**GI Restoration in Clinical Nutrition**

**The GI Tract:**

* GI track health is the cornerstone human well being
* 75% of our immune system lies in the GI tract
* The GI track has more nerve cells than spinal cord itself
* Can only have good nutrition unless have good NS, gi tract, immune system, etc
* 2 Important Questions:
  + - What is Nutrition:
    - Diet: choice of food animal chooses & consumes
* Gut Surface Area: 2 tennis courts laid side by side:
  + - Don’t want macro molecules in the blood stream until they are suitable for body
      * Don’t want macromolecules large proteins
      * Only want amino acids
    - Secretory IgA
      * 1st line of defense in gut lining
      * Needs nutrients to properly be produced
      * Needs Mg, Zinc, AA
      * Membrane surface is size of hair on head
* “Leaky Gut”
  + Dysbiosis: condition of having microbial imbalances on or within the body this is a disorder biology of gut resulting from large variety of factors. That can profoundly affect GI functioning & thereby the overall health of the body
    - Causes: emotional upsets; prescription drugs (antibiotics); beer, junk food/poor diet
    - Changes seen in less than 3 hours
    - Internal milieu gets disturbed by all these things & other factors such as antibiotic use
    - Note: steroids effect on GI Tract- prescribed for (anti-inflammatory) ulcerative colitis, crohns = thin out gut, can actually cause ulcers/suppress symptoms
    - Significant shifts occur in the intestinal flora as a result
    - Intestinal/bacterial disruption of the GI Tract:
    - Disruptions of normal intestinal functioning & associated bacterial patterns have a variety of causes begin them including:
      * + Dietary factors, digestive efficiency, emotional stressors, gut motility factors, associated physiological pathological processes
        + \* none of the following are all inclusive

**Putrefactive Disruption**

Primarily outcome of inadequate protein digestion leading to overgrowth of abnormal flora acting upon dietary proteins. This produces number of metabolic wastes & foul intestinal gas. Common reasons for this include weak digestive process including lack of hydrochloric acid & other GI digestants and/or an excessive amount of dietary protein beyond the capacity of the GI tract. Frequently a lowered amount of **bifidobactor** is observe in such situations. Common waste product indicant.

**Fermentation Disruption**

The outcome of large numbers bacteria feeding on undigested CHO. This can produce voluminous amounts of intestinal gas. Common causes include ingestion of excessive CHO and/or inadequacy of digestive capacity. This is seen in specific conditions such as blind loop syndrome & in immune deficiency conditions. This overgrowth condition can irritate and damage the lining of intestinal tract & may therby contribute to inceased permiabilty of intestines. This lead to **leaky gut** which lead to **allergy & autoimmune disease**

**Sensitivity Disruption**

Occurs when bacteria (normal or pathogenic) or bacterial byproducts continually come into contact with internal structures such as joints & muscle tissues, having reached them by going through compromised intestinal lining. Over time this may lead to exaggerated immune response against body’s own tissues contributing to conditions such as psoriatic arthritis, AS & other autoimmune conditions

**Deficiency Disruption**

Occurs when normal bacterial flora is destroyed by factors such as prolonged antibiotic usage, leaving vacuum for entry of pathogens (affect gut permeability). This can be caused by chlorinated water, alcohol abuse and radiation therapy which can wipe bacteria out.

* + - Dysbiosis – a disordered biology of the gut resulting from a large variety of factors…that can profoundly affect GI functioning and thereby the overall health of the body.
      * Causes – over eating, alcohol, medication, emotional upsets
      * Changes seen in less than 3 hours
      * Antibiotics – are the worse for the gut, steroids are also bad.
      * Steroids affect the GI tract via thinning out the gut even more.
        + The pain, discomfort, inconvenience and despair of having ulcerative colitis or Crohn’s disease is enormous.
        + Three principals in overcoming chronic digestive problems (IBD)
* Apply a foundational approach to each patient to improve the overall health and digestive efficiency.
* etiological factors involved via careful case history and phys exam
  + - * + How long before emotional stress for bacteria in stomach to start changing? 3 hours
        + Stool and what it says

***Alcoholic color*** = lacks colors, doesn’t secret stool

***Tarry stool*** = fat malabsorption

***Blood stool*** = inflammation of GI tract, hemorrhoids, the brighter the color, the lower it is in the GI tract.

***Ulcerative colitis*** = Mucous, pus, blood

***Ribbon stool*** = inflammatory problem, IBD, stress leading to anal sphincter being tight, tumor obstructing flow

***Steatorrhea*** = Large, fluffy, sticks to toilet bowl.

Intestinal brush Border Enzyme Deficiencies:

***Lactose intolerance*** = is the inability to digest **lactose** (a type of sugar found in milk and other dairy products)

