Clinical Nutrition INSIGHT
EVIDENCE-BASED REPORTS FOR IMPROVED PATIENT CARE

VOLUME 39 | NO. 3 MARCH 2013

Food Sensitivity Testing: Evidence-Based Practice or Pricey Placebo?

Kevin Lomangino

KEY MESSAGES

- Despite growing popularity, most tests designed to identify food sensitivities or intolerance reactions are not supported by strong evidence.
- Such tests are expensive, can lead to unnecessarily restrictive diets that limit nutritious food choices, and can delay appropriate diagnosis and treatment.

If your practice is anything like that of Kathryn Kolasa, PhD, RD, you are seeing many more patients today who think they are sensitive to specific foods. These are not your classic food allergy patients with symptoms such as itching, swelling, and hives immediately after eating a suspect food. Instead, patients typically complain of less severe, delayed symptoms such as gastrointestinal upset, headaches, or joint pain. They believe that these symptoms may be food-related and often have had testing performed to find out.

"During the last several years, as more people believe they have food sensitivities, I have had more patients come to me asking for help understanding reports they received after undergoing a food sensitivity test," said Kolasa, an emeritus professor with a small but active nutrition practice at East Carolina University's Department of Family Medicine. "We are in the business of both teaching and practicing evidence-based nutritional therapies, and it's been difficult to determine the value of having these tests done. I have also been asked by practicing primary care physicians who treat patients with complaints of food sensitivities to have these tests available." The testing is expensive, Kolasa said, and the results invariably lead to suggesting elimination diets and often to a whole host of supplements.

Kolasa has looked for credible information about the clinical use of these tests and the evidence that supports them, but has mostly come up empty. On the one hand, there are anecdotal reports from practitioners who say that the results are helpful to their patients and, in some cases, profitable for their practices. But at a recent educational seminar, Kolasa asked an allergist what she could tell her patients who ask about this testing. He both condemned the tests as quackery and said that he would not dignify them with a discussion. "I told him some of my patients were spending from a couple hundred to two thousand dollars out of pocket on these tests, and that I needed to understand them," Kolasa said. "He replied, 'Just tell your patients they are hog wash,' which is not very helpful for those of us trying to practice patient-centered care."

Kolasa said that she knew one clinician who had several patients complete tests. After finding that they all were told to avoid the same foods, she decided to save her patients some money and created a list of the "nasty 9" foods to avoid: dairy, soy, egg whites, wheat, peanuts, tree nuts, citrus

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Mr. Lomangino has disclosed that he is a consultant to the Informed Medical Decisions Foundation and the American Association of Diabetes Educators.

In This Issue:

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fruits, shellfish, and food additives. Kolasa has heard the frustration of patients who, when trying to eliminate these foods, say, "What is left to eat?"

ARE THE TESTS EVIDENCE-BASED?

Despite growing popularity, testing for food sensitivities in most cases is not supported by strong evidence. In combination with a careful patient history, immunoglobulin E (IgE)-based skin and blood tests can be effective for identifying true food allergies (ie, immediate type I hypersensitivity reactions), and there are valid tests for the diagnosis of specific food intolerances (eg, transglutaminase antibody immunoglobulin A for celiac disease, breath hydrogen testing for lactose intolerance).[1]

However, the tests that are proliferating today are typically based on unconventional diagnostic paradigms, including testing for serum immunoglobulin G (IgG) levels and the release of other non-IgE inflammatory mediators. Table 1 summarizes key information about some of the more popular testing approaches that are available.

Scientific societies around the world, and numerous expert reviews, recommend against the use of these tests. According to recent National Institutes of Health guidelines, all of these tests are on the list of "nonstandardized and unproven" procedures for the diagnosis of food allergy.[1] These tests are also dismissed as ineffective by the American Academy of Allergy, Asthma and Immunology; the Canadian Society of Allergy and Clinical Immunology; the European Academy of Allergy and Clinical Immunology; the Australasian Society of Clinical Immunology and Allergy; and the Allergy Society of South Africa.[2]

There is almost no evidence from well-designed studies demonstrating the accuracy of these tests or their value for guiding treatment. And from a plausibility standpoint, there is little reason to believe that many of these tests would provide useful information to clinicians.

For example, an increasingly popular assay, the Mediator Release Test (MRT), is said to detect changes in white blood cells incubated in the presence of potential trigger foods. But according to Robert Wood, MD, chief of the Allergy and Immunology Division at Johns Hopkins University, it is unlikely that such changes reflect

Clinical Nutrition Insight (ISSN 1938-8640) is published monthly by Lippincott Williams & Wilkins, Inc., 16522 Hunters Green Parkway, Hagerstown, MD 21740-2116. **Customer Service: Phone (800) 638-3030; Fax (301) 223-2400; E-mail customerservice@lww.com.** Visit our website at LWW.com.

