Advances in colorectal cancer research.

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Abstract

Cancers of the colon and rectum, also known as colorectal cancers, are the third most commonly diagnosed cancers among men and women in the United States and the second leading cause of cancer death in this country. In 2010, it is estimated that more than 140,000 Americans will be diagnosed with colorectal cancer and more than 50,000 will die of the disease. Over the past several decades, researchers have learned a lot about colorectal cancer, but much more research is needed to find ways to prevent the disease and to detect it earlier and treat it more effectively should it occur.

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Colorectal Cancer Stages

Both basic and clinical research scientists are utilizing the latest advances in technology in the effort to reduce the burden and toll of colorectal cancer. In the area of cancer screening and early detection, advances in computer-aided imaging, nanotechnology, and methods of molecular analysis promise to enhance our ability to identify abnormal growths in colorectal tissue that either are or could become cancerous. Meanwhile, other researchers are investigating ways to ensure that people adhere to current colorectal cancer screening recommendations.

Colon Polyps

In the area of cancer treatment, advances in DNA sequencing and genomic profiling methods should enable the identification of the specific molecular defects in a person's cancer cells and permit the development of therapies that target or take advantage of those defects. This genetic knowledge might also be exploited to help identify people who have an increased risk of colorectal cancer and to develop effective interventions to prevent the disease.

The process used to find out if cancer has spread within the colon or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment.

The following tests and procedures may be used in the staging process:

CT Scan (CAT scan)

A procedure that makes a series of detailed pictures of areas inside the body, such as the abdomen, pelvis, or chest, 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.

MRI (magnetic resonance imaging)

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 is injected into the patient through a vein. The gadolinium collects around the cancer cells so they show up brighter in the picture. This procedure is also called nuclear magnetic resonance imaging (NMRI).

PET Scan (positron emission tomography scan)

A procedure to find malignant tumor cells in the body. A small amount of radioactive glucose (sugar) is injected into a vein. The PET scanner rotates around the body and makes a picture of where glucose is being used in the body. Malignant tumor cells show up brighter in the picture because they are more active and take up more glucose than normal cells do.

Chest X-ray

An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body.

Surgery

A procedure to remove the tumor and see how far it has

spread through the colon.

Lymph Node Biopsy

The removal of all or part of a lymph node. A pathologist views the lymph node tissue under a microscope to check for cancer cells. This may be done during surgery or by endoscopic ultrasound-guided fine needle aspiration biopsy.

Complete Blood Count (CBC)

A procedure in which a sample of blood is drawn and checked for the following:

The number of red blood cells, white blood cells, and platelets.

The amount of hemoglobin (the protein that carries oxygen) in the red blood cells.

The portion of the blood sample made up of red blood cells.

Carcino Embryonic Antigen (CEA) assay

A test that measures the level of CEA in the blood. CEA is 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.

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