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Nutritional Issues in Primary Biliary Cirrhosis

Nutritional compromise is commonly seen in patients with Primary Biliary Cirrhosis (PBC). The following is an excerpt from a lecture given by Nan Cameron, MSN, RN, LAc to a PBC support group.

How often have you heard the following statements. The life in food gives us life. We are what we eat. Patients frequently ask me, "Where do I start?". I hope you find this information helps you begin to make changes in your diet. There are three "free therapies" - diet and nutrition, rest and exercise, and deep relaxation. Making small changes in these areas often makes a dramatic change in your health and how you feel.

As foods are processed they often don't have the essential enzymes and bacteria that are critical aids to digestion and metabolism. Fresh foods have greater amounts of enzymes. If your body doesn't have to work overtime making enzymes, it has more energy for other processes.

For example, hybridized foods may look or taste better but the nutrient content has changed. Corn has 14% less protein than it did 40 years ago. Whole wheat contains 22 vitamins and minerals that are removed to make wheat flour. After the bran and germ are removed to make white flour, 98% of Vitamin B 6, 91% of manganese, 84% of magnesium and 87% of fiber are extracted. One of the many lost nutrients is chromium which is critical for maintenance of blood sugar levels, normalizing high serum cholesterol levels and fat burning. (from Digestive Wellness)

Did you know?

- The average person eats 14 lbs of food additives each year. They are never tested in combination with each other.
- It has been shown that if you heat breast milk to 98.6 degrees in the microwave almost all the antibodies and lysozymes that protect us from infection are destroyed and the vitamin C levels are diminished.
- NSAIDs, aspirin, Tylenol, motrin, advil and others are hard on the stomach lining and irritating to the intestinal mucosa. They cause damage to the lining by blocking prostaglandins, small chemical messengers that stimulate repair. This can lead to leaky gut syndrome, food sensitivities, and inflammatory problems, such as arthritis and eczema.
- Antibiotics kill not only disease causing bacteria, but healthy ones as well
- Daily we are exposed to hundreds of chemicals: secondhand smoke, chlorine and fluoride from water, air pollution, cosmetics, toiletries, household cleaning supplies, medications, to list only a few.

When our liver is not functioning well our digestion is affected, which leads to an overtaxed liver, which leads to more digestive problems and so on. The liver has 3 lobes: the main lobe is like a chemical factory, it produces chemicals and enzymes necessary for body functions, the left lobe regulates and maintains body functions (toxic left lobes often result in allergic or environmentally sensitive reactions), We often crave what makes our body worse. The lower lobe provides storage for essential fatty acids, vitamins A, D, E, K and is responsible for the production of cholesterol and many hormones. The liver works at detoxification, but if there is too much or it is unable to perform this function it will store the toxins in the lower lobe of the liver or other parts of the body. Toxins include radioactive substances, pesticides, food preservatives and dyes.

The gallbladder stores and concentrates bile that has been produced by the liver. When we eat, bile is released by the gallbladder and liver to help emulsify or breakdown fat into smaller pieces so that lipase (fat splitting enzyme) can digest them.

There are more bacteria in our intestinal tract than cells in our body. We have 4-500 types of bacteria in our body. The two most important forms are lactobacilli, found mainly in the small intestines and bifidobacteria, found mostly in colon or large intestine. As a fetus our bodies are sterile, but the trip down the birth canal begins our relationship with bacteria. Friendly bacteria manufacture many of our B vitamins, folic acid, and Vitamin K. Lactobacillus acidophilus and bifidobacteria increase absorption of minerals such as calcium, copper, iron, etc., aids in digestion of dairy products, acidifies the digestive tract to provide a hostile environment for pathogens and yeasts.

What causes dysbiosis? Dysbiosis is an imbalance of intestinal flora in the GI tract. There are many causes, but we generally bring it on ourselves. It can be due to high levels of stress, exposure to chemicals, poor food choices, oral contraceptives, antibiotics, pain killers to name just a few. For instance, NSAIDs work by blocking prostoglandins. Some prostoglandins can cause pain and inflammation, but others cause healing and repair. Our intestinal lining replaces itself every 3-5 days. Prolonged use of NSAIDs interfere with the repair of gut mucosa. This can lead to the lining becoming weak, inflamed and leaky (increased intestinal permeability). Leaky gut syndrome puts an increased workload on the liver, it has more to detoxify. Low levels of hydrochloric acid in the stomach can lead to bacterial overgrowth. Poor transit time in the GI system (constipation) can lead to bacterial overgrowth.