Publisher: Randi Davis

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Table 1. Unconventional Diagnostic Tests for Food Sensitivity and Intolerance

Test	Description	Costs*	Evidence†	Expert Recommendations‡
ALCAT (www.alcat.com)	ALCAT measures changes in white cell diameter after incubation with foods, additives, chemicals, dyes, and other substances in vitro. Change in cell size indicates reactivity to challenge substance.	~$225 to >$1000	Company website links to various supporting articles, mainly case series presented as meeting abstracts, articles in non-PubMed journals, and media reports.	Expert NIH panel "recommends not using" this test for routine diagnosis. Review: "Although some practitioners have found them helpful, no well-designed controlled trials have validated the use of these tests."
Applied kinesiology (offered by practitioners as an office procedure)	Tests for specific muscle weaknesses associated with illness/organ dysfunction. For food allergy, muscle testing may be conducted while potentially allergenic food is held by patient.	~$150 (as part of initial chiropractic consult)	Controlled studies show that test is not useful as a diagnostic procedure.	Expert NIH panel "recommends not using" this test for routine diagnosis. Review: "The concepts of applied kinesiology do not conform to scientific facts about the causes or treatment of disease."
Electrodermal skin testing or "Vega" test (offered by practitioners as an office procedure)	Vega machine measures electrical resistance at acupuncture points when an allergen is placed in the electrical circuit. Changes in resistance are said to indicate sensitivity to allergens or toxins.	NA	Under blinded testing, results did not correctly identify respiratory allergies.	Expert NIH panel "recommends not using" this test for routine diagnosis. Review: "Lack(s) scientific credibility" and has "not been shown to have clinical efficacy."
IgG antibody testing (offered by numerous laboratories under different brand names)	Blood samples are tested for IgG antibodies to specific foods using ELISA.	Basic panels listed at $200 to $300	Some studies demonstrate correlation between IgG levels and symptoms. One controlled trial demonstrated clinical benefit to diet guided by IgG test. Other data suggest increased IgG signifies *tolerance* to food, not intolerance.	Expert NIH panel "recommends not using" this test for routine diagnosis. Numerous allergy societies say that tests are unproven. Review: Test is "controversial," and some data suggest that testing "can result in significant symptom improvement."
MRT/LEAP diet (www.nowleap.com)	Measures release of immune mediators (histamine, cytokines, etc) via changes to the liquid/solids ratio of a blood sample after incubation with specific food, additive, or chemical.	~$600 to $1000	No references on company website. Practitioners cite supporting data from uncontrolled case series presented as meeting abstracts.	Expert NIH panel "recommends not using" this test for routine diagnosis. Review: "Although some practitioners have found them helpful, no well-designed controlled trials have validated the use of these tests."

ALCAT, antigen leukocyte antibody test; ELISA, enzyme linked immunosorbent assay; IgG, immunoglobulin G; LEAP, Lifestyle Eating and Performance; MRT, Mediator Release Test; NA, information not available; NIH, National Institutes of Health.

**Figures based on informal search of testing company and practitioner websites and telephone inquiries at practitioner offices.*

†Data from references 2, 3, 11, and 13.

‡Data from references 1, 2, 3, and 13.

an intolerance reaction by the patient. In an interview, he said that white blood cells have been proven to change shape and break down for various reasons unrelated to the presence of an allergen. "In most cases, abnormal test results would be just as likely to occur in normal people as they would in people with food allergies or intolerance reactions," he said.

IS SERUM IgG AN EXCEPTION?

Of all the unconventional tests that are currently available to identify food sensitivities, serum IgG testing is the only approach that has any

support in the peer-reviewed medical literature. However, that support is extremely limited.

Some hypothesize that IgG plays a role in promoting delayed food sensitivity reactions. Unlike IgE-driven reactions, which occur immediately upon ingestion of the offending food, IgG-based reactions are thought to occur anywhere from hours to days later. According to this view, absorption of specific antigens in the gut promotes the systemic production of IgG antibodies, which may be responsible for triggering diverse symptoms in various organ systems, including the gastrointestinal tract (pain, diarrhea, bloating), joints (arthritis, stiffness, swelling), skin (itching, rashes, swelling), and brain (cognitive disturbance, headaches, behavioral problems).