Cause: genetic or secondary deficiency of milk sugar enzyme, lactase

Note lactase deficiency: avoid dairy, Hydrogen breath test or go home buy milk on empty stomach drink two 8 oz glasses & see what happens

AA, Asian, South Americans

Secondary:  infection, inflammatory disorders, HIV, or malnutrition

DX:  History, lactose tolerance test or breath hydrogen test

RX: avoid large amts of lactose, individual tolerance, foods made w /lactase enzymes; processed dairy sometimes tolerated

Blind Loop Syndrome/Bacterial Overgrowth

* Bacterial overgrowth from stasis in intestine, obstruction, radiation enteritis, fistula, or surgical repair
* TX:  Antibiotics for bacterial overgrowth, prebiotics & probiotics
* Bacterial growing in duodenum = hydrogen breath test
* Diet Reform
* Initially dx: IBS, ulceritis colitis

**Upper GI Tract Disorders**

* Esophagus:
  + GERD (Gastro-Esophageal Reflux Disease):
    - Backward flow stomach/duodenal contents into esophagus
    - Burning sensation after meals; heartburn
    - **Esophagitis**: inflammation of esophagus
    - Possible discomfort during & after eating, change in eating habits, especially in the evening
    - Typical patients is given a neutralize acid (alkaline solution) or drugs. If neutralize then can’t make minerals soluble therefore malabsorption & bacteria get through
    - Not always too much acid.
    - Goblet cells produce mucus in the stomach.
    - If you neutralize stomach acid, the direct problem is you need acidity to break down proteins. Problem with bacteria as well.
    - Stress (emotional mc), overeat,
    - Instead drink few glasses water; don’t eat something when begin to feel b/c stimulate secretion of stomach acid
  + Hiatal Hernia
    - An out pouching of a portion of the stomach into chest through esophageal hiatus of diaphragm
    - Epigastric discomfort after large, energy-dense meals
    - Weight reduction, decreasing meal size, some cases surgery will help relive symptoms
  + Indigestion (dyspepsia) & Dysphagia (trouble swallowing)
    - Epigastric discomfort following meals
    - Abdominal pain, bloating, early satiety, nausea & belching
    - Reduce food intake
    - Avoid alcohol
    - Identify & reduce stress
    - Identify & eliminate allergens
    - Organic vs. Functional Dyspepsia:
    - Organic from organic disease from upper GI tract or other part of GI tract or reflexively from elsewhere
    - Functional Dyspepsia: majority of what we see in practice (general practice)

Enteric Plexus = as many nerves as the spine

* Hiatal Hernia = Mechanical, destruction of GI tract
* Normal Digestion = no discomfort and think of food as pleasant

**Organic vs Functional Dyspepsia**

* + - Organic from pathological processes from GI or reflexively form elsewhere.  Heart disease, cancer, humors, liver disease, pancreas, etc.
    - Functional dyspepsia = majority of what we see in practice.  Not pathological...yet.
    - Gastrointestinal problems = the single most common complaint heard in a general practice.  May be secondary to systemic diseases outside the GI tract including diabetes, rheumatoid diseases, lymphomas, vascular disease, etc.

**Hypofunction or Hyperfunciton**

* Most GI disturbances involve over or under activity of some element of the GI tract...including where emotional issues are the primary etiological factor.

**Emotional Tension**

* Probably single greatest factor of Subluxation
* Most functional derangements of GI tract attributable at least in part to emotional tension
* Vagus, greater and lesser splanchnic nerves, etc
* Need for warm, sympathetic understanding  and understanding of where tension stems form
* Never assume, however, that a patient’s problems are “all in their head”
* The practitioner must be well versed in both functional and organic issues of the GI tract to be able to sort them out.

**General Measures**

* Avoid over-eating
* Avoid eating too rapidly
* Stop eating before full...leave 1/3 empty
* Avoid eating under tension
* Keep meals simple
* Avoid eating before bedtime
* Eliminate alcohol, tobacco, coffee : pulse increases >6 bpm body feels a threat trying to get rid of
* Provide warm, sympathetic understanding
* Rest before meal time!
* SEEK OUT ETIOOGICAL FACTORS AND ADDRESS THEM.

