Nutrition And Digestive Health

Randy Pendergrass LSN, CSCS, LMT
randycscss@gmail.com
HIPPOCRATES, 460-360 BC

ALL DISEASE BEGINS IN THE GUT

Hippocrates
Father of Western Medicine
Burden of Gastrointestinal Diseases in the United States

* Gastrointestinal disease affects 60-70 million U.S. citizens (reported)
* Americans spent ~$175 billion in 2010 on digestive diseases
* Acid reflux drugs are second most prescribed drugs in U.S.
* IBS is the second most common cause for missed work.
* Digestive diseases account for over 21 million hospitalizations and over 250,000 deaths each year
Common Digestive Disorders

- GERD
- IBS: (IBS-D and IBS-C)
- Ulcerative Colitis
- Crohn’s
- Diverticulosis & Diverticulitis
- SIBO
- Leaky Gut Syndrome
- Gallstones
- Appendicitis
- Hemorrhoids
Gut Facts

• Your gut is your “Second Brain”
• Enteric Nervous System
• 95% of the serotonin in your body is in your gut.
• 50% of the dopamine is in your gut
• You make 400 times more melatonin in your gut than in your brain (mostly made by your gut bugs and stored in the appendix)
• You have 10 times more microbes in your colon than cells in your body
• The genes of your gut flora are 100 times greater than our own
• Around 80% of your immune system is located in the gut (GALT)
The Second Brain

• More nerve cells in the gut than the spinal cord or the peripheral nervous system
• The vagus nerve is the primary connection between the 2 brains
• New research shows most of the information is from gut to brain
• Many of our mood influencing neurotransmitters like serotonin are made in the gut
• Helps the gut function on its own
• Mental issues like anxiety and depression may arise first in the gut (inflammation)
Melatonin

- Sleep- regulates our circadian rhythm (sleep-wake cycle)
- Once thought to be only in the brain (pineal gland)
- Very powerful antioxidant
- Protects stomach lining from toxins like NSAID’s
- Reduces stomach acid while you are sleeping
- Regulates LES and UES pressure regulation
- Increases blood flow to esophagus for quick healing
- Reduces bowel spasms
How to Increase Melatonin Production

• Get your gut in good shape
• Probiotics? Prebiotics?
• Minimize light exposure at night
• Beware of blue light
• Blue light blocking glasses
• Install F.lux on your computer
• Blue light screens
• Night lights for kids
• Don’t sleep with a full stomach
• Consume a SMALL amount of carbohydrate before bed (milk)
The Human Gut Flora

• 5 times more microbes in the gut than cells in your body

• Over 500 different strains have been identified

• The gut flora is thought to be ~85% beneficial and 15% pathogenic in a healthy person

• There is a mixture of bacteria and yeast (candida)
Importance of Fiber

- Bacteria ferment soluble fiber and resistant starch, which produces short chained saturated fats:
  - Butyric acid
  - Propionic acid
  - Acetic acid
- These short chained saturated fats are used by Goblet cells to make Mucus
- If the microbes are starved they may begin to consume the mucus
- Without the short chained saturated fatty acids the goblet cells starve and make less mucus
PROBIOTICS

- Bifidobacteria strains
- Lactobacillus strains
- Saccharomyces boulardii
- Streptococcus
  *Streptococcus salivarius*
  *Streptococcus thermophilus*

- Do not use if immune system is severely compromised.
- If gut is in bad shape an infant formula may be best to start
- Take on empty stomach (bedtime?)
- Take with non-chlorinated water
- People with histamine issues should be careful with fermented foods and probiotics
Jarro-Dophilus

Supplement Facts
Serving Size 1 Capsule
Servings Per Container 60

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<tr>
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<th>Amount Per Serving</th>
<th>% DV</th>
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<td>Probiotic Bacteria Blend</td>
<td>5 Billion Viable Cells</td>
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Composed of the following strains:
- *Lactobacillus rhamnosus* R0011
- *Lactobacillus helveticus* (L. acidophilus) R0052
- *Pediococcus acidilactici* R1001
- *Lactobacillus casei* R0215
- *Bifidobacterium longum* BB536
- *Lactobacillus plantarum* R1012
- *Bifidobacterium breve* R0070
- *Lactococcus lactis ssp. lactis* R1058

† Daily Value not established.
Infant Probiotics
What Do The Gut Bugs Do?

Functions Of The Gut Flora

- Contribute To Liver Health
- Regulate Immunity
- Synthesize Vitamins
- Synthesize Enzymes
- Regulate Appetite
- Regulate Blood Sugar
- Regulate Inflammation
- Control Pathogens
- Increase Mineral Bioavailability
- Synthesize Neurotransmitters
- Regulate Hormone Metabolism
What Is Creating all the Digestive Issues?

- Antibiotics
- Too much refined sugar
- Not enough good fiber
- Too many medications
- Chronic Stress
- Chronic Infections
- C-sections?
- Pollution
- Low Stomach Acid
Appendix: A Vestigial Organ?

