Gut Function
A Silent Player in Inflammation and Hormone Balance

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Disclosure

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Learning Objectives

To suggest digestive health as a consideration for concerns in other body systems. To explain where digestion-related tests can be an important tool when working with complex cases relating to any body system.

1. Examine literature supporting clinical value of Food sensitivity (IgG) testing and explain how this may affect systems beyond the digestive tract.

2. Demonstrate a relationship between gut inflammation and hormone metabolism. In particular to demonstrate the importance of the microbiome and to introduce the sterolbiome in relation to the metabolism of hormones and xenobiotics.

3. To illustrate the role of enterohepatic circulation and discuss the biliary tree as an often forgotten part of the digestive system.

4. Offer treatment strategies that incorporate this holistic view of gut/microbiome/hormone trilogy.
Food Sensitivity (IgG) Testing

• An established and well-used test with clinical benefits
• Distinction between allergy, sensitivity and intolerance needs to be communicated to patients and community
• Food sensitivities in adults and children are occurring at an increasing rate
Benefits to diet based on IgG results

- 5286 participants
- Questionnaire 3 months after IgG food test
- 76% reported a significant improvement in their condition
- 92% reported a return of symptoms on reintroduction of offending foods

Dietary advice based on food-specific IgG results

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Gillian Hart
YorkTest Laboratories Ltd, York Science Park, York, UK

Abstract

Purpose – To provide evidence that elimination diet based on food-specific IgG test results is an effective, reliable and valid aid to the management of chronic medical conditions.

Design/methodology/approach – A postal survey, commissioned by Allergy UK, was carried out with 5,286 subjects reporting a wide range of chronic medical conditions, who had taken a food-specific IgG enzyme-linked immunosorbent assay blood test. Questionnaires, issued three months after the results, were analysed to investigate the effect of eliminating the foods identified by the test.

Findings – Of patients who rigorously followed the diet 75.8 per cent had a noticeable improvement in their condition. Of patients who benefited from following the recommendations 68.2 per cent felt the benefit within three weeks. Those who reported more than one condition were more likely to report noticeable improvement. 81.5 per cent of those that dieted rigorously and reported three or more co-morbidities showed noticeable improvement in their condition. For those that dieted rigorously and reported high benefit, 92.3 per cent noticed a return of symptoms on reintroduction of the offending foods.

Originality/value – These data provide evidence for the use of elimination diet based on food-specific IgG blood test results as an aid to management of the symptoms of a range of chronic medical conditions.

Keywords Food products, Diet

Paper type Research paper

Introduction

A role for food-specific IgG antibodies in the underlying mechanism of food intolerance (non-IgE mediated food allergy) has been proposed, as has the measurement of food-specific antibodies as a strategy for identifying foods to which a patient may be sensitive (Marinkovich, 1996). It is proposed that the presence of food-specific IgG antibodies is a potential sensitivity to that particular food and that the patient may achieve benefit by eliminating the food(s) from their diet. Recent study showed a consistent increase in IgG antibody titres across the three Irritable Bowel Syndrome (IBS) subgroups compared to controls for wheat, beef, pork, lamb, and soya bean (Zar et al., 2005), and a clinically significant improvement in symptoms has been observed in IBS patients eliminating foods identified by such a method (Atkinson et al., 2004). However, the exact role of IgG antibodies as markers of food intolerance in general is not clear. IgG antibodies to food antigens are often present in healthy individuals and are generally considered to be part of the normal immune response to food allergens (Barnes, 1995).

Food intolerance has been associated with a myriad of chronic symptoms including headaches (Rees et al., 2005), intestinal and skin symptoms (Sampson and McCashill, 1985), behavioural changes and respiratory disorders (Pelikan, 1988). Currently, the best accepted method for diagnosing and confirming food intolerance is empirical, by elimination diet and subsequent challenge (Radciffe, 2002). Using this method patients
Obese children have significantly higher IgG antibody values directed against food antigens than normal weight children.