Where to begin: Clean our body by removing as many irritants as possible of food, medicine, pathogenic microbes, provide good nutrients, replace missing intestinal flora, enzymes, HCl, and give the body time to heal itself.

One of the many functions of the liver is to act as filter of let the good nutrients pass through, change the toxic ones to safe substances that can be eliminated by the body through urine, stool and sweat. When the liver can't break them down they are stored in the liver or somewhere else in the body, often in fatty tissue. Our bodies form antibodies to toxic substances, but antibodies can often trigger a systemic effect that results in an autoimmune reaction. The body fights or attacks itself.

The nervous system, endocrine system and immune system all work together to control appetite, food intake, and metabolism of food. Long term success in weight control can occur only by normalizing the function of neuroendocrine-immune function by modification in meal timing, food choices, exercise and stress management. The brain talks to the gut (our second brain) via the autonomic nervous system which has two parts the sympathetic and parasympathetic nervous systems. The sympathetic nervous system is responsible for the stress response. It slows down digestion so that our body can defend itself. This promotes fat storage, decreases the metabolism (burning fat), increases secretion of glucose, cortisol and adrenaline; promotes insulin resistance and increases reflux and constipation. Insulin is often considered the master metabolism hormone. It helps the body use the carbohydrates we eat or if we eat too much store it for later use. Eating quickly digested, high glycemic load carbohydrates such as sugar or highly processed and refined carbohydrates such as bagels or muffins get us into trouble. They increase the production of insulin which prompts us to eat more. Sugar comes in many forms ó high fructose corn syrup (HFCS), sucrose, glucose, maltose, dextrose, lactose, corn syrup, white grape juice and other fruit juice concentrates, honey, barley malt, sucant, cane sugar. Food suppliers are required to list only the total grams of sugar not whether any was added. Two factors that influence our food intake and appetite are HFCS and fiber. HFCS is different from regular sugar. It is absorbed more quickly and does not require insulin to be absorbed into the cells. Foods containing HFCS trigger none of the normal controls for appetite. It makes us even more hungry for sugar. Artificial sweeteners ó aspartame, neotame, acesulfame potassium, saccharin, sucralose, dihydorcholcones have become a significant component in our diets. Many questions of their safety remain. Known effects include stimulation of our appetite by increasing insulin production. Aspartame may disrupt brain chemistry and increase seizure risk, depression and headaches. Sorbitol, malitol, and xylitol are common nonabsorbed sugar alcohol sweeteners that increase gas production, bloating and abdominal pain.

Meal composition: Not all calories are created equal. Low fat diets slow your metabolism more than low glycemic load diets.

Meal timing: Eating in a regular, rhythmic pattern - approximately the same time each day, 3 meals and 2 snacks reduces calorie consumption, increases fatty acid oxidation, lowers cholesterol and insulin levels. Studies have shown that aside from emotional balance eating breakfast is one of the few things consistently correlated with longevity and healthy weight.

Fiber: Fiber is like a sponge it soaks up fat and sugar in gut and both slows and prevents some of their absorption. Eating an apple requires more metabolic effort and takes longer to breakdown than drinking a glass of apple juice.

Super fibers: Konjac, is an Asian tuber made into a rubbery jelly or noodles that has been used in Japan. Rye fiber. Fiber is an important part of long term weight loss and is found in unrefined, unprocessed whole plant foods such as beans, whole grains, nuts, seeds, fruits and vegetables.

PBC concerns:

Impairment of bile flow which results in malabsorption in the intestinal tract.. Many digestive enzymatic reactions in the small intestine are impaired. In one study, 40% of PBC patients were malnourished, and the problem did not appear to be related to poor nutritional intake. Poor nutritional acquisition can lead to loss of muscle mass, fatigue, bone density problems, and vitamin and mineral deficiencies.