**Gastritis**

* ***Acute:***  simple exogenous(food poisoning), corrosive, acute infectious (hematogenous= bacteria enter stomach from blood stream if it haves repeatedly one ends up with chronic gastritis) this can result in septicemia or bacteremia
* ***Chronic:***  atrophic, hypertrophic, it can get serious enough to develop into ***Menetriers disease***, aka Giant gastric rugae
* Etiology of chronic gastritis = Dietary indiscretion, alcohol, coffee, tobacco usage, autoimmune mechanism, and excessive stress
* ***Helicobacter pylori*** = causes gastritis and peptic ulcers; in some cases antibiotics make it better
* There are different types of gastritis which range from Mild to severe causing malaise, severe hemorrhagin and epigastric pain
* 3 Types of Gastritis are:
* Atrophic
* Hypertrophic
  + Erosive gastritis long term lead to dysplacia lead to cancer
  + Long term excessive stress
* Menetriers Disease: bigger than hypertrophic
* Infectious and Inflammation Symptoms = nausea, vomiting, malaise, anorexia, hemorrhage, and epigastric pain.
* Putrifaction = Intrinsic factor of castle = mucoprotein carrier for B12 = may cause pernicious anemia, fatigue, demylination of the myelin sheath.  This is an example where a functional issue can lead to a pathological issue of demyelination.

Story: eat out with wife at Mexican restaurant both felt sick when arrive home they had Diarrhea, vomiting = Simple Exogenous

Corrosive: kid that gets into lye

**Peptic Ulcer**

* 10% of the world’s population has peptic ulcers, that number may be higher now
* Ulceration of mucus membrane penetrating through the mucosa occurring in areas bathed by acid and pepsin, an other are is the proximal duodenum
* Peptic Ulcers are often found in patient with RA, COPD, or other autoimmune diseases
* Includes lower portion of esophagus (rare), the stomach, and the first portion of duodenum.
* Peptic ulcers most often occur in the stomach, duodenum, or both.
* In the stomach, they usually occur along the lesser curvature
* Highest incidences occurs around 45-55, but can occur at any age
* More men than women get it, but women are catching up because they have entered into the work place
* It is usually caused by an imbalance between acid pepsin secretion and mucosal resistance
* Among factors contributing:
* Poor nutrition
* Poor blood flow
* Stress factors
* Family history
* Blood group O
* Autoimmune disease

Mr. Y’s cells exposed to junk, his cells @ 20 y/o then 30 y/o immune system goes into attack system b/c doesn’t recognize these damaged cells.

* Acid flow not necessarily important variable
* Peptic ulcers can penetrate stomach or duodenum
* Patient complains of burning pain, gnawing, aching sensation.
* Management for peptic ulcers
* Antibiotics (medical)
* Sippy diet (medical/dietitian) = not recommended, because people are allergic to milk and because it contains a lot of protein, which requires acid to digest
* Pharmaceutical Acid suppression (medical)
* Surgery (medical)
* Hygienic Management of Ulcers
  + Stress reduction/creation of calmness and stress free eating atmosphere
  + Identify food and other allergens
  + Gut rest/possible fasting
  + Consider if autoimmune issue
  + Protein foods buffer gastric secretions but also stimulate gastrin, acid, and pepsin
  + Eliminate alcohol intake
  + Eliminate caffeine/coffee
  + Gut rest
  + When the mid gets right the gut often gets right!

**Malabsorption (fat)**

* To get an effective test result, it is necessary to eat 100 grams of fat each day for 6 days.  This begins 3 days before the test and continues for 3 days during the test.
* This fat load challenges the intestine to absorb fat.  If absorption is normal, up to 6 grams of the 100 grams would be passed with the stool over 24 hrs., and the rest would be absorbed in the intestine.
* Malabsorption is suspected when fat in the stood is in excess of 6 grams.
* ***Steattorhea*** = fat in the stool. Stool is loose (explosive diarrhea) and sticky. Steatorrhea is indicated by diarrhea with stool that floats and is foul smelling.

**Are we meant to eat grains?**

* Grain not natural to human GI tract; however, our civilization based upon grain, because it can be stored, harvested for long period time, we can feed large numbers people with grain
* Gluten is a protein and is insoluble in water
* ***Celiac disease*** (aka not tropical Sprue) = person’s immune system reacts to gluten by damaging the small intestine; the villi are damages or destroyed.  When the villi are not healthy or have been destroyed, a person becomes malnourished regardless of the quantity of food eaten. Some Symptoms are:
  + Chronic diarrhea
  + Fatigue
  + Iron deficiency
  + Osteomalacia
  + Growth failure
  + Projectile vomiting
  + Glossitis
  + Enteropathy
  + Anemia
  + Bloating
* Differential presentations:  gi issues, extra –intestinal (atypical)/
* Without symptoms:  silent and \_\_\_
* Because person is not absorbing nutrients, vitamins, mineral, etc, they may fail to thrive, waste, become anemic, and have glossitis, arthritis
* Massive production of IgG, IgA, IgM antibodies
* Dev sensitivity to everything they eat.
* Medical approach to Celiac = Biopsy the small intestine
* Rational approach to potential celiac; What should person do?
* Go on a gluten free diet and give it some time for the villi to re-cooperate; stay on the diet for at least 3 months.
* Eliminate gluten containing foods
* Provide nutrient support
* Allow adequate time and supervision (takes 1-3 months to see results)
* Nutrient supplementation of vitamins, minerals (calcium & magnesium particularly), amino acids, fatty acids
* Eliminate all etiological factors
* It may take 2-3 months for pt to feel better (remember, the intestines have to grow back)
* ***Tropical sprue*** = symptoms are the same as with Celiac disease, but removing gluten does not solve the problem. With tropical sprue, the person has usually been out of the country where the sanitation is not as good of country usually in Central/South America, parts of Asia, Africa & exposed to foreign bacteria (or protozoa). When they come back the US they have all kinds of problems.
  + There is no specific bacterial that causes this.
  + Medical treatment is antibiotics for 3 – 6 months.
  + Their joints may swell up (mimics RA)
  + Ant-inflammatory drugs (TNFL blocker) (TNFl- tumor necrosis factor )- these drugs are used to treat any autoimmune disorder but they causes cancer