Anti-food IgG antibodies are tightly associated with low grade systemic inflammation.
Irritable Bowel Syndrome (IBS)

Irritable bowel syndrome (IBS) is a common disorder which causes abdominal pain, abdominal distension, and bowel dysfunction, characterised by loose bowels, constipation, or a fluctuation between these two extremes. This condition significantly impairs quality of life and places a large burden on health care resources. Treatment of IBS is largely based on the use of antispasmodics, antidiarrheics, and medications that modify bowel habit, depending on whether constipation or diarrhoea is the predominant problem. The notorious inadequacies of current drug therapy lead to much patient dissatisfaction and a tendency for patients to seek a variety of alternative remedies, especially if a dietary measure is likely to be a multifactorial condition involving a number of different mechanisms although the prevalence of any particular factor may vary from patient to patient. However, patients often strongly believe that dietary intolerance significantly contributes to their symptomatology and some sufferers seem to benefit from eliminating certain foods from their diet. Detection of food intolerance is often difficult due to its uncertain aetiology, non-specific symptomatology, and relative inaccessibility of the affected organ. Thus most previous studies have relied on the use of exclusion diets, which are extremely labour intensive and time consuming.

Attempts to "test" for food intolerance in IBS have largely focused on "classic" food allergy based on the presence of IgG-mediated antibody responses, although it appears that these "immediate type" reactions are probably quite rare in this condition. It is therefore possible that adverse reactions to food in patients with IBS might be due to some other form of immunological mechanism, rather than dietary allergy. Such reactions could be mediated by IgE antibodies, which characteristically give a more delayed response following exposure to a particular antigen and have been implicated in some cases of food hypersensitivity. However, this mechanism is controversial and is considered by some to be physiological.

Background: Patients with irritable bowel syndrome (IBS) often feel they have some form of dietary intolerance and frequently try exclusion diets. Tests attempting to predict food sensitivity in IBS have been disappointing but none has utilised IgG antibodies.

Aims: To assess the therapeutic potential of dietary elimination based on the presence of IgG antibodies to food.

Patients: A total of 150 outpatients with IBS were randomized to receive, for three months, either a diet excluding all foods to which they had raised IgG antibodies (enzyme linked immunosorbent assay test) or a sham diet excluding the same number of foods but not those to which they had antibodies.

Methods: Primary outcome measures were change in IBS symptom severity and global rating scores. Non-parametric methods were chosen as IBS symptomatology, quality of life, and anxiety/depression were secondary outcomes. intention to treat analysis was undertaken using a generalised linear model.

Results: After 12 weeks, the true diet resulted in a 10% greater reduction in symptom score than the sham diet (Mean difference 39.5% confidence intervals [CI] 0.1–7.7; p = 0.024) with this value increasing to 26% in fully compliant patients (difference 95.3% CI 3.1–17.4; p < 0.001). Global rating also significantly improved in the true diet group as a whole (p = 0.048, NNT = 9) and even more in compliant patients (p = 0.006, NNT = 2.5). All other outcomes showed trends favourable to the true diet. Replacing the diet led to a 24% greater deterioration in symptoms than those on the true diet (difference 52.5% CI 18–88; p = 0.003).

Conclusion: Food elimination based on IgG antibodies may be effective in reducing IBS symptoms and is worthy of further biomedical research.

**PATIENTS AND METHODS**

Patients: All patients with uncomplicated IBS (all bowel habit subtypes) attending the Gastroenterology Department at the University Hospital of South Manchester were considered eligible for the study, and those aged between 18 and 75 years, who satisfied the Rome II criteria, were invited to participate. Tertiary care patients were excluded from the study. All patients had normal haematology, biochemistry, and endoscopic examination where indicated. Coeliac disease was excluded using the tissue transglutaminase test and a hydrogen breath test was used for excluding lactose intolerance. Patients were also excluded from participating in the study if they had any significant coexisting disease or a history of gastrointestinal surgery, excluding appendectomy, cholecystectomy, and hiatal hernia repair. The study was approved by the local ethics committee and all patients provided written informed consent.