A recent systematic review[3] identified a handful of studies that reported higher levels of food-specific IgG antibodies in patients with irritable bowel syndrome (IBS) than in controls. And a randomized controlled trial found that an elimination diet guided by IgG testing led to an improvement in IBS symptoms.[4]

In that study,[4] the authors randomized 150 outpatients with IBS to a diet that excluded all foods to which the participant had raised IgG antibodies or to a control diet that excluded foods that were not flagged on the IgG test. After 3 months, the "true" IgG-guided elimination diet produced a 10% greater reduction in symptom scores than the "sham" diet. On a scale from 0 to 500, symptom scores were reduced by 100 points on the true diet compared with 69 points with the sham diet. The authors concluded that IgG assays "may have a role in helping patients identify candidate foods for elimination," and that IgG testing is "an approach that is worthy of further biomedical and clinical research."

IgG is a marker of exposure and tolerance to food. Hence, positive test results for food-specific IgG are to be expected in normal, healthy adults and children.

Enthusiasm for this result should be tempered by the study's considerable methodologic limitations, however. In a letter to the editor, Jon Hunter, MD,[5] of Addensbrooke Hospital in the United Kingdom, noted that far more patients assigned to the true diet were told to avoid milk and wheat products (84% and 49%, respectively) compared with the sham diet (1.3% and 8%). Because these foods are recognized as common IBS triggers, such disparities between the diets "could easily explain the modest difference in outcome," according to Hunter. "The same diet sheets, distributed randomly to the patients in each group, regardless of IgG levels, would probably have produced the same overall result," he said.

Other evidence undercuts the biologic rationale for the use of IgG tests to identify food sensitivities. For example, children allergic to egg and milk were more likely to outgrow these allergies if they had *higher* IgG levels.[6] Similarly, resolution of cow's milk allergy is associated with increased IgG levels,[7] and treatment of milk and peanut allergies with oral immunotherapy increased serum IgG, whereas patients in the control group had no change in IgG levels.[8]

Far from indicating intolerance, these data suggest that IgG "is a marker of exposure and tolerance to food," according to a Canadian Society of Allergy and Clinical Immunology position statement.[9] "Hence, positive test results for food-specific IgG are to be expected in normal, healthy adults and children. Furthermore, the inappropriate use of this test only increases the likelihood of false diagnoses being made, resulting in unnecessary dietary restrictions and decreased quality of life."

MRT GOING MAINSTREAM

Lack of supporting data has not stemmed the adoption of these expensive test panels. Surprisingly, even some relatively mainstream nutrition publications have published reviews encouraging their use—particularly the MRT and its associated LEAP (lifestyle, eating, and performance) diet therapy.

In one such article appearing in the *Women's Health Practice Group* newsletter of the Academy of Nutrition and Dietetics, Katherine Kendall, MS, RD, and Rebecca Britzer, MS, RD,[10] state that "Food sensitivity testing by MRT and the resulting patient-specific diet (LEAP) provide

the dietitian critical information that has been lacking. Rather than guessing which foods may be causing symptoms, we can now accurately determine trigger foods, plan healthy diets which will bring symptom relief and reduce levels of inflammatory chemicals in the body."

No peer-reviewed data are referenced to substantiate these bold claims. The only cited research comes from 2 studies[11,12] presented as abstracts at scientific conferences. Both were small, uncontrolled case series reporting improvement in IBS and other disease symptoms after MRT-guided elimination diets. The first author of one of the studies is an employee of Signet Diagnostics, which markets the MRT test. Without a comparison group, it is impossible to know whether these effects represent a true benefit of the intervention or simply a robust placebo response.

Patsy Catsos, MS, RD, a Portland, Maine-based dietitian who has been certified in the LEAP program, acknowledged that the approach is "admittedly less evidenced-based than most of the work" she does, and that "more well-designed studies are needed before MRT/LEAP will win over its critics." But she maintained that the program can be effective for a small number of carefully selected patients, typically those with various complaints that could be related to food sensitivities. She added that the expense of the testing, while significant, can be justified for certain clients.

"Clients who choose MRT/LEAP consider it money well spent in the context of expenses they have previously incurred: repeated trips to the emergency department, expensive drugs, sick days from work and so on," Catsos noted in an e-mail interview. "These clients can often actually save money if they improve their health with an appropriate diet."

For Wood, the Johns Hopkins allergist, however, such anecdotal reports of benefit do not constitute justification for ordering the test, as there is no evidence that the test is more accurate than randomly selecting potential trigger foods. People who think that they are sensitive to specific foods "will often feel better on a restricted diet," Wood observed, "but whether that's really because they're truly intolerant of that food or because there's a strong placebo effect from doing this very life-changing diet, we can't tell for sure. But certainly we see lots of people who feel better when they make major life changes."

The improvement may be commensurate with the patient's investment in the diet and related expectation of benefit. Patients might also benefit in the short term from cutting out processed snacks and fast food that are not allowed on strict elimination diets.

