Crohn's Disease: Diagnosis and Treatment

Crohn's disease is an inflammatory bowel disease (IBD), characterized by inflammation of one or more parts of the digestive system (Figure 1), usually occurring large intestine or ileum, the lower part of the small intestine. Crohn's fully permeates the tissue of the affected organ creating erosions and eventually colitis ulcers in the affected area. Over time, the area becomes rigid and narrowed, more susceptible to obstruction. If present in the colon, deep ulcers can puncture the colon wall, resulting in a septic infection of the surrounding area.

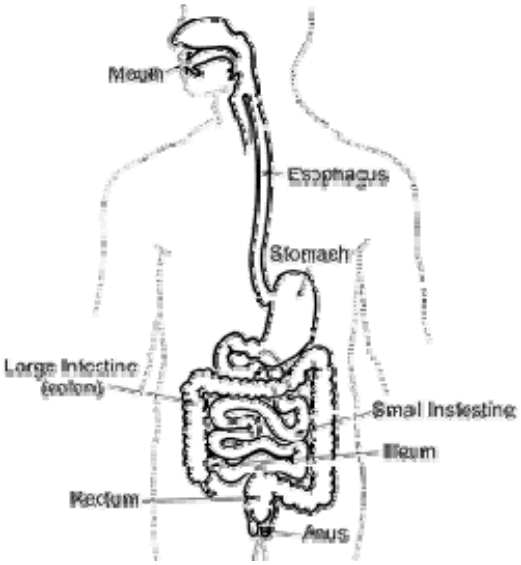

Figure 1: The Digestive System
After: http://digestive.niddk.nih.gov

Causes

Crohn's disease is predominantly believed to be caused by a viral or bacterial infection. Normally, once activated, the immune system uses inflammation as a tool to combat the foreign organism in the digestive system. In patients with Crohn's, the immune system becomes activated in absence of an invader, resulting chronic inflammation and the formation of ulcers.

Crohn's has also been traced to genetic factors; at least seven genes have been linked to the development of Crohn's disease. NOD2 is crucial in determining the immune system's reaction to certain bacterial products; individuals with a frameshift

mutation in the NOD2 gene are more susceptible to developing the disease. The disease often displays a hereditary tendency, but there is no known pattern of inheritance. The risk of developing the disease is highest when a brother or sister is affected. Studies show that identical twins show the highest rate of occurrence.

Symptoms and Diagnosis

Many of the symptoms associated with Crohn's disease are common in other digestive diseases; therefore, an accurate diagnosis is a multi-step process. Crohn's usually appears during the mid-thirties with symptoms including weight loss, diarrhea, loss of appetite, fever, joint pains, and rectal bleeding. The symptoms depend primarily on the location, extent, and severity of inflammation along the digestive tract.

To properly diagnose Crohn's disease, doctors must perform a physical examination, blood tests, radiologic examinations, stool tests, urine tests, and endoscopic examinations. Two physical examinations are required; the doctor will examine the right lower quadrant of the abdomen for signs of inflammation or tenderness, as well as the anorectal area for tenderness. Blood tests serve to detect the effects of Crohn's. Anemia may indicate intestinal bleeding, a direct effect of Crohn's, while high white blood cell and platelet numbers can detect inflammation. Blood chemistry profiles are also utilized to determine if the colon is absorbing nutrients improperly, an indication of Crohn's. Radiologic examinations provide the doctor with a visual image of any inflammation or ulcers in the digestive tract. Stool tests separate Crohn's from other diseases with similar symptoms, for example parasitic infections. Urine analysis detects red and white blood cells, which increase in number if the patient has Crohn's, as well as bacterial presence.

Endoscopic examinations identify the area of the digestive system being affected by Crohn's disease.

Complications

Crohn's disease complication can be grouped into two main categories, intestinal, occurring inside of the intestine, or extra-intestinal, occurring outside the intestine. The most common intestinal complications include obstruction of the small intestine, abscesses, intestinal bleeding, and rupture. Crohn's patients also show an increased risk of cancer in the small intestine and colon. Extra-intestinal complications involve inflammation of the skin, eyes, joints, spine, liver, and bile ducts.