Methods: The study used a double blind, randomised, controlled, parallel design in which patients were randomised to either a "true" diet or a "sham" diet control group. At screening, patients were asked to complete a dietary history. At baseline and on completion of the study, collection of data was made, and patients were asked to complete the IBS symptom severity scale and a global rating scale. Patients were assessed weekly for compliance and tolerability of the diet. At baseline and before diet commencement, blood samples were taken for enzyme linked immunosorbent assay tests. The primary outcome measures were change in IBS symptom severity and global rating scores. Non-parametric methods were chosen as IBS symptomatology, quality of life, and anxiety/depression were secondary outcomes. Intention to treat analysis was undertaken using a generalised linear model.

**Irritable Bowel Syndrome**

Food elimination based on IgG antibodies in irritable bowel syndrome: a randomised controlled trial

W Atkinson, T A Sheldon, N Sheath, P J Whorwell


**Abbreviations:** IBS, irritable bowel syndrome; ELISA, enzyme linked immunosorbent assay; AU, arbitrary unit; HAD, Hospital Anxiety Depression scale; QOL, quality of life; NNT, number needed.
Migraines

Migraine

Original Article

Diet restriction in migraine, based on IgG against foods: A clinical double-blind, randomised, cross-over trial

Kadiyri Alpay¹, Mustafa Ertas¹, Elif Kocasoy Orhan¹, Didem Kanca Ustao³, Camille Lieners⁵ and Betül Baykan¹

Abstract

Introduction: It is well-known that specific foods trigger migraine attacks in some patients. We aimed to investigate the effect of diet restriction, based on IgG antibodies against food antigens on the course of migraine attacks in this randomised, double-blind, cross-over, headache diary based trial on 20 patients diagnosed with migraine without aura.

Methods: Following a 6-week baseline, IgG antibodies against 266 food antigens were detected by ELISA. Then, the patients were randomised to a 6-week diet either excluding or including specific foods with raised IgG antibodies, individually, following a 2-week diet-free interval after the first diet period, the same patients were given the opposite 6-week diet (provocation diet following elimination diet or vice versa). Patients and their physicians were blinded to IgG test results and the type of diet (provocation or elimination). Primary parameters were number of headache days and migraine attack count. Of 30 patients, 28 were female and 2 were male, aged 19-52 years (mean, 35 ± 10 years).

Results: The average count of reactions with abnormally high titres was 24 ± 11 against 266 foods. Compared to baseline, there was a statistically significant reduction in the number of headache days (from 10.5 ± 4.4 to 7.5 ± 3.7, P < 0.001) and number of migraine attacks (from 9.0 ± 4.4 to 6.2 ± 3.8; P < 0.001) in the elimination diet period.

Conclusion: This is the first randomised, cross-over study in migraineurs, showing that diet restriction based on IgG antibodies is an effective strategy in reducing the frequency of migraine attacks.

Keywords

migraine, food, diet, IgG, trigger

Date received: 09 November 2009; accepted: 3 January 2010

Introduction

The exact pathophysiology of migraine is still unclear. Besides different genetic mutations, there is evidence of a profound role of meningeal inflammation in migraine pathogenesis (1,2). Environmental trigger factors are thought to play an important role. Many contributing factors may trigger the occurrence of migraine attacks and food is one of the most well-known (3-8). These, however, as with most elements of migraine, need to be individualised to the patient with migraine.

Since the 1990s, hidden food allergy has been suspected to be linked to migraine. Several studies showed significant improvement when patients were put on an elimination diet (9,14). IgG-specific food allergy has been shown to be related with migraine supported by the success of individualised diet in controlling migraine attacks (4,15). Non-IgE antibody-mediated mechanisms have also been proposed in food allergy (16). Aljada et al. (17) provided evidence for the pro-inflammatory effect of food intake. IgG antibodies against food antigens have been found to be correlated with inflammation and intima media thickness in obese juveniles (18).

Several studies reported significant improvement in irritable bowel syndrome (IBS) by food elimination based on IgG antibodies against food antigens (19-22). Rees et al. (23) showed a beneficial effect of a diet guided by IgG antibodies to food in migraine patients.