**Disorders of the Lower GI Tract**

* Contains the enteric nervous system (the Third Brain)
* Which is very heavily influenced by our emotion (fear, anxiety, sadness)
* Stress typically induces dysfunction
* Nerves that innervate gut include: Vagus, Greater and lesser splancnic and the autonomic nervous system.
* Common Intestinal Problems
* Intestinal gas and flatulence (very common)
* Constipation
* Diarrhea
* Steatorrhea / mal absorption
* IBS (irritable bowel syndrome)
* IBD (inflammatory bowel disease)
* ***Intestinal Gas and Flatulence***
* Its normal to pass gas occasionally
* When is it too frequent?
* If it causes the pt discomfort
* If it causes embarrassment
* Record 388 passages of gas per day
* Belching (eructation) and rectal gas (flatulence)
* N, O2, CO2, H2, (CH4 – genetic issue)
* Fermentation and putrefaction
* Record 388 passages of gas per day
* Common reasons for gas include:
* Food allergy
* Fast eating
* Swallowing air
* Organic issues: tumors, strictures, etc
* Aerophagia = abnormal, spasmodic swallowing of air
* Bacterial fermentation may be increased by dietary fiber (especially soluble fiber), excessive starches, lactose (if lactase deficient), fructose, or alcohol sugars (e.g., sorbitol).
* Gas can also escape the intestines by being absorbed into the blood via the intestines and being exhaled. Stinky bowels = stinky breathe.
* Healthy people = the smell doesn’t stink as bad.
* Food offenders
* Milk- due to the decrease in lactase enzyme.
* Cabbage - sugars within break down to hydrogen gases
* Carbohydrate - rich food eaten in excess
* Any other food eaten in excess
* Beans -contains the sugar raffinose
* Beer/alcohol
  + Addressing flatulence
    - Omit offending foods including potential allergens
    - Determine if patient is swallowing air with meals and address the problem
    - Avoid eating in excess or while under stress
    - Check for dys-biotic condition (do a stool-microbiology)
    - If problem is not a functional one, seek out organic causes.
    - Keep in mind that IBS, IBD, Crohn’s, Celiac disease, and other GI disorders such as small bowel overgrowth may lead to production of large amounts of gas.
* ***Constipation***
* Bowels not moving on regular basis
* Lack of bowel evacuation for periods leading to physiological disturbance
* General less than satisfactory evacuation every two days assuming individual is eating on regular basis
* A disturbance of normal timing for the individual
* Panoramic View (netter)
* Function:  Dietary, atonick, dyskinesia, dyshygienic, iatrogenic, post-smoking, post-diarrheal
* Organic:  reflex, anal disorders, obstruction
* Causes:
  + Side effect of medication
  + Metabolic endocrine abnormalities, such as hypothyroidism
  + Parkinson’s Disease
  + Lack of exercise
  + Ignoring urge to defecate
  + Vascular disease of large bowel
  + Systemic neuromusucular disease leading to deficiency of volume
  + Poor diet, low fiber
  + Lack water
  + Pregnancy
  + Organic Disorder
  + Stress
  + Poor energy output/fatigue
    - Laxatives:
      * ***Wetting agents***: = softens stool at coating & dimension of component particles
      * ***Bulk agents*** = psylium; provide increased of mass which promotes peristalsis by distention; Cellulos (paper) expands in system, expands on bowel membranes & push through
      * ***Mineral Oil*** = creates a slip & slide action; decrease fat absorption & fat soluble vitamins; irritate lining of gut & gut pushing it through
      * ***Castor Oil*** = irritant in the GI
      * ***Phenolphthalein*** = stimulates peristalsis and secretion by irritation or major action undetermined probably widespread
      * ***Emodens*** = icascara, semina, aloes; stimulate large bowel peristalsis & secretion by irritation
      * ***Salines*** = mg sulfate, Epson salts, draw & hold fluid in lumen osmotic ally, also have some irritant action. The salts don’t move the bowels, the bowels move the salts.
        + General Measures for Constipation

