Understanding Pancreatic Cancer
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The Pancreas

The pancreas is an organ that is about 6 inches long. It’s located deep in your belly between your stomach and backbone. Your liver, intestine, and other organs surround your pancreas.

The widest part of the pancreas is called the head. The head of the pancreas is closest to the small intestine. The middle section is called the body, and the thinnest part is called the tail.

The pancreas makes pancreatic juices. These juices contain enzymes that help break down food. The juices flow through a system of ducts leading to the main pancreatic duct. The pancreatic juices flow through the main duct to the duodenum, the first part of the small intestine.

The pancreas is also a gland that makes insulin and other hormones. These hormones enter the bloodstream and travel throughout the body. They help the body use or store the energy that comes from food. For example, insulin helps control the amount of sugar in the blood.

Pancreatic Cancer

Normal cells grow and divide to form new cells as the body needs them. When normal cells grow old or get damaged, they die, and
new cells take their place. In cancer, new cells form when the body doesn't need them, and old or damaged cells don't die as they should. The buildup of extra cells often forms a mass of tissue called a growth or tumor.

Pancreatic cancer often starts in the ducts that carry pancreatic juices. This is called exocrine pancreatic cancer. Tumors in the pancreas can be benign (not cancer) or malignant (cancer). Benign tumors are not as harmful as malignant tumors:

**Benign Tumors (such as cysts)**
- Are usually not a threat to life
- Can be removed and usually don't grow back
- Don't invade the tissues around them
- Don't spread to other parts of the body

**Malignant Growths**
- May be a threat to life
- Can sometimes be removed but can grow back
- Can invade and damage nearby tissues and organs
- Can spread to other parts of the body

Pancreatic cancer can invade other tissues, shed cancer cells into the abdomen, or spread to other organs.

**Risk Factors**

Studies have found the following risk factors for cancer of the pancreas:

**Smoking:** Smoking tobacco is the most important risk factor for pancreatic cancer. People who smoke tobacco are more likely than nonsmokers to develop this disease. Heavy smokers are most at risk.

**Diabetes:** People with diabetes are more likely than other people to develop pancreatic cancer.

**Family History:** Having a mother, father, sister, or brother with pancreatic cancer increases the risk of developing the disease.

**Inflammation of the Pancreas:** Pancreatitis is a painful inflammation of the pancreas. Having pancreatitis for a long time may increase the risk of pancreatic cancer.

**Obesity:** People who are overweight or obese are slightly more likely than other people to develop pancreatic cancer.
Diet & Lifestyle: A diet high in saturated fat or heavy drinking of alcoholic beverages may increase the risk of pancreatic cancer.

**What are the Symptoms?**
Early cancer of the pancreas often doesn't cause symptoms. When the cancer grows larger, you may notice one or more of these common symptoms:

- Dark urine, pale stools, and yellow skin and eyes from jaundice
- Pain in the upper part of your belly
- Pain in the middle part of your back that doesn’t go away when you shift your position
- Nausea and vomiting
- Stools that float in the toilet
- Weakness or feeling very tired
- Loss of appetite or feelings of fullness
- Weight loss for no known reason

These symptoms may be caused by pancreatic cancer or by other health problems. People with these symptoms should tell their doctor so that problems can be diagnosed and treated as early as possible.

**Diagnosis and Testing**
If you have symptoms that suggest cancer of the pancreas, your doctor will try to find out what's causing the problems. You may have blood or other lab tests. You may also have one or more of the following tests:

**Physical Exam:** Your doctor will assess for changes in areas near the pancreas, liver, gallbladder, and spleen. Your doctor also checks for an abnormal buildup of fluid in the abdomen. Your skin and eyes may also be checked for signs of jaundice.

**CT Scan:** An x-ray machine linked to a computer takes a series of detailed pictures of your pancreas, nearby organs, and blood vessels in your abdomen.

**Ultrasound:** The ultrasound device uses sound waves that make a pattern of echoes as they bounce off internal organs. These echoes create a picture of the pancreas and other organs in the abdomen. The picture may show a tumor or blocked ducts.

**EUS:** While you are under anesthesia a thin, lighted tube (endoscope) is passed down your throat, through your stomach, and into the first part
of the small intestine. An ultrasound probe at the end of the tube sends out sound waves. These waves bounce off tissues in your pancreas and other organs. As your doctor slowly withdraws the probe from the intestine toward the stomach, the computer creates a picture of the pancreas from the echoes. The picture can show a tumor in the pancreas. It can also show how deeply the cancer has invaded the blood vessels.