Source:
Respiratory Conditions

Asthma

Respiratory disease

The effects of exclusion of dietary egg and milk in the management of asthmatic children: a pilot study

INTRODUCTION

In the UK there are over three million people with asthma. In adults and children a clinical response can be triggered by a wide variety of agents. These include dietary and environmental allergens, viral infections, exercise, exposure to fumes and other irritants, certain drugs, food, drink and food additives.

In asthmatic children aged less than two years, an adverse reaction to cows' milk is reported to be the most common 'allergic reaction' followed by an adverse reaction to eggs. Anderson and Weale reported that amongst the factors that determine asthma prognosis the following were important: age, immune status, sex, mother's age at child-birth, infections, other allergic diseases, and signs and symptoms of food allergy. Anderson commented that up to the early 1990s little interest and investigative effort had been directed towards a possible role for foods in the provocation of atopic asthma. Perhaps the general feeling was that inhaled allergens, rather than those consumed in food, were more likely to be the main causes and immediate sensitivity reactions to foods were reported to be less frequent in children with asthma than in those with eczema. The results of only a few clinical trials seem to have been published and priority has been
Inflammatory Bowel Disease

**IBD**

**Crohn’s disease**

**Ulcerative colitis**

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**Food Exclusion Based on IgG Antibodies Alleviates Symptoms in Ulcerative Colitis: A Prospective Study**


**Background:** Most patients with ulcerative colitis (UC) rely predominantly on medication for disease control. Diet interventions can reduce pharmaceutical expenditures and prolong remission. We designed a prospective study to evaluate whether an immunoglobulin G (IgG) guided food exclusion diet would improve symptoms and quality of life (QoL) in patients with UC.

**Methods:** The 6-month diet intervention included 97 patients with UC who were randomly divided into an intervention group (n = 49) and a control group (n = 48). Individual diet plans were created for the intervention group according to IgG titers. The control group ate a healthy diet as normal. Nutritional indices included disease activity, extraintestinal manifestations, nutritional status, and QoL. Relationships between dietary IgG and disease activity were also analyzed.

**Results:** At baseline, there were no significant differences between the groups. Food-specific IgG antibodies were detected in 70.10% of participants. After intervention, the Mayo score was significantly lower in the intervention group than in the control group (2.41 ± 0.89 vs. 3.52 ± 1.15, P < 0.05). The number of patients with extraintestinal manifestations decreased from 75.6% in the intervention group and from 6.5% in the control group. As for nutritional indices, the intervention group had higher mean body mass index and albumin than the control group (23.80 ± 1.33 vs. 25.30 ± 1.28 kg/m², respectively, P < 0.05; 40.02 ± 5.30 vs. 45.72 ± 5.48 g/L, respectively, P < 0.05). Insulin and transferrin were not significantly different between the groups. QoL improved after food exclusion (P < 0.05).

**Conclusions:** An IgG-guided exclusion diet alleviated UC symptoms and improved QoL. A prospective study with IgG-based food intolerance and UC warrant further study.

**Keywords:** colitis, ulcerative, immunoglobulin G, food exclusion

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**Future Directions**

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**Source:**
Research Article
Antibodies against Food Antigens in Patients with Autistic Spectrum Disorders

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Purpose. Immune system of some autistic patients could be abnormally triggered by gluten/casein assumption. The prevalence of antibodies to gliadin and milk proteins in autistic children with paired/unpaired intestinal permeability and under dietary regimes either regular or restricted is reported. Methods. 162 ASDs and 44 healthy children were investigated for intestinal permeability, time-transtubaline (TTG) anti-endomysium antibodies (EMA-IgA), and total mucosal IgA to exclude celiac disease; HLA-DQ2+/DQ8 haplotypes; total systemic antibodies (IgA, IgG, and IgM); specific systemic antibodies e-gliadin (AGA-IgA and IgG); deamidated-gliadin-peptide (DGP-IgA and IgG), total specific gliadin-IgG (all fractions α, β, and γ), β-gluten (IgG), α-lactalbumin (IgG), casein (IgG), and milk IgG. Results. AGA-IgG and DGP-IgG titers resulted to be higher in ASDs compared to controls and are only partially influenced by diet regimes. Casein IgG titers resulted to be more frequently and significantly higher in ASDs than in controls. Intestinal permeability was increased in 23.6% of ASDs compared to 2.2% of healthy children. Systemic antibodies production was not influenced by paired/unpaired intestinal permeability. Conclusions. Immune system of a subgroup of ASDs is triggered by gluten and casein; this could be related either to AGA, DGP, and Casein IgG elevated production or to impaired intestinal barrier function.
Depression and IBS