Adequate soluble & insoluble dietary fibers

Whole grains, fruits, vegetables, legumes, seeds, nuts

ID allergens & eliminate

Adequate fluids (water)

Rest bowel

Creation of proper bowel/elimination habits

Adequate activity

Peace of mind

ID specific factors at play

***Diarrhea***

***Steatorrhea / Mal-absorption***

***Malabsorption*** = condition where dietary, fat proteins, cho, minersals & vit are not asorbed properly (absorption…)

To get effective test results check for greater that 6g fat in stool

Alcoholic

Tarry stool: fat & malabsorption

Blood stained: inflammatory problem in GI tract (brighter color lower in GI tract it is / hemorrhoids

***Steattorhea*** = large fluffy, sticks to toilet bowel; fat in the stool. Stool is loose (explosive diarrhea) and sticky. Steatorrhea is indicated by diarrhea with stool that floats and is foul smelling Steatorhea,

* IBS (irritable bowel syndrome)
* Common syndrome involving abdominal discomfort and altered intestinal motility, bloating, feelings of incomplete evacuation, mucus in stool, straining or increased urgency, GI distress with psychosocial distress.
* Alternating bouts of constipation and diarrhea
* 3 major causes (can be either or a combo):
  + Allergic = acute/chronic
  + Infectious = bacteria
  + Psychogenic = psych stresses

Connections

* Grand central station
  + Liver gallbladder pancreas stomach all enter into small intestine
  + Small bowel overgrowth of flora at this junction
    - Pandora’s box!

Small bowel overgrowth

* Right after where pancreatic duct enters into…..there shouldn’t be any bacteria growing here!!!
* It can disturb pancreatic flow, endogenous waste compounds form, interfere with liver fxn
* Could be caused by eating the wrong foods for too long or eating too much of the right food
  + Bacteria start acting on undigested food
  + Over taking antactids also a cause
  + too much stress
  + Disorders of motility
  + Blind loop syndrome/resection of the gut
  + Diabetes
  + Hypothyroidism
  + Scleroderma
  + 40% of chronic diarrhea in people with diabetes is this
  + Hypochlorhydria
  + Structural abnormalities ie bypass
  + Other causes: immune deficiency, stress, certain meds ie steroids, antibiotics and birth control pills, inadequate fiber, and pancreatic enzyme deficiency
* Massive indigestion occurs!
* All bacteria produce exogenous wastes, they can permeate the gut lining and get in joints and cause an inflammatory reaction
* A process called bile acid deconjugation, unwanted bacteria causes fat malabsorption
* 157 out of 202 peouple had bacterial overgrowth (78%) when tested for IBS
* Symptoms
  + Abdominal bloating and gas after meals
  + Pain
  + Constipation
  + Chronic loose stools or diarrhea (48-67%)
  + Soft,foul-smelling stools that stick to bowl
  + Fatigue
  + Megaloblastic anemia due to vitamin B12 malabsorption
  + Depression
  + Nutritional deficiency despite taking supplements
  + Weight loss
  + Ab pain
  + Mucus in stools
  + Bloating worse with carbs, fiber and sugar
* Addressing
  + Identify causes
  + Diet-low carb diet
  + Fasting is good too if people can handle it
  + Eradicate unfriendly bacteria in small intestine via appropriate botanicals ie oregano oil, peppermint oil, etc
  + Limit intake of sweet and starchy foods
  + Popular diet for bacterial overgrowth is the specific carbohydrate diet limiting grains
    - Godshell ?
  + Medium chain triglycerides-medium chain triglycerids are absorbed directly without the need for digestive enzymes coconut oil is good
  + Digestive enzymes- supplements can support body’s digestive enzymes until function is restored. They should be taken before meals. Not always needed and often taken when not needed
* SIBO diagnosis
  + Gold standard is to take bacterial cultures of small intestine fluid
  + Lactulose hydrogen breath tests- the most common test is lactulose hydrogen breath test. Lactulose is a non-absorbable sugar that’s fermented if there is intestinal bacteria, resulting in hydrogen production. After ingesting glucose, there will also be a rise in hydrogen
    - Measured by gases exuded thru mouth
  + Schilling test (for b12 deficiency)
    - One of the underlying causes of bacterial overgrowth is insufficient stomach acid, called hypochlorhydria. Also associated with AB usage

