Cystic Fibrosis: Managing This Disease with Herbs and Supplements

By Dawn Gates

Cystic Fibrosis is a life-threatening genetic disease that as of this time has no cure; most people with cystic fibrosis live to be around 41 years of age depending on how bad their disease is. In fact most people don't know they are even carriers; the estimate is that 7-10 million people in the United States don't even know they carry the mutated gene. Since there is no cure for Cystic Fibrosis in allopathic medicine it is just managed with frequent hospitalizations, IV antibiotics, and medications aimed at reducing infections and mucus. The good thing is that we can do better things with herbs and supplements, often keeping our clients out of the hospital for months at a time.

Pathophysiology

Cystic fibrosis is an autosomal recessive disease caused by defects in the *CFTR (Cystic Fibrosis transmembrane conductance regulator)* gene, which encodes for a protein that functions as a chloride channel which transports chloride in and out of cells, this is important for the salt and water balance on epithelial surfaces, such as in the lungs or pancreas. Here is where the issues with Cystic Fibrosis happens; since this gene regulates water and salt balance it also has the potential to disrupt multiple organ systems. There are 6 major defects that are controlled by this channel including decreasing the reabsorption of sodium and water, decreasing the hydration of mucus which promotes infection and inflammation in the respiratory tract, gastrointestinal tract, pancreas, sweat glands, and other exocrine tissues Immune functions are also thrown off as mast cells and neutrophils increase, producing a cascade that increases proteases, prostaglandins, and histamine which can further complicate health issues. Unfortunately, more than 1000

variations of this gene mutation exist which varies the symptoms and their severity including the immune response, pancreatic disease, severe pulmonary disease, gastrointestinal, infertility issues and life expectancy.

Additional health issues that occur due to this gene mutation may include the following:

Gastrointestinal (GI) symptoms

- Meconium ileus
- Abdominal distention
- Intestinal obstruction
- Increased frequency of stools
- Failure to thrive (despite adequate appetite)
- Flatulence or foul-smelling flatus.
- Excretion of large amount of fat with stool.
- Recurrent abdominal pain
- Jaundice
- GI bleeding

Respiratory symptoms

- Cough
- Recurrent wheezing
- Recurrent pneumonia
- Atypical asthma
- Dyspnea on exertion
- Chest pain

End-stage lung disease is often the principal cause of death.

Genitourinary symptoms

- Undescended testicles or hydrocele
- Delayed secondary sexual development
- Amenorrhea
- Infertility in men, and possible infertility in women

Lung complications

Most deaths associated with cystic fibrosis result from progressive end-stage lung disease. In individuals with cystic fibrosis, the lungs are normal in utero, at birth, and after birth. Shortly after birth, many persons with cystic fibrosis acquire a lung infection, which incites an inflammatory response. This cycle of infection, inflammatory response leads to scarring in the airway causing an obstruction. This condition leads to the expansion of the alveoli where air is trapped during exhalation, causing a trapping of CO2; its presence is exhibited by the barrel-shaped chest that Cystic Fibrosis patients often get. Infections happen often because of the thickened mucus, and decreased immune response. The most common types of infections in Cystic Fibrosis patients is pneumonia and includes the virus of *Staphylococcus aureus, Haemophilus influenzae,* and *Pseudomonas aeruginosa.*

Pancreas and digestion

As a part of the digestive process, stomach acid is neutralized by pancreatic bicarbonate, leading to the optimal pH for pancreatic enzyme action. Cystic Fibrosis clients have reduced bicarbonate secretion; this affects the digestion so that none of the pancreatic enzymes work at their optimal level. Other mechanical type obstructions that occur with Cystic Fibrosis are associated with

inflammation, scarring, and strictures, may predispose the patient to sludging of intestinal contents, leading to intestinal obstruction by fecal impaction. Another related disease process related to digestion is that many Cystic Fibrosis clients get as they reach their 20's is glucose intolerance because of frequent steroids, stress, and inability of pancreas to balance hormones and vitamins correctly. In fact pancreatic insufficiency leads to poor absorption of fat-soluble vitamins A, D, E, ad K. Other issues can include gallstones, obstructive cirrhosis, hepatic steatosis, right heart failure, and splenomegaly.