Major Depressive Disorder
Irritable Bowel Syndrome
Case Study: Eczema

- 4 year old male with significant eczema
- Extreme excoriation, infection
- Much family tragedy and limited resources
- In care of grandmother after passing of mother, father is absent
- Diet consists of cookies, processed foods, nuts, dates, meats
- Bowels are slow, require strain, likely fissures
-Tx
  - Probiotic, multi, fish oil, dietary recommendations to increase fibre and water
  - Food sensitivity test
Case Study: Eczema

Graphic slide warning

Source:
Case Study: Eczema
Case Study: Eczema
Case Study: Eczema
Case Study: Eczema

- Visit 2 (2 weeks)
  - Review food sensitivity results
  - Many elevated foods & positive candida
  - Treatment plan includes dietary advice to increase variety of vegetables/fibre, probiotic, fish oil, multivitamin, anti-candida.
Case Study: Eczema

- Visit 3 (7 weeks after initial)
- Improvements in eczema are definitive
- Excoriation is much improved.
- Bowels are more regular and comfortable
- Requisition stool analysis
  - Results indicate poor SCFA Distribution, low fecal fat, very low putrefactive SCFA, no parasites
  - Recommend increased protein, fibre, silver
Case Study: Eczema
Case Study: Eczema

- Visit (16 weeks after initial)
- Improvements in eczema are definitive
- Excoriation remains improved.
- Bowels remain comfortable, no strain, no hesitation
- Exposure to wheat shows papular rash consistent with dermatitis herpetiformis
- Grandma is thrilled
Case Study: Eczema
Case Study: Eczema

Source:
Microbiome

“The second genome”
the gut sterolbiome represents an important class of enzyme encoding genes that give gut microbiome the ability to act as an endocrine organ with far-reaching effects in the host. Perturbing effects of the sterolbiome, such as diet, antibiotics, probiotics, and so forth, have the potential to affect many physiological effects.”

• Primary and secondary bile acids related to reabsorption or clearance of steroids and xenosteroids

• Produce metabolites distinct from the liver’s metabolism
Diet Changes Are Reflected in Microbiome

- Diet affects microbiome
- Microbiome in turn affects enterohepatic recirculation
Pregnane X-receptor

- Affected microbiome leads to changes in clearance of hormones and other molecules
• Healthy gut bile enables healthy microbiome to flourish while dysbiotic organisms flounder
Enterohepatic Circulation of Bile Acids

Phillip B. Hylemon et al. J. Lipid Res. 2009;50:1509-1520
Figure 1. Bile acid synthesis, signaling, and regulation in human liver.

Chiang JY. Recent advances in understanding bile acid homeostasis [version 1]. F1000Research 2017, 6:2029 (doi: 10.12688/f1000research.12449.1)
Enterohepatic Circulation

Or is it better called Recirculation?

• Intestinal metabolism of bile-excreted hormones
• Intestinal conversion of exogenous molecules to endocrine active metabolites
• Pregnane X receptor
  • Sensor for steroid and xenotoxic substances upregulates detoxification, especially in situation of supraphysiological levels
• “Innocent bystander” effect: supplemental estrogen leads to increased clearing of testosterone.