Gut brain and head brain connections

- 1917 trendelenburg a pharcologist….the gut had a mind of its own

- Neurogastroenterology

- 100 million plus nerves

- does daily chores without input from brain

- big brain calls on fraternal twin aka mast cells embedded in gut lining during stress; release histamine; activates nerves controlling gut, tells the muscles to contract; cramps and bathroom trips so often associated with bouts of stress

- antidepressants effect both brain and gut because they have much of the same biology

Lower GI tract = Nerve city!! Enteric NS

Diverticular disease

* Pockets of poisoning

IBD

* Inflammatory bowel disease
* Chronic inflammation of large and/or small intestines
* Two major types
  + Ulcerative colitis
    - Chronic inflammation of the large intestine, usually beginning in sigmoid colon
  + Crohn’s disease
    - Starts in terminal ileum. May spread throughout ileum and large intestine
  + Both of them have most things in common, not unusual to have them misdiagnosed
  + Treatments are virtually the same
* Symptoms
  + Cramping
  + Indigestion
  + Severe diarrhea
  + Weight loss
  + Urgency (defecation)
  + Blood and or mucus in stool
  + Fatigue
  + Extra-intestinal symptoms ie skin probs and joint pains
  + Fever
  + Growth failure
  + Anorexia
  + Anemia
  + Depression
  + Social isolation
* The pain, discomfot, inconvenience and despair are life-threatening!! Can ruin your life!!
* 3 principles
  + Apply a foundational approach to each patient to improve overall health and digestive efficiency
  + Id Etiological factors
  + Treat each patient unique ?
* Arthritis is commonly associated with esp crohns
* \*\*He believes immunesuppressant drugs will be taken off the market in 15-20 years because cause cancer and other severe probs
* Iriditis
  + Related to ulcerative colitis
* Medical treatment
  + Remove the colon
  + TOTALLY unecceary
  + Can lead to hypercatabolic disease

When the GI tract begins to fail, the whole body does

* Allopathic treatments
  + Symptoms
  + Corticosteroids
  + Immune suppressants
  + Tumor necrosis factor inhibitors
  + Surgery to remove portions of the intestines or complete colonectomy
  + \*\*\*\*\*\*\*\*SAME TREATMENTS/DRUGS AS AUTOIMMUNE DISEASES

TNF alpha blockers

* Enbrel
* Remicade
* Can lead to
  + Heart failure
  + Demyelination of spinal cord
  + Etc

Major etiological factors in IBD

* Diet
* Poor digestion
* Allergy
* Emotional stress
* Dysbiosis/ (parasites on rare occasion)/ SIBO
* Immune dysfunction
* Enervation
* Unknown etiological factors

Case study

* 10 year old boyscout
* Ended up just having giarrdia

IBD

* Probiotic combination therapies may benefit patients with inflammatory Bowel disease
  + NEVER EVER EVER give probiotics to someone with small bowel overgrowth
* Saccharomyces bouldardii in patients with crohn’s disease was found to help ul. Colitis
* Complete bowel rest. Fasting.
* Enteral nutrition
* Paraenteral nutrition may temper inflammatory process and be steroid sparing (medical)
* Basic principle: each patient is different from the next and in each case etiological factors must be identified

Case #1: psoriatic arthritis with ulcerative colitis

* 41 year oldm ale
* Dr.’s wanted to remove colon
* Tried all of the other “herbal” remedies
* Social factors
  + Patient’s job was stressful and felt frustrated by poor health. Very athletic but couldn’t workout or compete with his current health
* Program
  + Repeated short liquid diets
  + Reduced carbs with increased proteins and low carb vefggies. No joices.
  + Warm fluids, warm baths, meditation, sunbaths, careful chewing of food and bavsence of worry
  + Stretching, swimming in warm water
  + Walking outdoors
  + Nutritent supplements
    - Probiotics (after short fast)
    - Free form pharmaceutical grade AA
    - Vitamin/mineral formulation (pharm grade)
    - Cod liver oil to supply needed omega 3 FA
* Outcome
  + Rapid improvement, increased energy, better mood, sedimentation rate dropped 50%

Case #2: RA, Ulcerative colitis, Diabetes Type 2, migraiens and Eczema

* 55 year old female
* Everything was being treated separately
* Also had kelbsiella pneumonia
  + Common in rheumatoid patients especially with spondyloarthropathy
  + Starch feeder
  + Put on starch free diet!!!
  + Doesn’t CAUSE the problem but COMPLICATES the problem
* Was on three different steroids by 3 different doctors
* Treatment
  + Rest
  + Sunbaths
  + Eliminated food allergens
* She is now drug free and healthy
* Discussion
  + Patients with IBD have mucosal ulceration allowing partially digested foods particales to be absorbed into blood stimulating immune complex formation. Fasting/liquid allow bowel rest to occur and facilitate intestinal healing
  + Patients high carb diet created insulin resistance (pro-inflammatory). A paleolithic style diet centered around non-starchy veggie, proteins, low sugar fruits and good quality fats allowed sugar regulating mechanisms to re-balance wwith positive results on her skin and migrains as well. Fatty acids also helped