But placebo-based improvement is likely to fade over time, and then the patient must resume the search for a legitimate diagnosis and treatment—an outcome that can be unnecessarily delayed by the use of unproven food sensitivity tests.[13]

None of the interview sources for this article disclosed relevant conflicts of interest.

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Talking With Patients About Food Sensitivity Tests

Kevin Lomangino

KEY MESSAGE

- When discussing food sensitivity testing with patients, clinicians should be prepared to explain why these tests are not useful, and offer evidence-based alternatives.

The medical profession bears some responsibility for the popularity of unproven food sensitivity tests, according to Sheila Crowe, MD, Professor of Medicine and Director of Research at the University of California, San Diego Medical School's division of gastroenterology. "[Doctors] mainly blow off people who have indigestion and other symptoms that people feel are related to their diet," Crowe says, "and so people seek these alternative tests because it validates what their symptoms might be due to."

Although it may be tempting to acquiesce to patients who want to include these tests in their treatment plan, Crowe stresses that they are no substitute for a thorough, evidence-based workup that includes a food diary. "I would mainly focus on teaching people to choose healthy food," she says, "and maybe talk about the foods that often give people problems. But I would tell them not to rely on these tests, because these tests are inaccurate and not scientifically based."

Mr. Lomangino has disclosed that he is a consultant to the Informed Medical Decisions Foundation and the American Association of Diabetes Educators.

Emphasizing that conversations about these tests can be difficult and time-consuming, Crowe adds that it is important for clinicians to show empathy and explain carefully why the tests are not useful. Following are some helpful talking points:

- There is no solid evidence that these tests are better than chance for identifying specific trigger foods.
- These tests frequently identify a long list of "problem" foods, which can promote overly restrictive diets that are unhealthy and difficult to comply with.
- The tests are expensive and often not covered by insurance.
- Many of these tests are not based on sound scientific principles and lack biologic plausibility.
- Anecdotal reports of benefit based on these tests may represent a strong placebo response; a general improvement in diet quality with the elimination of unhealthy foods; or reduced consumption of foods that commonly cause problems, especially when eaten in large amounts (e.g. fat, lactose).
- Relying on these tests can delay appropriate diagnosis and successful treatment.

What does Crowe recommend as an evidence-based alternative for patients with suspected food sensitivities? "I usually send [patients] away for 3 to 4 weeks to keep a food diary, which lists everything they ate and drank including time of day in one column and their health complaints in another parallel column," she says. "Often they'll recognize that it's not a food but rather big meals or stressful days that are the problem."

If nothing specific is identified, the next step is a trial of a hypoallergenic elimination diet for a few weeks. This restrictive diet excludes most foods that are possibly allergenic, and allows only rarely allergenic foods such as rice, chicken, and olive oil.[1] "If they feel better, we can start adding foods back in [as part of a challenge phase], but if they feel no better, then I tell them it's highly unlikely that you're allergic to any of these things. And then we can start to look at other modes of empiric dietary trials," says Crowe.

She mentions excluding grains; the low-FODMAP (fermentable oligo-, di- and monosaccharides and polyols) diet; and the "paleo" diet as candidates for such a diet trial. (See the June 2012 issue for an in-depth review of the low-FODMAP diet for irritable bowel syndrome).

Dr. Crowe disclosed that she is an investigator in a trial funded by Alvine Pharmaceuticals.

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Are "Gluten-Free" Foods Really Gluten-Free?

Kevin Lomangino

KEY MESSAGES

- Tests of packaged gluten-free foods found very low levels of gluten contamination, suggesting that these foods are safe for patients with celiac disease (CD) to eat.
- Restaurant foods containing undeclared gluten, and voluntary consumption of gluten-containing foods, are probably more important sources of gluten exposure for patients with CD.

A new analysis suggests that packaged "gluten-free" (GF) foods are not a significant source of unintentional gluten exposure for patients with celiac disease (CD). The study authors said that contamination of these foods cannot explain the failure of many patients to achieve full mucosal healing after adoption of a GF diet.

In tests of 205 products labeled GF in 4 European countries, Anna Gibert,[1] of the Associació de Celíacs de Catalunya, Barcelona, Spain, and colleagues found that 99.5% of products fell below the World Health Organization threshold for gluten content in GF foods, which is 20 parts per million (ppm). Furthermore, 94% of products were below their assay's limit of quantification, which is 5 ppm, they said.

DISCREPANCY WITH CLINICAL FINDINGS

Plugging their data into a risk assessment model incorporating previous research on safe exposure limits, Gibert et al.[1] calculated that only 0.18% of the European CD population is at risk of adverse effects from the residual gluten in these products. They noted that there is a "huge discrepancy" between this figure and the 50% to 80% of patients with CD who exhibit persistent damage to the small intestinal mucosa on biopsy despite consumption of a GF diet.