**ERCP:** An endoscope is passed through your mouth and stomach, down into the first part of your small intestine. Your doctor slips a smaller tube through the endoscope into the bile ducts and pancreatic ducts. After injecting dye through the smaller tube into the ducts, the doctor takes x-ray pictures. The x-rays can show whether the ducts are narrowed or blocked by a tumor or other condition.

**MRI:** A large machine with a strong magnet linked to a computer used to make detailed pictures of areas inside your body.

**PET Scan:** You'll receive an injection of a small amount of radioactive sugar that gives off signals that the PET scanner picks up. The PET scanner makes a picture of the places in your body where the sugar is being taken up. Cancer cells show up brighter in the picture because they take up sugar faster than normal cells do. A PET scan may show a tumor in the pancreas or cancer that has spread to other parts of the body.

**Needle Biopsy:** The doctor uses a thin needle to remove a small sample of tissue from the pancreas. EUS or CT may be used to guide the needle. A pathologist uses a microscope to look for cancer cells in the tissue.

**Treatments**

Treatment options for people with pancreatic cancer include:

- **Surgery**
- **Chemotherapy**
- **Targeted Therapy**
- **Radiation Therapy**

The treatment that's right for you depends mainly on the location of the tumor in your pancreas, whether the disease has spread, your age and general health.

You may have a team of medical professionals to help plan and manage your treatment. Specialists who treat cancer of the pancreas
include surgeons, medical oncologists, radiation oncologists, gastro-enterologists, oncology nurses, dietitians, and palliative care or supportive care specialists.

**Surgery**

Surgery may be an option for people with an early stage of pancreatic cancer. The surgeon usually removes only the part of the pancreas that has cancer. But, in some cases, the whole pancreas may be removed. The type of surgery depends on the location of the tumor in the pancreas. Surgery to remove a tumor in the head of the pancreas is called a Whipple Procedure. The Whipple Procedure is the most common type of surgery for pancreatic cancer.

In addition to part of, or your entire pancreas, the surgeon usually removes duodenum, gallbladder, common bile duct and sometimes part of your stomach.

For tumors located in the body or tail of the pancreas, a distal pancreatectomy may be performed. During this operation, the surgeon may remove your spleen and nearby lymph nodes.

**Chemotherapy**

Chemotherapy uses drugs to kill cancer cells. Most people with pancreatic cancer get chemotherapy. For early pancreatic cancer, chemotherapy is usually given after surgery, but in some cases, it’s given before surgery. For advanced cancer, chemotherapy is used alone, with targeted therapy, or with radiation therapy.

**Targeted Therapy**

People with cancer of the pancreas who can’t have surgery may receive a type of drug called targeted therapy along with chemotherapy. Targeted therapy slows the growth of pancreatic cancer. It also helps prevent cancer cells from spreading.

**Radiation Therapy**

Radiation therapy uses high-energy rays to kill cancer cells. It can be given along with other treatments, including chemotherapy.

**Stages of Pancreatic Cancer**

Staging is a careful attempt to find out the following:

*The size of the tumor in the pancreas*

*Whether the tumor has invaded nearby tissues*

*Whether the cancer has spread, and if so, to what parts of the body*
These are the stages of cancer of the pancreas:

**Stage I:** The tumor is found only in the pancreas.

**Stage II:** The tumor has invaded nearby tissue but not nearby blood vessels. The cancer may have spread to the lymph nodes.

**Stage III:** The tumor has invaded nearby blood vessels.

**Stage IV:** The cancer has spread to a distant organ, such as the liver or lungs.

**What are some questions I can ask my doctor?**

As you cope with cancer and cancer treatment, we encourage you to have honest, open talks with your doctor. Feel free to ask any question that's on your mind, no matter how small it might seem. Here are some questions you might want to ask. Be sure to add your own questions as you think of them. Nurses, social workers, and other members of the treatment team may also be able to answer many of your questions.

1. What kind of pancreatic cancer do I have?
2. What is the clinical stage of cancer? What does this mean in my case? Is it resectable?
3. Has my cancer spread beyond the primary site?
4. What other treatments might be right for me? Why?
5. Among those treatments, what are the risks or side effect I should expect?
6. What are the chances of the cancer coming back with the treatment you suggest? What would be our next step if this happened?
7. What is my expected survival rate based on clinical stage, grade, and various treatment options?
8. Should I follow a special diet?
9. Is there another kind of doctor I should see?
10. How much experience do you have with this type of treatment?
11. May I have a copy of my pathology report?
12. What other tests (if any) do you think I need and why?
13. What are the chances that I will have diabetes?

For more information or to schedule an appointment please call (516) 663-2436.