Severe protein deficiency is not normally observed until an individual has had PBC for 10-20 years and has developed cirrhosis. Neither protein or sodium restriction is necessary in the early stages of PBC.

Studies have shown that there is a high incidence of glucose intolerance and insulin resistance that can cause significant problems with carbohydrate metabolism.

Fatty liver (steatorrhea) typically means that there is a component of pancreatic failure. Restriction of fats are then important.

Supplementing with medium-chain triglycerides (MCT) is helpful in improving energy levels. Coconut oil is easily hydrolyzed in the absence of bile salts and is easily absorbed. MCT dosage recommended is 15 ml 3-4 times per day. MCTs help with the absorption of calcium which may be important in some patients with osteoporosis.

Celiac disease is not uncommon in PBC patients. Celiac disease is the inability to digest foods containing the gliadin fraction of gluten. This results in damage to the small intestine and affects the ability to absorb nutrients. Gluten is in wheat, rye, barley, millet and probably spelt. Many people with celiac disease are able to eat oats. Celiac disease is often mistaken for irritable bowel disease.

Hyperlipidemia is common in patients with chronic cholestasis (gallbladder disease). Two studies indicate that heart disease may not be associated with increased mortality so treatment should only be given when a patient has multiple risk factors such as family history, obesity and diabetes.

Vitamin deficiency

Vitamin D osteoporosis

Vitamin E ataxia, progressive neuromuscular disorders, peripheral neuropathy, eye problems

Vitamin K bleeding problems, impaired osteoblast function

Vitamin A nightblindness, dermatologic disorders,

Other: fuzzy thinking, depression

Progressive complications of fibrosis: swollen feet, muscle loss, ascites, confusion, memory loss, difficulty sleeping at night and increased sleeping during the day, vomiting blood or blood in the stool, jaundice, bruising easily or clotting problems, high bilirubin, low platelets, high or low cholesterol.

High bilirubin is a problem with the breakdown of heme, the main oxygen-transporting molecule in red blood cells. Becomes a toxin and produces jaundice.

Low albumin levels ó a blood protein level. Low levels allow fluid to leak out of the blood vessels and result in edema (swelling) of legs and abdomen.

High ammonia levels ó is a by-product of protein metabolism. High levels can cause mental confusion and may lead to encephalopathy. Zinc levels may be low. Zinc is required to clear ammonia. Reduce meat consumption to no more than three 3 ounce servings per day. If encephalopathy is present eliminate red meat.

Abnormal INR or bleeding time ó leads to increased bruising or bleeding.

Portal hypertension causes ascites. Blood backs up in the portal vein which increases the pressure in the spleen, esophagus and stomach. This results in accumulation of fluid in the abdomen and may cause bleeding in the esophagus and stomach. Reduce sodium intake to 500 milligrams per day.

Pruritis (itching) ó the liver cannot remove toxins.

Functions of the liver - Western

1. The liver is the second largest organ in the body, only the skin is larger.
2. Blood circulation and filtration
3. Bile production and fat metabolism
4. Blood sugar regulation
5. Cholesterol production
6. Toxin removal
7. Liver enzyme synthesis
8. Protein Metabolism

Functions of the liver – Traditional Chinese Medicine (TCM)

1. The liver affects digestion, fluid metabolism and distribution of energy.
2. Controls bile secretion (Gall bladder is the paired organ)
3. Stores and regulates Xue (blood and other substances).
4. Removes toxins from the blood.
5. Controls the smooth flow of Qi (energy) and blood throughout the body.
6. Regulates the whole body by making Qi flow smoothly through the channels and organs.
7. Emotions associated with the liver are anger, depression, irritability, frustration and stress
8. The liver controls the tendons.
9. The liver opens into the eyes.
10. The liver manifests itself in the nails.

Functions of the spleen - TCM

1. The spleen governs transformation and transportation ó the process of digestion.
2. The spleen maintains proper movement of ingested fluids and fluids throughout the body.
3. The spleen creates and controls Xue (blood)
4. The spleen dominates the muscles and limbs.
5. Spleen controls the lifting of qi.
6. The spleen houses thought.
7. Spleen disharmony can be caused by over worry, overthinking and overwork.