\*\*Whipples disease

* classic example of relationships between GI tract, Musculoskeletal system and Intestinal flora in producing Rheumatoid diseases
* Further down that SBO, but have extra bacteria in small intestine (further down)
* Major symptom: inflammatory joint disease
* Medical treatment
  + Give the patient’s Antibiotics for 6 months-2 years
  + Joint symptoms dissipate
  + Problem:
    - Once come off AB’s then problem comes back and then develop SBO
* These patients have ALL kinds of BACK PAIN!!!!
* Prone to spondyloarthropathies

Celiac Disease

* Sensitive to gluten
* Destroy microvilli
* Pretty common
* Just cut out gluten!!!
* Wheat, oats, barley, rye
* Rice is okay.
* Why it isn’t in china!
* Joint pains

UC

* AS: 15%
* Enteropathic: 20%

Crohns

* AS: 15%
* Enteropathic: 10%

Gut specifics

* Altered intestinal permeability
* Molecular mimicry
  + Leads to inflammatory processes in joints
  + similarities between foreign and self-peptides are sufficient to result in the cross-activation of autoreactive T or [B cells](http://en.wikipedia.org/wiki/B_cells) by pathogen-derived [peptides](http://en.wikipedia.org/wiki/Peptides)Upon the activation of B or [T cells](http://en.wikipedia.org/wiki/T_cells), it is believed that these “peptide mimic” specific T or B cells can cross-react with self-epitopes, thus leading to tissue pathology ([autoimmunity](http://en.wikipedia.org/wiki/Autoimmunity))
* Dysbiosis
  + Disordered condition of gut

Two routes affecting permeability

* Transcellular uptake
  + Thru cell
* Paracellular uptake
  + Thru tight junction

Abnormal Bowel Permeability in AS and RA

* Increased permeability in patients with RA and AS
* From 1985…this is OLD STUFF!!!

WHY Does the patient have an overgrowth of GI organisms?

* If you don’t address this issue, their problems will come back

Two steps

* Improving the interal environment of GI tract
* Improve intestinal flora

Fasting and veggie diets are good also for these disorders

Stress can have a profound affect on biology…”when the mind gets right, the body gets right”

Disordered biology of gut—dysbiosis

* Alcohol
* Overeating
* 4 types
  + Fermentation dysbiosis
    - Too much carbs or not able to digest them
    - Bloated, belch a lot, fart a lot(odorless)
    - Disrupt intestinal flora and membrane
  + **Sensitivity dysbiosis**
    - Associated with spondyloarthropathies
    - Pt has developed a sensitivity to certain bacteria that can permeate thru gut membrane
  + Deficiency dybsiosis
    - Lack normal bacteria
  + Putrefactive dysbiosis
    - Maldigestion of protein
    - Ie eat too much protein! Tuna, eggs etc.
    - Indicate urine test is easy way to tell if have this problem
  + Note: not exclusive of each other
  + Key: eat everything in moderation

Two areas involved in RD’s

* Thyroid gland
* Adrenal gland

Check:

* Have the patient keep a temperature chart
* Thyroid profile with TSH

Hypothyroidism

* Cold-slow-tired-depressed
* Poor circulation
* Diffuse hair loss (head, body and outer eyebrows)
* Morning stiffness, arthralgias
* Morning fatigue, depression, apathy
* Memory and concentration problems
* Increased allergys

Adrenal dysfunction

* Cortisol secreted in response to stress to raise blood sugar
* Cortisol suppresses function of insulin
* As adrenals become increasingly fatigued, corticosteroid drops leading to pro-inflammatory response and a reduced ability to cope with allergens
* How to take care of adrenal glands:
  + Love your spouse
  + Love your job
  + Be happy, rest

Restoring normal adrenal function

* Diet reform with appropriate supplementation (not much
* Stress reduction
* Rest, relax, moderate exercise
* Extended sleep (lack of promotes inflammation)
* Sunlight
* Hormone replacement therapy: cortisol and DHEA if indicated, in physiologic doses
* Safe uses of cortisol is a good reference

Key point

* Quiet the immune system….to modulate it to a balanced status
* It is mistaken to think it needs to be “stimulated”