Source:
Enterohepatic Circulation

• The nuclear pregnane X receptor (PXR; NR1I2) is an important component of the body's adaptive defense mechanism against toxic substances including foreign chemicals (xenobiotics).
• PXR is activated by a large number of endogenous and exogenous chemicals including steroids, antibiotics, antimycotics, bile acids, and the herbal antidepressant St. John's wort.
• The nuclear pregnane X receptor (PXR; NR1I2) is an important component of the body's adaptive defense mechanism against toxic substances including foreign chemicals (xenobiotics).
Enterohepatic Circulation

- The host and microbiome appear to regulate bile acid pool size.
- The host produces a large, conjugated hydrophilic bile acid pool, maintained through positive-feedback antagonism of Farnesoid X Receptor in intestine and liver. Members of the microbiome utilize bile acids and their conjugates resulting in agonism of FXR in intestine and liver resulting in a smaller, unconjugated hydrophobic bile acid pool.
- Hydrophilicity of the bile acid pool is associated with disease states.
- Reduced bile acid levels in the gut are associated with bacterial overgrowth and inflammation.
- Diet, antibiotic therapy, and disease states affect the balance of the microbiome-bile acid pool.
The results are compatible with the contention that ursodeoxycholic acid stimulates the biliary excretion of sulphated progesterone metabolites.

The effects(s) appears to be independent of the stimulation of bile acid secretion.
Psyllium and Bile Excretion

- Fecal excretion of both bile acids and total steroids was significantly higher by rats fed psyllium
- Up-regulation of bile acid excretion enzyme pathway in liver
bile acids act as potent non-competitive inhibitors of 5bR

compensatory activation of the hypothalamic-pituitary-adrenal axis and adrenal androgen excess
The Microbiome as an Endocrine Organ

Mol Endocrinol. 2014. 28(8):1221-1238.
## The Microbiome as an Endocrine Organ

<table>
<thead>
<tr>
<th>Class</th>
<th>Examples</th>
<th>Functions</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCFAs</td>
<td>Acetate</td>
<td>Energy source</td>
<td>Directly produced by bacteria; epigenetic and receptor-mediated effects; CNS effects linked to autism-like behaviors</td>
</tr>
<tr>
<td></td>
<td>Butyrate</td>
<td>Host metabolism</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Propionate</td>
<td>Signaling molecules</td>
<td></td>
</tr>
<tr>
<td>Neurotransmitters</td>
<td>Serotonin</td>
<td>Mood, emotion, cognition, reward (CNS)</td>
<td>Can be directly produced by bacteria (see Table 2) or indirectly regulated</td>
</tr>
<tr>
<td></td>
<td>Dopamine</td>
<td></td>
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<tr>
<td></td>
<td>Noradrenaline</td>
<td>Motility/secretion (ENS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GABA</td>
<td></td>
<td></td>
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<tr>
<td>Precursors to neuroactive compounds</td>
<td>Tryptophan</td>
<td>Precurser to: 5-HT</td>
<td>Kynurenine is itself a metabolite of tryptophan, production subject to regulation by microbiota</td>
</tr>
<tr>
<td></td>
<td>Kynurenine</td>
<td>Kynurenic acid, quinolinic acid, Dopamine</td>
<td></td>
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<tr>
<td></td>
<td>L-Dopa</td>
<td></td>
<td></td>
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<tr>
<td>Bile acids</td>
<td>Secondary bile acids</td>
<td>Antimicrobial</td>
<td>Some effects mediated by bile acid receptors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Host metabolism</td>
<td></td>
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<tr>
<td>Choline metabolites</td>
<td>Trimethylamine</td>
<td>Lipid metabolism (choline)</td>
<td>Metabolized in the liver to trimethylamine-N-oxide, linked to cardiovascular disease</td>
</tr>
<tr>
<td>HPA hormones</td>
<td>Cortisol</td>
<td>Stress response</td>
<td>Indirect regulation; HPA endocrine abnormalities prominent in stress-related psychiatric disorders</td>
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<tr>
<td></td>
<td></td>
<td>Host metabolism</td>
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<td></td>
<td>Anti-inflammatory</td>
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<td>Wound healing</td>
<td></td>
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<tr>
<td>GI hormones</td>
<td>Ghrelin</td>
<td>Host metabolism</td>
<td>Indirect regulation; possibly mediated by SCFAs via enteroendocrine cells</td>
</tr>
<tr>
<td></td>
<td>Leptin</td>
<td>Appetite regulation</td>
<td></td>
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<td></td>
<td>Glucagon-like peptide-1</td>
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<tr>
<td></td>
<td>PYYY</td>
<td>GI motility/secretion</td>
<td></td>
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</tbody>
</table>
Biliary Tree Evaluation