Treatment by Oriental Medicine

The Oriental Medicine practitioner completes a comprehensive evaluation and arrives at a Chinese Medicine diagnosis for you and will plan an individualized treatment plan for you that includes acupuncture, herbal formulas, dietary guidelines and other lifestyle changes. Common

Chinese Medicine diagnosis include: liver qi stagnation, spleen qi deficiency, liver yin deficiency, liver/GB damp heat.

Chinese Medicine talks about food in terms of Temperature and Flavor. We need to balance these. But if you tend to be hot then you want more cooling or neutral foods and if you are cold all the time, warming foods make a difference.

Temperature of the food: Hot, Warm, Neutral, Cold or Cool

Cooling - tends to direct energy inward and downward, cooling the upper and outer parts of the body first.

Warming - move energy upwards and outwards from the core; warm us from the inside out. Very hot foods such as chili peppers or alcohol heat us up intensely and then cool us down by sweating.

Warmer foods speed us up and cooler foods slow us down.

General guidelines to determine a foods temperature:

1. Plants that take longer to grow (root vegetables, ginger) tend to be warmer than faster growing foods like lettuce or summer squash.

2. Foods with high water content tend to be more cooling (watermelon, cucumber)

3. Dried foods tend to be more warming than their fresh food counterparts.

4. Chemically fertilized foods tend to grow faster and are generally cooler than their naturally growing counterparts.

5. Raw food is more cooling than cooked food. Foods eaten cold are more cooling. Cooking for a long time on lower heat is more warming than a short time on high heat.

Raw food	cooling	Baked	more warming
Steamed	cooling/neutral	Deep fried	heating
Boiled	neutral	Roasted	more heating
Stewed	warming	Grilled	more heating
Stir-fried	warming	Barbecued	most heating

6. Chewing food thoroughly creates warmth. Chewing not only breaks down food, but in the case of carbohydrates the action of the saliva interacts to release digestive enzymes, facilitates greater assimilation and warmth.

Dietary Guidelines

Eating Well: General Considerations According to Chinese Medicine

1. Enjoy the food you eat.

2. Have a positive attitude about food. We often have beliefs about a good vs. bad food.

3. Relaxation. Don't mix food with work, reading or watching TV. Avoid emotionally charged subjects. Crossing our legs, sitting in a hunched over or twisted position compresses our digestive organs and hinders the passage of food.

4. Chew your food well. The Chinese have a saying that "The stomach has no teeth".

5. Stop eating before you are full. Overeating creates stagnation and may result in you feeling tired because your energy is occupied with the digestion of excess food. Habitual overeating overstrains the spleen and may produce mucus or heat.

6. Don't flood the spleen. Consume most of your fluid between meals. Much more than a cup dilutes the action of the spleen and stomach and weakens digestion.

7. Don't chill the spleen. Too much raw or chilled food or fluid can weaken the spleen. The process of digestion needs warmth (digestive fire).

8. Eat at regular times. As we get older our spleen function is less strong.

9. Eat the main meal early. In the evening (yin time) our body is slowing down, the food will sit in our digestive tract longer and create stagnation and heat that can damage our stomach yin.

10. Choose food with a strong life force. Fresh, locally grown food in season is the best. Excessive processing and chemicals tend to effect food value.

11. Eating well:	Vegetables and Fruits	40-60%
	Grains	30-40%
	Beans, Dairy, Meat, Nuts	10-20%

In order to get the most from the acupuncture and Chinese herbs, it is important to support your treatment with proper diet and lifestyle.

Each food has a nature and flavors. A food's nature is the affect it has on the temperature of the body. A food can be hot, warm, neutral, cool or cold. Since Chinese Medicine works by restoring balance to the body, if a person has a hot pattern then one should avoid foods with a hot temperature and eat more neutral or cool foods.