• Only found in a few animals
• Once thought to digest tree bark (Darwin)
• Vital part of our immune system
• Lymphoid tissue accumulates right after birth
• Helps in maturation of immune cells (B cells)
• Produces antibodies
• Helps re-colonize beneficial microbes after infection
• Stores Melatonin, and maybe other neurotransmitters
• People without an appendix are far more likely to develop IBS or SIBO
What Causes Acid Reflux?

• Too much acid or too little?
• Dysfunction in the LES
• The stomach can handle HCL, the esophagus can not
• Those with Zollinger-Ellison Syndrome are an exception
• ZES is caused by a tumor in the small intestine, pancreas, or lymph nodes by the pancreas
• ZES is rare. Occurs in about 1 in 1 million people
Conventional Treatment for Acid Reflux

**Acid Neutralizers**
*Antacids: Tums, Rolaids, Maalox, Mylanta, etc.*

**Acid Suppressors**
*Histamine blockers: Zantac, Tagamet, Pepcid, etc.*

**Proton Pump Inhibitors**
*Prilosec, Nexium, Prevacid, etc.*
“Why Stomach Acid Is Good For You” by Jonathan Wright, M.D.

Fig. 1. Contrary to popular belief, stomach acid secretions drop with advancing age. This graph shows average decline in stomach acid secretion in humans between age 20 to age 80. (From “Why Stomach Acid is Good For You.”)
Treating gastroesophageal reflux disease with profound acid inhibition will never be ideal because acid secretion is not the primary underlying defect.

It is never ideal to treat 1 abnormality by creating another, as was the case for many years with management of ulcer disease before the discovery of H pylori infection.

The pathophysiology of acid reflux concerns the dysfunction of the gastroesophageal barrier and research needs to refocus on ways of restoring its competence rather than merely suppressing gastric acid secretion.
What Causes the LES to Malfunction?

- Intra-abdominal pressure
- High blood sugar/High Insulin
- Overweight
- Overeating
- Lying down after eating
- Low stomach acid
- Bacterial overgrowth (H. pylori)
- Carbohydrate malabsorption
- Gas
- Bloating and Distention
Effect of hyperglycemia on triggering of transient lower esophageal sphincter relaxations
American Journal of Physiology - Gastrointestinal and Liver Physiology
2004 May;286(5);G797-803

• Abstract
  
  Acute changes in blood glucose concentration have major effects on gastrointestinal motor function. Patients with diabetes mellitus have an increased prevalence of gastroesophageal reflux. Transient lower esophageal sphincter (LES) relaxation (TLESR) is the most common sphincter mechanism underlying reflux. The aim of this study was to investigate the effect of acute hyperglycemia on triggering TLESRs evoked by gastric distension in healthy volunteers. TLESRs were stimulated by pressure-controlled and volume-controlled (500 ml) gastric distension using an electronic barostat and performed on separate days. On each day, esophageal manometry was performed in the sitting position during gastric distension for 1 h under euglycemia (5 mM), and either marked hyperglycemia (15 mM) or physiological hyperglycemia (8 mM) in randomized order was maintained by a glucose clamp. Marked hyperglycemia doubled the rate of TLESRs in response to both pressure-controlled [5 (3-10.5, median or interquartile range) to 10 (9.5-14.5) per hour, P < 0.02] and volume-controlled [4 (2.5-7.5) to 10.5 (7-12.5) per hour, P < 0.02] gastric distension but had no effect on basal LES pressure. Physiological hyperglycemia had no effect on the triggering of TLESRs or basal LES pressure. In healthy human subjects, marked hyperglycemia increases the rate of TLESRs. Increase in the rate of TLESRs is independent of proximal gastric wall tension. Mechanisms underlying the effect remain to be determined. Hyperglycemia may be an important factor contributing to the increased esophageal acid exposure in patients with diabetes mellitus.
What Causes Stomach Ulcers

• The suspected cause of stomach ulcers and gastritis for most of the 20th century was stress.

• In 1982 Barry Marshall and Robin Warren theorized the cause was a bacteria, *Helicobacter Pylori*.

• Dr. Marshall drank a broth full of *H. Pylori* and developed gastritis in 5 days.

• The two doctors won the Nobel Prize in Medicine in 2005.
Floor Toilet
Anorectal angle
Squatty Potty
Digestive Enzyme Supplement
D-limonene
Stone Root
Vinegar - diluted with water
Bitters
Bitters
Bitters and Digestion

• Bitter taste receptors (T2R’s)
• Bitter green salad (arugula)
• Pre-meal aperitif (Campari)
• Stimulates digestive juices
Conclusion

• You are what you can digest and absorb.
• Stomach acid is very important.
• Digestive issues can affect areas outside the gut. (rosacea, depression, asthma, etc.)
• Focus on eating changes first.
• Feed your gut bugs properly.
• Supplementation and medication can also be useful.
Magnesium

• Involved in over 1,000 enzymatic reactions
• Most important nutrient for detoxification
• Critical to balance with calcium
• “relaxing” mineral
• Magnesium required for chlorophyll production
  (dark greens)
• 200-800 mgs/ daily
  (bowel tolerance)
• Malate, taurate, glycinate, orotate, and chloride are best forms
• Magnesium oxide poorest form
• Skin absorption of magnesium is excellent: Epsom salt or magnesium oil
Epsom Salt