Urinary disease

Congenital absence of vas deferens may result in male infertility; and undescended testicles or hydroceles may be present in boys. Fertility is possibly decreased in females due to increased mucus in fallopian tubes, uterus and decreased fluid in secretions. Amenorrhea (lack of period) may occur in females that have moderate to severe nutritional or pulmonary complications.

The goal with Cystic Fibrosis patients is to manage the symptoms of their dis-ease, keep them from having to be admitted to the hospital with infections, and to increase their quality of life. I do this with a systemic approach to the entire system.

Management of Cystic Fibrosis Clients

The primary goals of CF treatment include the following:

- Decrease or thin out mucus systemically.
- Boost immunity.
- Improve digestion
- Fight constipation
- Balance hormones
- Fight infection as needed.
- Add nutritional education and supplements.
- Add breathing exercises

Decrease/ thin out mucus

The goal of decreasing mucus production and thinning out secretions is a multi-system approach that uses diet and herbal therapy.

Nutrition

- Limit foods that encourage the body to make mucus, such as dairy products (especially milk, cream, and ice cream), peanuts, oranges, bananas, sugar, saturated fats, wheat and gluten-containing grains (barley, oats, and rye), meat, and salt.
- Increase intake of foods that reduce mucus, such as garlic, onions, watercress, horseradish, mustard, parsley, celery, pickles, and lemons.
- Eliminate food allergens. Common food allergens include milk, eggs, fish, peanuts, food colorings, and additives. Talk to your doctor about determining food sensitivities through an elimination diet or a food allergy test.
- Reduce foods in the diet that may contribute to inflammation, including saturated fats (meats, especially poultry, and dairy), refined foods, and sugar.

Encourage the use of a high calorie diet rich in nuts, high quality fats, and astringent vegetables.

Herbs to thin out and decrease mucus production

- Burdock root (Articum lappa)- balances out oil and water ratio
- Comfrey (Symphytum officinale) - Decreases mucus, strengthens lung tissues (use low-PA tincture-short term).
- Elecampane(Inula helenium)- If an infection is present
- Lobelia (Lobelia inflata) - To open airways and increase movement of mucus.
- Skullcap (Scutellaria lateriflora)-To relax airways, decrease coughing
- Turmeric (Curcuma longa)-Thins secretions, decreases inflammation in airways.

Supplemental therapy

- Drink at least 2 liters of water daily
- Daily Netti pot with salt water.
- Daily deep breathing exercises aimed at lung expansion.

Breathing exercises

Goal is to increase vital capacity and flexibility in lung tissue and should increase Pulmonary Function Test results.

Take a deep breath in to a count of 8 and hold it for a count of 5, Let breath out to a count of 8. Practice this exercise 6-8 times a day. Once this exercise becomes easy: Take a deep breath in to a count of 8 and hold it for a count of 8, Let breath out to a count of eight. Practice this exercise 8-10 times a day.

Boost Immunity

The goal of boosting immunity is to decrease the amount of infections the client gets.

Nutrition

Eliminate processed foods or foods with Trans fats. Trans fats increase mucus and decrease immunity.

Herbs to boost immunity

- Astragalus (Astragalus membranaceus)
- Cleavers (Galium aparine)
- Garlic (Allium sativum)
- Bladderwrack (Fucus vesiculosus)
- Nettles (Urtica diotica)
- Reshi Mushroom (Ganoderma lucidum)

If an infection occurs add herbs like:

- Echinecia (Echinacea purpurea)
- Goldenseal(Hydrastis Canadensis)
- False Indigo Root(*Baptisia australis)*
- Garlic (Allium sativum)

Supplemental therapies

- Drink water, at least 2 liters a day
- Wash hands frequently.
- Inhale essential oils of lavender, eucalyptus, and or tea tree oil.

Improve digestion

Nutrition- make sure food palate is balanced. Yes, Cystic Fibrosis clients need a high fat, high calorie diet, but make sure to add bitters (like green vegetables), fruit acid, like lemon in

water, fatty fish like salmon 2 times a week. Reduce foods that produce mucus like dairy products. A nutrition consult is highly recommended to find optimal calorie intake and food balancing. Make sure peptic enzymes or papaya pills are taken with every meal including snacks. Add acidophilus to daily supplement; its best to take them 30 minutes before eating breakfast.

Herbs to support digestion

Herbs to support digestion are aimed not only at reducing mucus in GI tract they are also aimed at making the liver work more efficiently and to keep gallstones from forming.