According to Gibert et al., such damage is inconsistent with the minimal amount of contamination they observed in GF foods. "In our experience, more attention should be paid to voluntary transgressions [i.e. willful consumption of gluten-containing foods], particularly in vulnerable subjects such as adolescents, and to the gluten contamination of meals consumed outside the patient's household (eg, in restaurants and pizzerias)," they say.

"BUYER BEWARE"

Sheila Crowe, MD, a CD expert at the University of California, San Diego, called Gibert et al.'s conclusions "reasonable." She noted that there is limited evidence from which to establish a safe gluten exposure threshold, and that clinically patients are observed to have varying sensitivities to gluten. So although it is likely that most patients would not react to the low levels of gluten found in commercial GF foods, definitive proof is lacking, she said.

Crowe agreed, however, that voluntary breaches of the GF diet, or unintentional exposure while dining away from home, are far more important reasons why patients fail to maintain CD remission. "Knowing what's on the market right now, people can buy gluten-free food in any market these days," she said. "It's big business for people, but we have no quality control whatsoever. It's buyer beware." Illustrating her point, she referenced the case of a New York City chef who reportedly admitted serving high-gluten pasta to customers who requested gluten free.[2]

WHAT ABOUT GLUTENINS?

In an accompanying editorial, Frits Koning,[3] of Leiden University Medical Center in the Netherlands and colleagues said that these conclusions do not represent the final verdict on this issue. They noted that the test methods used by Gibert et al.[1] cannot detect glutenins, a second class of gluten proteins that, along with gliadin, is capable of stimulating T cells. "Better methods to determine the actual gluten content of gluten-free foods are thus still needed," they said.

In addition, it is not certain that persistent mucosal inflammation in CD is caused by continuing consumption of hidden gluten in all cases, they said. Perhaps some patients are unable to recover from the damage already inflicted by their diet before diagnosis.

"Having said this, the study indicates that it is unlikely that the consumption of commercial gluten-free foods by itself will cause problems in the large majority of patients," Koning et al.[3] conclude. "The consequence is that patients, physicians, and dietitians

Mr. Lomangino has disclosed that he is a consultant to the Informed Medical Decisions Foundation and the American Association of Diabetes Educators.

need to better watch the diet and be more suspicious of transgressions and naturally gluten-free foods."

In the study by Gibert et al., some authors reported relationships with healthcare, pharmaceutical, and gluten-free food companies. Dr. Crowe disclosed that she is an investigator in a trial funded by Alvine Pharmaceuticals.

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Elimination Diet Treats Adult Eosinophilic Esophagitis

Kevin Lomangino

KEY MESSAGES

- Most adults with eosinophilic esophagitis (EoE) respond to an elimination diet that restricts 6 common trigger foods.
- Skin prick testing is not effective for identifying trigger foods in adults with EoE.
- The current evidence supporting dietary therapy for adult EoE has substantial limitations, especially a lack of long-term outcomes data.

An elimination diet focusing on 6 common trigger foods is effective for treating eosinophilic esophagitis (EoE) in adults, according to a prospective, uncontrolled study involving 50 patients.[1]

Dysphagia symptom scores decreased in 94% of patients after 6 weeks on the elimination diet, which restricts cow's milk, soy, egg, wheat, peanuts/walnuts, and shellfish/fish. Complete histologic improvement was observed in 64% of patients, the study authors said.

After the foods were systematically reintroduced to patients who had complete histologic resolution, there was clinical and histologic evidence of recurrence within days of consuming the trigger food in all cases. The most common EoE trigger foods were wheat (60% of cases) and milk (50% of cases). In 6 patients, the researchers identified more than 1 food trigger.

Mr. Lomangino has disclosed that he is a consultant to the Informed Medical Decisions Foundation and the American Association of Diabetes Educators.

WHAT IS EOE?

Rarely seen in clinical practice before the 1990s, EoE is now thought to affect 1 in 2500 people in the United States and Europe. Its prevalence appears to be rising in concert with that of other immune system disorders such as food and respiratory allergies. Approximately 75% of sufferers are male[2] (Table 1).

EoE is an inflammatory disease characterized by clinical and histologic abnormalities of the esophagus. To meet the criteria for diagnosis, patients must have symptoms of esophageal dysfunction (dysphagia, food impaction, heartburn) and evidence of eosinophil infiltration of the esophagus on biopsy (≥15 eosinophils per high-power microscopy). The diagnosis also requires the exclusion of other causes of esophageal eosinophilia, particularly gastroesophageal reflux disease.

