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### Colon Cancer

Colon cancer is a disease in which cancerous [malignant] cells form in the tissues of the colon, which is the lower part of our digestive system, commonly referred to as the GI [gastrointestinal] system. This system removes and processes nutrients such as vitamins, minerals, carbohydrates, fats, proteins and water, from foods and helps pass waste material out of the body.

Our digestive system is made up of the esophagus, stomach, and the small and large intestines. The first six feet of the large intestine are called the large bowel or colon; the last six inches are the rectum and the anal canal, which ends at the anus.

Our age and health history can affect the risk of developing cancer of the colon. There are multiple risk factors that may contribute to the development of this malignant disease. These factors are: age fifty or older, family or personal history of cancer of the digestive system, as well as of ovaries, uterus or breasts, plus ulcerative colitis, the presence of polyps, Crohn's disease.

Symptoms and signs that may accompany intestinal cancer are a change in bowel habits, blood [bright red blood or very dark] in the stools, diarrhea, constipation, feeling that the bowel does not empty completely, etc.

Also, stools that are narrower than usual, frequent gas pains, bloating, fullness or cramps.

Weight loss for no known reason, feeling very tired, vomiting and other gastrointestinal symptoms may go together with advanced stages of this disease.

Tests that examine the rectum, rectal tissue and blood are used to detect and diagnose colon cancer: physical exams and history, general signs of health, looking for signs such as lumps or anything else that seem unusual. A history of the patient's health habits and past illnesses and treatments will also be taken.

Fecal occult blood test is a test designed to check stools for blood that can only be seen with a microscope. Small samples of stool are placed on special cards and returned to the doctor or laboratory for testing.

Digital rectal exam; the doctor or nurse inserts a lubricated, gloved finger into the rectum to feel for lumps or anything else that seems unusual. Barium enemas are a series of x-rays [lower GI series] of the lower gastrointestinal tract taken after a liquid that contains barium is introduced into the rectum; this substance coats the lower gastrointestinal tract and x-rays are taken.

A 'sigmoidoscopy' is a procedure applied to look inside the rectum and sigmoid colon for polyps, abnormal areas, or cancer. An instrument called 'sigmoidoscope', which is a thin, flexible, lighted tube, is inserted through the rectum into the sigmoid colon. Polyps or tissue samples may be taken for biopsy. This procedure may also be called 'colonoscopy' when the exam includes the colon. A 'biopsy' is the removal of cells or tissues that can be viewed later under a microscope to check for the presence of cancerous or malignant cells.

A 'colonography or CT colonography', also known as 'virtual colonoscopy' is the procedure that uses a CT scanner to detect polyps and anything else that seems unusual on the inside surface of the colon. This is an 'external' diagnostic procedure, without the use of a 'colonoscope.'

What are the factors affecting the chances of recovery after a malignancy is found?... It depends on the stage of the cancer: whether it is in the inner lining of the colon only, involves the whole colon, or has spread to other places in the body; when the cancer has blocked or perforated the colon. Also when blood tests show that certain antigens are elevated, particularly the 'carcinoembryonic antigen' or 'CEA', before treatments begin. Another important factor is the recurrence of the malignancy after it was treated. All the factors are affected by the patient's general health.

After colon cancer has been diagnosed, tests are done to find out if cancer cells have spread within the colon or to other parts of the body; this process is called 'staging.' The information gathered from the staging process determines the advance of the disease. It is important to know the stage in order to plan treatments. The following tests and procedures may be used in the staging process:

CT scan - It is a procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called 'computed tomography', 'computerized tomography', or 'computerized axial tomography.'

Lymph node biopsy - It is the removal of all or part of a lymph node; a pathologist views the tissue under a microscope to look for cancer cells.

Complete blood count or 'CBC' - It is a procedure in which a sample of blood is drawn and checked for the number of red blood cells, white blood cells, and platelets, plus the amount of 'hemoglobin' in the red blood cells.

The 'CEA' or 'Carcinoembryonic Antigen' assay - It is a test that measures the level of CEA in the blood, released into the bloodstream from both cancer cells and normal cells. When found in higher than normal amounts, it can be a sign of colon cancer or other conditions.