- Burdock root(Articum lappa)
- Dandelion root (Taraxacum officinale) for liver and dandelion flower for gallstone issues.
- Dock, yellow(Rumex crispus)
- Milk Thistle(Silybum marianum)- if Lfts are elevated
- Oatstraw (Avena sativa)
- Warming bitters- take 1 dose (depending on who makes them) 10 minutes before eating each meal.

Supplemental therapies

- Drink warm or room temperature beverages with food to maximize digestion
- Eat 6-8 small meals/snacks daily in order to allow for optimal digestion.
- For indigestion eat 1 inch piece of candied ginger.

Herbs to help prevent constipation

Constipation for someone with Cystic Fibrosis can be life threatening because they are prone to bowl obstructions due to lack of secretions and bowel mobility.

- Cinnamon (Cinnamomum cassia)
- Borage seed oil (Borango officinalis)
- Flax seed (Linum usitatissimum)-fresh ground daily)
- Nettles (Urtica diotica) - integrate dried or fresh into foods.
- Psyllium seed (Plantago ovata) daily at bedtime (tastes great mixed with cinnamon).
- Slippery Elm (Ulmus rubra)

Supplemental therapies

- At least 2 liters of water daily.
- Daily walk of at least 15 minutes or bounce on mini-trampoline daily.
- Drink at least (2) 8 oz. glasses of water after any added flax or psyllium seed.

Balance Hormones

Most teenagers with Cystic Fibrosis have a harder battle with hormone imbalance then non-CF teenagers. Girls may never develop breasts, or start their menses later than most of her friends. Boys may never develop chest or facial hair. Acne in a CF teenager is usually worse than that of their friends due to the increased hormones stuck in their system. As adults these hormone imbalances can cause infertility or liver issues. We talk about liver herbs in digestion but all of those can be applied here as well. My only warning in doing a liver “cleanse” in Cystic Fibrosis clients is that they are already in a

weakened state and supportive and strengthening herbs should be used to get them at their optimal health before working on hormone imbalances.

Herbs for liver

- Burdock(Articum lappa)-
- Dandelion root(Taraxacum officinale)
- Yellow dock (Rumex crispus)-use in small doses.
- Milk Thistle(Silybum marianum)-
- *Do not use Bupleurum or any harsh liver herb on this population.*

Sexual Hormone balancing

- Chaste tree berries (Vitex agnus-castus)
- Eluthrococus senticosus
- Maca root (Lepidium meyenii)
- Red Clover (Trifolium pretense)

Building herbs

With Cystic Fibrosis they will often come to see you after they have been on years of steroids, antibiotic use and multiple infections and their bodies will be in a debilitated state. For this reason they need to be rebuilt with herbs that are high in nutrition, vitamins, minerals and life essence.

Herbs for rebuilding

- Burdock root (Articum lappa)-High in natural insulin precursors, also vitamins, minerals and natural oils.
- Dandelion root (Taraxacum officinale)-High in vitamins and minerals
- Horsetail (Equisetum arvense) - Can use daily in this population in small doses.
- Nettles (Urtica diotica) - Full of vitamins and minerals, also supports decrease in histamine and prostaglandin production.
- Oatstraw (Avena sativa) - Full of vitamins and minerals but also soothes inflammation and balances out mucus production. Use straw and not milky oat seed unless there is anxiety.

Supplement Protocol for Cystic Fibrosis Patients

Supplements

Vitamin C- 1000 mg twice daily. When symptoms of infection appear take 2000 mg twice daily as tolerated. Can be taken with or without food

Vitamin E- 400-800 IU daily. Should be taken with food.

Beta Carotene- 25,000IU a day. Should be taken with food

Omega 3, 6, 9 fatty acids (fish oil) Take 3 pills daily with food (1 with each meal).

N-acetyl cysteine- 200mcg three times daily. Can be taken with or without food

Selenium- 200 mcg. Can be taken with or without food

Zinc- 10mg twice a day. Can be taken with or without food.

Acidophilus at least 5 billion CFU's- Must be taken ½ hour before food in AM.

Antioxidant intervention aimed at reducing oxidative stress; and CF patients have been shown to be deficient in these.

http://ccn.aacnjournals.org/content/25/4/46.full

Pathophysiology of Cystic Fibrosis

Implications for Critical Care Nurses

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