EoE can present with various symptom patterns. In younger children, other allergic conditions, including food allergies, are present in the majority of patients with EoE, and symptoms often include general complaints, such as feeding intolerance, failure to thrive, and abdominal pain. In adolescents and adults, the primary symptom is dysphagia, which in extreme cases can lead to food impaction. About half of all emergency food impaction cases are now attributable to EoE.[2]

IS A DIETARY APPROACH EFFECTIVE?

Dietary interventions, including elemental formula diets and the 6-food elimination diet, have been shown to effectively treat EoE in children.[3] But there are no data regarding the value of these treatments for adults. Considering the differing clinical manifestations of EoE in each age group, it is unclear whether the disease process is the same or whether dietary treatments would be equally useful in each population.

To investigate, Nirmala Gonsalves, MD, of Northwestern University and colleagues[1] recruited 50 adult patients with EoE to receive treatment with

Table 1. Eosinophilic Esophagitis: An Overview

Description	Prevalence	Diagnostic Criteria	Treatments
Immune-mediated disorder in which food or environmental antigens stimulate an inflammatory response	Approximately 1 in 2500 in the general population 5% to 16% of endoscopy patients with upper GI symptoms Disproportionately male (75%)	Patients must have the following: • Symptoms of esophageal dysfunction (dysphagia, heartburn, etc) • Biopsy shows ≥15 eosinophils/hpf • Eosinophilia limited to the esophagus • GERD and other causes of eosinophilia ruled out	Diet modification (elemental formula diet, elimination diet guided by allergy testing, empiric elimination diet restricting common triggers) Corticosteroids (topical agents typically tried first; systemic agents reserved for nonresponders) Endoscopic dilation (second-line treatment when diet or pharmacologic therapy fails)

GERD, gastroesophageal reflux disease; GI, gastrointestinal; hpf, high-power field.

the 6-food elimination diet instead of topical corticosteroids. At the start of the study, patients were counseled by a dietitian with expertise in allergy diet restriction. Participants completed a 3-day dietary log to document adherence to the diet and possible sources of contamination. After 6 weeks, esophageal biopsies were performed to assess the primary outcome of complete histologic improvement (defined as <5 eosinophils per high-power field). Patients who met the endpoint had 1 of the 6 foods reintroduced every 2 weeks, with biopsies repeated every 4 weeks to identify histologic evidence of food triggers.

Nearly all patients had an improvement in dysphagia symptoms after 6 weeks. On a symptom scale from 2 to 18, median scores dropped from 12 to 3.5. Histologically, 78% of patients had a reduction in peak eosinophil counts of 50% or more, with 64% achieving the endpoint of 5 or fewer eosinophils per high-power field after treatment. Patients with heartburn symptoms were 5 times more likely to respond to the elimination diet than those who did not.

CAVEATS AND CAUTIONS

Gonsalves et al.[1] acknowledge some concerns about their study. Despite symptomatic and histologic improvement, quality-of-life measures were not significantly improved on the elimination diet. This may reflect the difficulty of compliance with a strict elimination diet and underscores the fact that long-term effectiveness of the diet is unknown.

Another concern is that the study was not randomized and had no control group. The patients studied may have been more willing to undergo dietary therapy than the typical patient, and the subjective outcomes could reflect a partial placebo response to the intervention.

Although the results strongly suggest that food allergens play a causative role in EoE, skin prick testing (SPT) was not useful for identifying food triggers. SPT results correlated with food challenge testing in only 13% of patients, and 67% of patients who had a challenge-identified trigger tested negative to all food allergens.

"Given the poor sensitivity of SPT and lack of history of food allergy or intolerance, the six foods elimination diet with reintroduction is the only reliable method to date to identify food triggers in adult EoE and should allow us to better tailor the diet to individual patients for long-term management," said Gonsalves et al.[1] They concluded that the diet should now be considered "an effective therapeutic alternative to corticosteroids for adults with EoE."

Expert reviews[2,4] agree that an elimination diet should be considered a first-line therapy for EoE in adults, along with topical corticosteroids. Although more challenging from a compliance standpoint, dietary therapy has a lower risk of adverse effects than corticosteroid treatment and may be appealing to many patients who either do not respond to or wish to avoid pharmaceutic intervention. Gonsalves et al. are continuing with a maintenance arm of their study to assess longer-term outcomes for the 6-food elimination diet.

Meanwhile, these data should be considered groundbreaking for various reasons, argues Alex Straumann, MD,[5] of the Eosinophilic Esophagitis Research Group at University Hospital Basel, Switzerland. Not only do they offer a potentially important new treatment approach for adults, he said, but they also confirm that adult EoE is likely a food-driven disease whose primary culprits are wheat and milk.

