the result of the

combined ideas and efforts of the professional and voluntary organizations that focus on celiac disease, along with the NIDDK, the National Institutes of Health, and the Centers for Disease Control and Prevention.

Visit www.celiac.nih.gov to learn more about the Awareness Campaign.

Executive Editor: Stephen P. James, M.D.

Dr. James is the director of the Division of Digestive Diseases and Nutrition within the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). As director, Dr. James oversees planning, implementation, and evaluation of a national research effort focused on gastrointestinal, pancreatic, hepatobiliary, and nutrition diseases and conditions. Before joining the NIDDK in 2001, Dr. James directed the division of gastroenterology at the University of Maryland's School of Medicine for 10 years.



Research Suggests Celiac Disease Can Compromise Effectiveness of Hepatitis B Vaccine

Half of children with celiac disease who were inoculated with the hepatitis B vaccine within their first year of life did not develop protective levels of antibody response to HBV.

A team of researchers in Italy reported that vaccination against the hepatitis B virus (HBV) is less likely to be successful in children with celiac disease than in children without the disease.

Salvatore Leonardi, M.D., and colleagues at the University of Catania's Department of Pediatrics found that half of children with celiac disease who were inoculated with HBV vaccine within their first year of life did not develop protective levels of antibody response to HBV. Among children without celiac disease, fewer than 10 percent failed to develop a protective response. The researchers evaluated HBV

antibody levels in 120 children between 5 and 15 years of age, 60 of whom had been diagnosed with celiac disease before age 18 months. All the children received HBV immunization that was administered in three doses—at ages 3, 5, and 11 months. The research was reported online in August 2009 by the journal *Vaccine*. ■



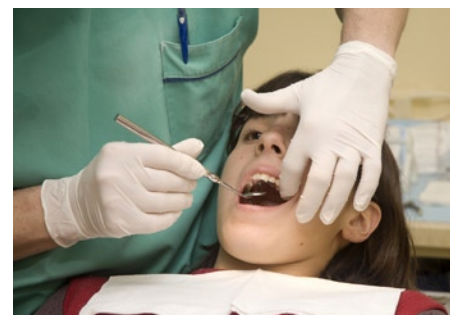
Studies Add Details to Link between Celiac Disease and Oral Disorders

Investigators found significant associations between celiac disease and dental enamel defects in 87 percent of participants younger than age 18.

Two recent studies, one conducted in the United States and the other in Iran, provide additional evidence linking celiac disease with two oral disorders—dental enamel defects, in which tooth enamel does not develop properly, and aphthous ulcers, or canker sores.

At Columbia University in New York, researchers from the Department of Medicine and the Celiac Disease Center compared the prevalence of the disorders among 67 people with celiac disease, ranging in age from 14 to 67, with the prevalence among 69 age- and sex-matched control group participants without celiac disease. The Columbia researchers found an increased prevalence of aphthous ulcers in both teens and adults with celiac disease. Overall, teens with celiac disease were more likely to have enamel defects than those without the disease. Investigators found significant associations between

celiac disease and dental enamel defects in 87 percent of participants younger than age 18. No association was found between celiac disease and enamel defects in adult participants. The researchers speculate that adults in the study group may have developed celiac disease after age 7, by which time their adult enamel was already fully formed. The high rate of association between celiac disease and oral disorders in teens suggests that examination of the mouth



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Study Finds Celiac Disease Associated with Slightly Higher Risk of Death

Patients with celiac disease face a “modestly increased” risk of death compared with men and women of the same age who do not have celiac disease.

A group of Swedish health researchers has reported that patients with celiac disease face a “modestly increased” risk of death compared with men and women of the same age who do not have celiac disease. Celiac disease is linked to a roughly 35 percent increase in death rates, and the risk is highest in the first year following a diagnostic biopsy, according to a study published in the September 16 issue of the *Journal of the American Medical Association*. As is the case in the general population, cardiovascular disease was the most common cause of death for patients with celiac disease, followed by cancer.



The researchers examined national health data to identify men and women age 60 or younger who had undergone biopsies of the small intestine between July 1969 and February 2008. This group was analyzed to identify patients who fell into three categories: 1) those with celiac disease confirmed by an intestinal biopsy showing atrophied intestinal villi (29,096 patients); 2) those with “inflammation”—biopsy results showing inflammation but no villous atrophy (13,306 patients); and 3) those with “latent celiac disease”—serological tests showing celiac disease-linked antibodies in conjunction with normal biopsy results (3,719 patients).