Lab testing

* Help uncover etiological factors
* Monitor patient progress

**READING- Textbook**

**Clinical Nutrition: A Functional Approach**

**Reading Notes pg. 237-259**

**Chapter 9 –Environment and Toxicity**

* Chapter focuses on the basic xenobiotics humans are exposed to and the impacts these substances have on the human body
* Four million synthetic compounds and many natural compounds in the environment that must be taken as a serious threat to our health
* Xenobiotic
  + chemicals or molecules foreign to living organisms
* Total Load
  + Total of all exposures and influences that bear on human physiology
    - Factors that have been found to influence the total load: xenobiotics, infections, toxicants, biological inhalants, physical phenomena, lifestyle, mechanical problems, hormonal aberration, and psychosocial factors
    - Nutritional status is not a direct part of total load, but the factors above are influenced by nutritional status
* Endogenous Toxicants
  + Toxic agents can be produced internally and can be as harmful as xenobiotics from the environment
    - Inborn errors of metabolism
      * caused by genetic mutations that result in accumulation of an intermediate compound that creates toxic substances

(example: PKU)

* + - Imbalanced metabolism
      * The body’s normal metabolic mechanisms function inefficiently
    - Polymorphisms, Biochemical Individuality and Toxicity
      * Each enzyme in the body is formed from two genes, one from the mother and one from the father, and this combination is a main factor in determining how well the enzyme functions
    - Gastrointestinal Microbial Metabolism
      * Large intestine has at least 50 genera of bacteria comprised of nearly 400 species
      * Microbes in the intestinal tract produce metabolites that are absorbed into systemic circulation
      * Dysbiosis: state of imbalance in the beneficial organisms in the colon
* Exogenous Toxicants
  + Molecules that are foreign to a living organism
  + General groups include: prescription and OTC drugs, restricted and/or illegal drugs, food additives, dyes and coloring agents, pesticides, pediculicides, herbicides, fungicides, natural food components, alcohols, volatile organic compounds, toxic or heavy metals
    - Heavy metals
      * Gastrointestinal, neurological, cardiovascular and urological systems are very sensitive to heavy metals
      * Most common metals that cause toxic illness: mercury, lead, cadmium, arsenic, aluminum and nickel
    - Food Additives
      * In the U.S. nearly 4,000 additives are allowed in foods
      * The categories include: preservatives, food colorings, sweeteners, stimulants, flavor enhancers
    - Excitotoxin Concept
      * Concept developed by Dr. Russell Blaylock that there are substances added to foods and beverages that cause neuronal hyperexcitability
      * Cause “unnatural” levels of excitation when naturally occurring compounds are consumed as an additive (example: MSG)
    - Prescription Drugs
      * Drug/nutrient interactions exist and can be classified by: location, mechanism, pharmacological or nutritional outcomes, drug or drug group, nutrient, temporal relationship to food or nutrient ingestion, patient group affected, risk factors
* A Functional Approach to Toxicity
  + Must assess relationships among toxicants, toxic load and clinical manifestations
  + Patient management must focus on decreasing toxic exposure and increasing toxicant removal
    - Decrease Toxic Load
      * Toxic load can come from endogenous and exogenous sources
    - Promote Bacterial Balance
      * Bacterial flora imbalance and increased intestinal permeability might increase the toxic load
    - Promote Healthy Detoxification
      * Detoxification: broad spectrum of bodily processes that help maintain the body’s health when exposed to harmful substances
      * Biochemistry of detoxification
        + Phase I and II -chemically biotransform lipid-soluble substances into progressively more water-soluble substances through a series of chemical reactions
        + Consequence of this biotransformation is an increase in free radical molecules
    - Clinical Relationships
      * Various nutrients are necessary for proper detoxification function
      * Drugs and detoxification pathways
        + Body’s detoxification system is strongly influenced by drugs
        + Various drugs or chemicals may have an inhibitory or stimulatory effect on detoxification capacity
      * Idiopathic disease and detoxification
        + Variability of detoxification may influence diseases thought to be benign
      * Neurologic disease and detoxification
        + Detoxification may also influence chronic degenerative diseases
        + Combination of genetic susceptibility, reduced detoxification capacity and increased exposure to neurotoxicants may lead to clinical disease over time
    - Nutritional Support of Detoxification
      * Regulation of Phase I and Phase II activity levels has a dietary component
    - Assessment of Detoxification
      * The body’s detoxification systems are highly complex and show a great amount of variability
        + Various laboratory tests available
* Summary
  + Detoxification studies suggest the enzymes that control Phase I and Phase II processes vary significantly from person to person
  + Support Roger Williams’ work and concept of “biochemical individuality”
  + Differences among individual detoxification capacities are based upon individual genetic disposition, environmental exposure, and nutritional insufficiencies and can have a large effect on disease susceptibility