MRI or 'Magnetic Resonance Imaging' - It is a procedure that uses a magnet, radio waves, and a computer to make a series of detailed pictures of areas inside the colon; a substance called 'gadolinium' may be injected into the patient through a vein to enhance the images obtained. Abdominal and chest x-ray films are also obtained to determine the presence of tumors in different organs. Surgery is used to remove tumors and see how far they have spread through the colon.

Stages 0 to IV are used to determine how the tumor progresses, in the intestine and adjacent organs. Stage 0, also called 'Carcinoma In Situ' is when malignant cells are found on the lining of the colon. Stages I through IV will describe the advance of the tumor through the intestine's wall and other pelvic or abdominal organs and peritoneum.

Surgery removal is the most common treatment for all stages of colon cancer: 'local excision' is performed when the cancer is found at a very early stage, for instance in the form of a polyp. This is done using a 'colonoscope' equipped with

special instruments that will remove malignant lesions [polypectomy] from the inside of the colon.

When cancer cells have invaded the wall of the colon, or when the cancer is larger, a surgeon will perform a 'partial colectomy', removing the cancer and a small amount of healthy tissue around it. An 'anastomosis' or sewing the healthy parts of the colon together may be performed.

Lymphatic nodes near the colon will also be removed and examined under a microscope to see whether they contain cancer.

If after a resection of a segment of the colon cannot be put back together, then a 'colostomy', or opening through the abdominal wall is performed [stoma], which will allow for waste to be eliminated into a bag. Sometimes the colostomy is needed only until the lower colon has healed, and then it can be reversed. If the surgeon needs to remove the entire lower colon, however, the 'colostomy' may be permanent, requiring daily care.

Radiofrequency ablation is the use of a special probe with tiny electrodes that kill cancer cells. Sometimes the probe is inserted directly through the skin and only local anesthesia is needed. In other cases, the probe is inserted through an incision in the abdomen; this is done in the hospital, using general anesthesia.

Cryosurgery is a treatment that uses an instrument to freeze and destroy abnormal tissue, such as 'carcinoma in situ.' This type of treatment is also called 'cryotherapy.'

Even if a surgeon removes all the cancer that can be seen at the time of the operation, some patients may be given chemotherapy or radiation therapy after surgery to kill any cancer cells that are left. Treatment given after the surgery, to increase the chances of a cure, is called 'adjuvant therapy.'

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. When chemotherapy is taken by mouth or injected into a vein or muscle, the drugs enter the bloodstream and can reach cancer cells throughout the body [systemic chemotherapy]; when it is placed directly into the spinal column, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas [regional chemotherapy].

Chemoembolization of the hepatic artery may be used to treat cancer that has spread to the liver. This involves blocking the hepatic artery (the main artery that supplies blood to the liver) and injecting anticancer drugs between the blockage and the liver. The liver's arteries then deliver the drugs throughout the liver. Only a small amount of the drug reaches other parts of the body. The blockage may be temporary or permanent, depending on what is used to block the artery. The liver continues to receive some blood from the hepatic portal vein, which carries blood from the stomach and intestine.

The way the chemotherapy is given depends on the type and stage of the cancer being treated.

Radiation therapy is a type of treatment that uses high-energy x-rays or other types of radiation to kill cancer cells. There are two types of radiation therapy: external radiation therapy uses a machine outside the body to send radiation toward the cancer, while internal radiation therapy uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer.

The way the radiation therapy is given depends on the type and stage of the cancer being treated.

Other types of treatments are being tested: 'Biologic Therapy' is a treatment that uses the patient's immune system to fight cancer. Substances made by the body or made in a laboratory are used to boost, direct, or restore the body's natural defenses against cancerous cells. This type of treatment is also called 'Biotherapy' or 'Immunotherapy.'

Follow-up exams may help find recurrent colon cancer earlier. After treatments, blood tests measure 'carcinoembryonic antigens', which may be done along with other tests to see if the cancer has come back.

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