Researchers then used data from the Swedish Total Population Register to calculate risk of death for these men and women compared with age- and sex-matched controls. They found the overall death risk for patients with celiac disease to be 1.39 times higher than for men and women without celiac disease—a hazard ratio (HR) of 1.39. Among patients with inflammation, the overall HR was 1.72, and for those with latent celiac disease, HR was 1.35. For each group, the risk was highest in the first year following biopsy: celiac disease, HR 2.80; inflammation, HR 4.66; and latent celiac disease, HR 1.81. ■

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by all physicians, not just dentists, could provide valuable clues to early detection of celiac disease. The research was published online in August 2009 by the *Journal of Clinical Gastroenterology*.

In Iran, researchers from Tehran University, Iran University of Medical Sciences in Tehran, and the Alborz Hospital in Karaj found that the prevalence of celiac disease among 247 patients with recurring aphthous ulcers was 2.8 percent, more than three times the rate seen in the general population. Researchers looked for a

serologic marker for celiac disease in patients with a history of more than three aphthous ulcer outbreaks per year. Seven patients with positive serologic tests were diagnosed with celiac disease following intestinal biopsy. None of the patients found to have celiac disease had responded to standard aphthous treatment previously, but four of the seven celiac disease patients showed substantial improvement in their aphthous condition following 6 months of adherence to a gluten-free diet. The research was reported in June 2009 in the online journal *BMC Gastroenterology*. ■

The NIH Wants to Hear from You

The National Institutes of Health (NIH) has issued a Request for Information (RFI) to gather public input about the health information needs and information-seeking behaviors of NIH health consumer audiences. The Consumer Health Information RFI is a response to President Obama's January 21, 2009, directive to create greater transparency, public participation, and collaboration among federal agencies. Responses to the RFI will help the NIH develop and disseminate health, medical, and scientific information to a broader audience.

Members of the public and organizations are invited and encouraged to participate by completing a brief online survey. For more information, visit <https://nibhealthinforfi.cit.nih.gov>.



Resources

Additional Resources

New Provider Points Publication Will Focus on Celiac Disease and Type 1 Diabetes

Among children and adolescents with type 1 diabetes, the prevalence of celiac disease may be as much as 20 times higher than in the general population. The newest addition to the National Institutes of Health Celiac Disease Awareness Campaign's Provider Points Series, titled *Celiac Disease and Type 1 Diabetes: Shared Genetic and Environmental Factors*, will provide a succinct discussion of the genetic and environmental features shared by these two immune disorders.

The Provider Points Series is designed to aid primary care physicians in recognizing the symptoms and complications of celiac disease. Most health care professionals must choose among multiple sources of information to keep up to date about the myriad conditions they see in their practices. The series allows health care providers to access essential information in a concise and practical format.

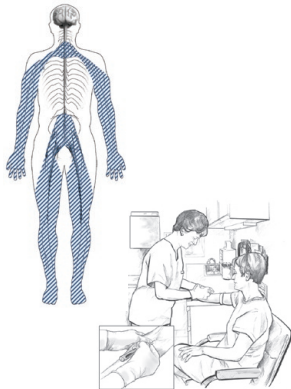
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Image Library

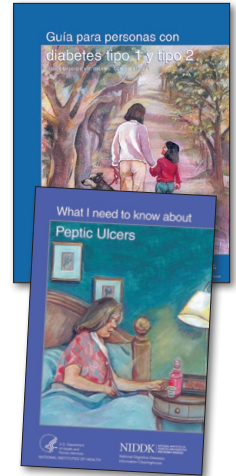
The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) Image Library is a database of original full-color and black-and-white illustrations produced by the NIDDK Information Clearinghouses. All images are available copyright free to the public at no cost. The Image Library contains more than 600 images, presented in high, medium, and low resolutions. Images are sorted into three categories: anatomical and medical, instructional, and lifestyle and activity.

Visit the Image Library at <http://catalog.niddk.nih.gov/ImageLibrary>. The NIDDK requests that users credit each downloaded illustration as follows: National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.



Newly Revised Publications

What I need to know about Peptic Ulcers, part of the NIDDK's easy-to-read publications series, provides updated information about the causes, diagnosis, and treatment of peptic ulcers—sores that may develop in the lining of the esophagus, stomach, or duodenum. To view and download this publication, go to www.digestive.niddk.nih.gov/ddiseases/pubs/pepticulcers_ez.



Guía para personas con diabetes tipo 1 y tipo 2 (Your Guide to Diabetes: Type 1 and Type 2) provides important diabetes information in an easy-to-read format for Spanish-speaking audiences. To view and download this publication, go to <http://diabetes.niddk.nih.gov/spanish/pubs/type1and2>. ■

Upcoming Meetings, Workshops, and Conferences

The National Institute of Diabetes and Digestive and Kidney Diseases will exhibit at the following upcoming events:

American Gastroenterological Association Clinical Congress of Gastroenterology and Hepatology

January 15–16 in Las Vegas.

For more information, go to www.gastro.org.

American Academy of Dermatology 68th Annual Meeting

March 5–9 in Miami.

For more information, go to www.aad.org/meetings/annual. ■