Nutritional deficiencies can also result from Crohn's disease. Most nutritional problems stemming from Crohn's are the result of reduced intake of nutrients by the colon. Anemia, a condition in which the blood carries less oxygen, is caused by reduced iron levels and loss of blood from the bowel in Crohn's patients. Weight loss and reduced growth and development in children also arise from the inability of the colon to properly absorb nutrients.

Control and Treatment

Crohn's is characterized in most patients with variable remission periods. It is believed that stress and diet can trigger Crohn's. Studies find that avoiding fiber, dairy, alcohol, and hot spices, reduce the severity and number of Crohn's flare-ups, although this is not consistent for all sufferers. Studies also show that omega-3 fatty acids play a crucial role in reducing the expression of the disease.

There are two primary treatments for Crohn's disease, drug therapy and surgery. Most drugs designed to treat Crohn's contain mesalamine, an inflammation reducing substance. Side effects of mesalamine treatments include nausea, vomiting, heart burn, diarrhea, and headache. The most effective drug treatments for Crohn's are corticosteroids, which control inflammation, although corticosteroids prove effective, they significantly heighten the risk for infection.

Surgery is used to remove sections of the intestine not responding to drug treatment, such as those with blockage, perforation, or bleeding. Removing a section of the intestine does not cure Crohn's, it only relieves the symptoms, inflammation often reoccurs in the intestines near the removed area. A colostomy (Figure 2) is a procedure which removes the small intestine and brings the ileum to the surface to create an opening, usually in the abdomen, for waste to exit. In many cases, the diseased section of the intestine can simply be removed and then the remaining intestinal tissue can be reattached.

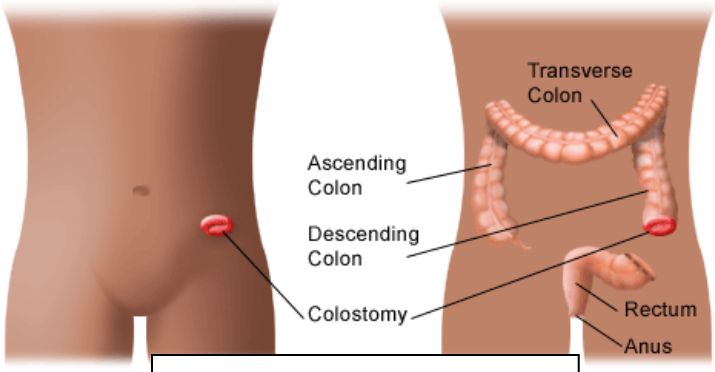

Figure 2: Colostomy
After: http://lpch.org

Bibliography

1. "Crohn's Disease." Digestive Diseases. Jan. 2003. National Institutes of Health. 09 Jan. 2006 http://digestive.niddk.nih.gov/ddiseases/pubs/crohns/
2. Dr Cliff Tasman-Jones. "CROHN'S DISEASE - a patient's guide." Crohn's Disease. Medic8. 09 Jan. 2006 http://www.medic8.com/healthguide/articles/crohns.html
3. "Crohn's Disease." Crohn's Disease. 2006. OSF Healthcare. 09 Jan. 2006 http://www.stayinginshape.com/3osfcorp/libv/i27.shtml
4. Crohn's Disease Web Site. 2000. 09 Jan. 2006 http://www.angelfire.com/ga/crohns/
5. "Treatment Options." Crohn's Disease. 2006. Crohn's & Colitis Foundation of America. 09 Jan. 2006 http://www.ccfa.org/info/?LMI=3
6. Crohn's. 2005. 09 Jan. 2006 http://www.crohns.org.uk/
7. "Crohn's Disease." Information on Crohn's Disease. 02 Jan. 2005. Medicine Net. 09 Jan. 2006 http://www.medicinenet.com/crohns_disease/page3.htm