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Clinical Nutrition INSIGHT

CPE QUIZ

To earn CPE credit, you must read the CPE articles and complete the quiz and evaluation assessment survey, answering at least 70% of the quiz questions correctly. **Select the best answer and use a blue or black pen to completely fill in the corresponding space on the enclosed answer form.** Please indicate any name and address changes directly on the answer form. If your name and address do not appear on the answer form, please print that information in the blank space at the top left of the page. If you do not pass the test, you have the option of taking it one more time. Make a photocopy of the completed answer form for your own files and mail the original answer form in the enclosed postage-paid business reply envelope by **March 31, 2015.** For more information, call (800) 638-3030.

Lippincott Williams & Wilkins (LWW) is a Continuing Professional Education (CPE) Accredited Provider with the Commission on Dietetic Registration (CDR), provider number LI001. Registered Dietitians and Dietetic Technicians will receive 2.0 continuing professional education units (CPEUs) for successful completion of this program/material, CPE Level 2. Dietetic professionals may submit evaluations of the quality of the activity directly to the CDR via its website (www.cdrnet.org). LWW is approved as a provider of continuing education for the Florida Council for Dietetics and Nutrition, CE Broker Provider # 50-1223. The program is part of the *Clinical Nutrition Insight* curriculum, which is designed to serve the clinical nutrition needs of the Registered Dietitian, Dietetic Technician, and other health care professionals with an interest in nutrition-related disorders. Each issue of the newsletter constitutes a CE program that provides CPEU credits upon successful completion of the test and evaluation form.

Online quiz instructions: To take the quiz online, **log on to your account at http://www.clinnutrinsight.com,** and click on the "CPE" tab at the top of the page. Then click on "Access the CPE activity for this newsletter," which will take you to the log-in page for **CME.lwwnewsletters.com**. Enter your ***username*** and ***password as follows:*** your **username** will be the letters LWW (case sensitive) followed by the 12-digit account number that appears above your name on the paper answer form mailed with your issue. Your ***password*** will be **1234**; this password ***may not*** be changed. Follow the instructions on the site. You may print your CPE certificate ***immediately***. Please note: LWW ***will not*** mail certificates to online participants. **Online quizzes expire at 11:59 PM Pacific Standard Time on the due date.**

Learning Objectives: After reading these articles and taking this test, you should be able to:

Food Sensitivity Testing: Evidence-Based Practice or Pricey Placebo?

- ❑ Evaluate the evidence that supports unconventional tests for the diagnosis of food allergy.
- ❑ Explain potential harms associated with these tests.
- ❑ Discuss these tests with patients and offer evidence-based alternatives.

Are "Gluten-Free" Foods Really Gluten-Free?

- ❑ Discuss the safety of packaged foods labeled "gluten-free" for patients with celiac disease.
- ❑ Identify other likely sources of unintentional gluten exposure.

Elimination Diet Treats Adult Eosinophilic Esophagitis

- ❑ Describe symptoms and diagnostic criteria for eosinophilic esophagitis.
- ❑ Evaluate the evidence supporting a 6-food elimination diet for the treatment of eosinophilic esophagitis.
- ❑ Discuss the effectiveness of skin prick testing for identifying trigger foods in adults with eosinophilic esophagitis.

1. According to evidence-based guidelines, which one of the following, used in combination with a careful patient history, is a valid test for the diagnosis of food allergies and/or intolerance reactions?
   A. IgE skin and blood tests
   B. IgG blood tests
   C. MRT
   D. Applied kinesiology

2. According to the Canadian Society of Allergy and Clinical Immunology, what is the primary reason IgG tests should not be used in the diagnosis of food sensitivities?
   A. The tests are too expensive.
   B. The tests are not widely available.
   C. Positive tests indicate exposure and tolerance to a food—not intolerance.
   D. None of the above

3. Besides lack of accuracy, which of the following is/are a reason(s) *not* to order an unconventional food sensitivity test?
   A. The tests promote overly restrictive diets that can cause harm.
   B. The tests are expensive and often not covered by insurance.
   C. Use of these tests can delay appropriate diagnosis and treatment.
   D. All of the above

4. What is the World Health Organization threshold for gluten content in foods labeled gluten-free?
   A. 20 ppm
   B. 5 ppm
   C. No detectable gluten
   D. None of the above

5. Of 205 GF products tested by Gibert et al., what percentage had gluten levels less than 20 ppm?
   A. 5
   B. 25
   C. 78
   D. 99.5