Each food has a flavor of sour, bitter, sweet, spicy (pungent), salty or bland tastes. Each flavor is associated with an organ and guides the effects of the food to that organ. For example, sweet is associated with the spleen and guides the effects of sweet foods to it. Excess sweet will create dampness in the spleen. Each flavor has a general affect on the body's metabolism. Sour astringes, spicy causes upward and outward movement that can disperse stagnation and promote circulation, salty leads downward and softens, bitter clears heat, sweet supplements and moistens and bland tends to cause urination

Whether a food is good or bad is entirely dependent on your Chinese Medicine diagnosis. My Chinese teachers would say, it isn't just that Americans tend to overeat, but we eat the same things all the time. You can make it simple by eating moderate amounts of food with each meal and having lots of variety.

For liver imbalances

Avoid or minimize the following foods:

Alcohol	Greasy, fatty, oily foods	Overeating in general
Coffee (regular and decaf)	Hard to digest foods like nuts	Large amounts of red meat
Excessively sour foods and drinks	Spicy, pungent, hot foods	

For spleen weakness

Avoid or minimize the following foods and drink that weaken spleen function:

Raw salads, fruits, vegetables	Pork	Dairy products
Sugar and sweets	Buckwheat	Beer
Frozen and chilled drinks	Fruit juice from concentrate	Frozen or chilled foods
Lettuce, radishes, celery	Echinacea or Goldenseal	

Eat warm, cooked foods, plenty of cooked vegetables, rice, noodles, soups and stews. Eat more frequent but smaller, easier to digest meals. Drink a teacup of warm water, broth or herb tea with each meal. You may use black and white pepper, cardamom, fresh ginger, ginger powder, cloves, nutmeg, orange peel or fennel as cooking spices.

For excessive phlegm

Avoid or minimize the following:

Dairy products	Heavy, hard to digest foods	Sugar and sweets
Overeating in general	Pork and beef	Oily, greasy, fried and fatty foods
Oats, possibly wheat		

For damp heat

Avoid or minimize the following foods:

Sugar and sweets	Spicy, pungent and hot foods	Alcohol
Nuts and nut butters	Greasy, oily, fried and fatty foods	Pork and beef
Fruit juice from concentrate, especially orange and tomato		

If damp heat is complicated by candidacies (yeast infections), also avoid:

Vinegar Yeasted breads and baked goods Fermented foods (except miso, shoyu, and yogurt)

For blood deficiency

Eat plenty of the following foods:

Cooked leafy greens	Meat and marrow broths and stews
Black beans	Regular small portions of animal protein

Orange and yellow vegetables

Cherries, beets, grapes and raspberries

Basic Dietary Guidelines According to Western Medicine

1. Avoid iron supplements
2. Reduce or eliminate drugs and alcohol
3. Reduce dietary fat ó 20-30% of our calories a day from fat, only 10% should be saturated fat. Inflammation, fibrosis, cirrhosis interfere with the ability of the liver to metabolize, process and eliminate fat from the bloodstream.
4. Balance protein sources ó vegetable proteins are easier on the liver. Anyone with high ammonia levels should eliminate red meat entirely from their diet. High ammonia levels lead to encephalopathy and impaired mental function.
5. Reduce sodium intake
6. Monitor fluid intake ó sufficient fluids are necessary for body to process nutrition and eliminate toxin. A 150 lb person should drink nine 8 oz. Glasses per day.

Prescription and over the counter medications that can affect liver function

Acetaminophen (Tylenol) (Cordarone)	alpha-methyldopa (Aldomet)	amiodarone
Chlorzoxazone (Parfon Forte)	Fluconazole or ketoconazole (Diflucan, Nizoral)	
Hydralazine (Apresoline)	ibuprofen (Motrin)	isoniazid (NIH)
Nitrofurantion (Macrochantin)	phenytoin	quinidine (Cardoquin)
Rifampin	Sulfa medications (Septra or Bactrim)	
Vitamin A (in doses >5000 units/day)		

Herbal patent medicines, tonics, elixirs and prepackaged solutions can be risky for anyone, whether they have liver disease or not. Ingredients labels may be incomplete. Avoid self-prescribed premixed preparations, rely on a trained and experienced herbalist who can individualize your herbal therapy and monitor your reactions.

Important: You should discontinue taking any drug or herb if you experience a skin rash, substantial nausea, bloating, fatigue and/or aching in the area of the liver, yellowing of the skin or pale feces.

www.elizabethlipski.com

www.westonaprice.org

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