Biliary Dyskinesia, cholelithiasis

- Clinical evaluation: RUQ ttp, radiating pains, distress with rich meal, greasy stools, poor ADEK absorption, low fat diet, GI dysfunction
- Hx NAFLD, H Pylori, Cholelithiasis, pancreatitis, obesity, OCP, estrogens, cholesterol medications, antibiotics
- Laboratory evaluation: GGT, AST, ALT, bilirubin,
- Food sensitivity; IgG
- Stool analysis
- Ultrasound, HIDA scan, ERCP, CT, MRI
Gut Function Evaluation

- IgG food sensitivity testing
  - Reactive foods
  - Patterns such as leaky gut
  - Carbohydrate, fat, protein maldigestion
- Stool analysis
  - Fecal fat
  - Short-chain fatty acids, butyrate
  - Inflammation: IgA, calprotectin
  - Pathogens & parasites
Biliary Tree Support

• Drink a glass of water with lemon upon awakening.
• Minimize sugars and processed foods.
• Consume bitter foods, or take bitters at start of meal.
• Engage the parasympathetic nervous system: “Meal Hygiene”
• Eat garlic, onions, carrots, horseradish, spicy foods
• Drink tea made from dandelion, peppermint, green tea, or ginger.
• Drink buttermilk and eat yogurt.
• Cholegogue/choleretic herbs: *Fumaria officinalis, Chelidoneum majus, Artemesia absinthum, Rheum palmatum, berberus*
• Bile salts

Source:
Digestive Support

- Bile salts
  - I provide bile salts for 4 weeks with oils such as hemp or flax to increase and dilute the bile reservoir before stimulating bile production
- Beet juice, taurine, vitamin C, pancreatic lipase
- Phosphatidyl choline, lecithin, inositol
- Pancreatic enzymes, digestive enzymes
- Probiotics
- Fermented foods
- Hydrotherapy, castor oil pack
- Fiber, resistant starches
Case: Perimenopause

Robust 51-year old female chiropractic assistant

- Sporadic menses; 2-3 per year since discontinuing OCP 18 months prior
- Hot flashes, night sweats, low sex drive, low mood, anxiety
- Vegetarian greater than 20 years (lacto-ovo)
- Mild digestive complaints of bloating, reflux
- Initial treatment plan
  - Breathwork
  - Saliva hormone panel
  - Digestive enzyme, withania, vitamin D
Case: Perimenopause

51 year old female

- Saliva hormone panel finds low estradiol, suboptimal progesterone
- Patient reports that relaxation breathwork is helping with anxiety
- Enzymes minimize bloating/reflux, but patient is resistant to do elimination diet or food sensitivity testing
- Treatment plan includes typical herbal regimens and we cycle through several products and see little benefit to any of the programs over approx 6 months
- Ultimately patient starts BHRT program with another practitioner
Case: Perimenopause

51 year old female

- Patient returns after 12 months with little benefit to BHRT so she has discontinued.
- No menses for past 6 months and hot flashes and night sweats are increasing in frequency and intensity
- I again suggest to do elimination diet or food sensitivity testing, and we settle with a commitment to avoid cheese and crackers at daily “happy hour”, and patient is very reluctant to do this. In fact we did agree to be grain-free for three weeks
- Eventually the patient does comply and sees a dramatic and quite immediate change in hot flashes and night sweats. Ultimately food elimination and challenge show the cheese and wine as tolerable but gluten-containing grains as problematic.
Thank You

"The 'i' in illness is isolation, and the crucial letters in wellness is 'we'."
~Author Unknown

It is my pleasure to have shared this time with you and I encourage you to contact me if you would like further discussion.

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