6. Restaurant meals are a more likely source of gluten exposure than packaged GF foods.
   A. True
   B. False

7. Which one of the following is *not* required for the diagnosis of eosinophilic esophagitis?
   A. Biopsy shows ≥15 eosinophils/hpf
   B. Eosinophilia limited to the esophagus
   C. Patient demonstrates histologic response to 6-food elimination diet
   D. GERD and other causes of eosinophilia ruled out

8. SPT correctly identified trigger foods in 67% of adult patients with eosinophilic esophagitis.
   A. True
   B. False

9. What is the primary symptom of eosinophilic esophagitis in adults?
   A. Recurrent vomiting
   B. Diarrhea
   C. Dysphagia
   D. Heartburn

10. Eosinophilic esophagitis is more frequently observed in males.
    A. True
    B. False

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"Third," Straumann continued, "this study indicates that adult and pediatric EoE have comparable response patterns. This adds further support to the argument that adult and pediatric EoE together represent a single entity, despite their different clinical manifestations."

Sources for this article disclosed no conflicts of interest.

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newsbites

NEW DRUG FOR SHORT BOWEL SYNDROME

The FDA has approved teduglutide (Gattex, NPS Pharmaceuticals) for the treatment of short bowel syndrome in adults. An analog of glucagon-like peptide-2, teduglutide promotes intestinal epithelial growth and decreases transit time, leading to increased fluid and nutrient absorption. In a phase III study involving 86 adults who were receiving parenteral nutrition (PN) support 3 or more times per week for at least a year before enrollment, a 20% reduction in PN requirements was achieved by 63% of teduglutide-treated patients compared with 30% of the placebo group after 24 weeks of treatment. Fifty-four percent of patients in the teduglutide group achieved a reduction of at least 1 full day of PN compared with 23% in the placebo group. No patients in the study were weaned completely from PN. (See *Gastroenterology.* 2012;143(6):1473-1481.)

"Today's approval expands the available treatment options for patients with this life-threatening condition," Victoria Kusiak, MD, deputy director of the Office of Drug Evaluation III in the FDA's Center for Drug Evaluation and Research, said in a press release. "Because Gattex may cause other serious health conditions, it is critical that patients and health care professionals understand the drug's potential and known safety risks." Based on rodent studies, there is concern that teduglutide could promote colonic adenomas. Furthermore, abdominal pain, distention, nausea, peripheral edema, and nasopharyngitis were more common in teduglutide-treated patients. The approval is contingent on implementation of a Risk Evaluation and Mitigation Strategy, which will consist of a communication plan and training for prescribers, the FDA said. Teduglutide therapy will reportedly cost about $300,000 per year.

BULLYING IN FOOD ALLERGY PATIENTS

Nearly a third of children with food allergies report being the victim of bullying related to their condition. However, parents were aware of this bullying in only about half of cases, according to a study. Children who reported being bullied for any reason had modestly lower quality-of-life scores than their peers who were not bullied (~7 points on a 100-point scale). Quality-of-life scores for children were better when parents were aware of the bullying than when they were unaware of it. This suggests that children with food allergies should be encouraged to identify and report bullying, said Eyal Shemesh, MD, of Mount Sinai Medical Center, and colleagues. (See *Pediatrics.* 2013;131:e10-e17.)

The authors studied 251 patients and parents from a food allergy clinic who completed a questionnaire. They found that teasing was the most common form of bullying reported by these children (42 reports), but bullying specifically involving food, including children waving food (30 reports) and throwing food (10 reports), and forcing the patient to touch food (12 reports) were not unusual.

GUT MICROBES AND COLIC

The intestinal microbiota of infants who go on to develop colic is already different from non-colicky control infants in the first couple of weeks of life, according to a study. The authors say that the finding could eventually lead to a better understanding of the condition and more effective treatments. Using state-of-the-art DNA analysis techniques, Carolina de Weerth et al. studied fecal samples of 12 infants who developed colic and 12 control infants without colic. Both groups were selected from among infants who were participating in a larger study of the influence of early care-giving factors on child development. Sample collection started 2 days after birth and continued for 100 days.

They found that infants who developed colic had lower microbial diversity in the first few weeks of life, and that colicky babies had more proteobacteria (including pathogenic species linked to inflammation and gas production) and lower levels of lactobacilli and bifidobacteria. Although other studies have also reported alterations in the gut microbes of colicky infants, this is the first study to demonstrate that these differences precede the development of symptoms, suggesting a potential causal influence. "The results could also help explain why the administration of probiotics can result in a decrease in colic symptoms," the authors said. "The probiotics might change the microbiota, thereby displacing the colic-associated bacteria." (See *Pediatrics.* 2013; published online, January 14, 2013;doi:10.1542/peds.2012-1449.)

Coming Soon

- Obesity and Mortality
- Obesity Myths Explored
- Treatment of Pediatric Obesity