

Pancreatic Cancer

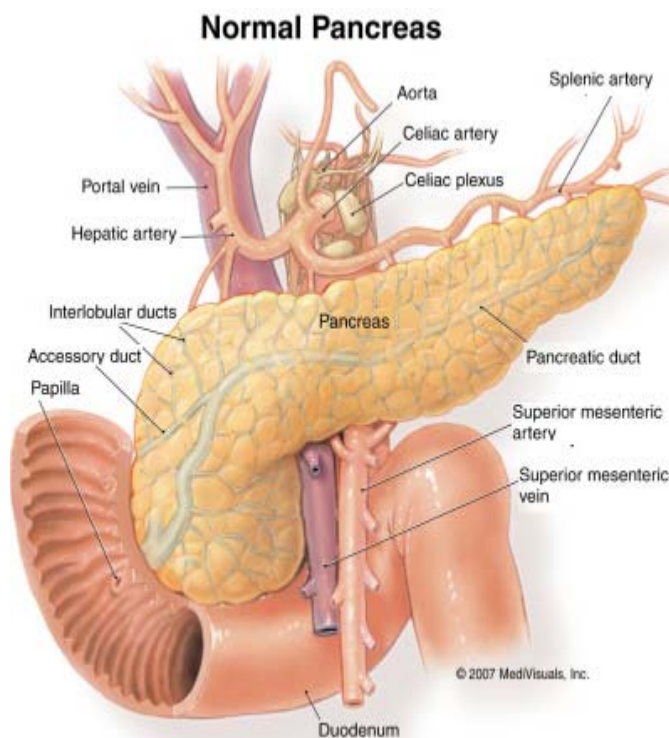
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Abstract: This article is a review on pancreatic cancer. This article contains normal pancreas methods of diagnosing pancreatic cancer. It is a short review about the latest diagnostic technique used in the treatment of pancreatic cancer.

Keywords: germline mutations; adenomatous polyposis; hereditary nonpolyposis colorectal cancer; heterogeneous disease; genetic epidemiology

1. Introduction



Pancreas is an organ present deep in the body behind the stomach. It is about 6 inches long and less than 2 inch wide. It across the abdomen. Pancreas has two glands exocrine gland and endocrine gland. It make pancreatic juice. This juice contains enzymes which breakdown fats and proteins in the food. They majority of exocrine cells and a small number of endocrine cells. They make hormones like insulin which balances the sugar level in the body.[1][2][3]

Pancreatic cancer is one of the most serious cancer. Pancreatic cancer is seen more in man than in women. Pancreatic cancer is a malignant neoplasm originating from transformed cells arising in tissues forming the pancreas. Both exocrine and endocrine cells of pancreas can form tumors. Tumors formed from exocrine cells are much more common than endocrine. Exocrine tumors are also called as adenocarcinomas. Endocrine tumors are much less common. They are known as islet cell tumor or neuroendocrine.[4][5]

2. Signs and Symptoms

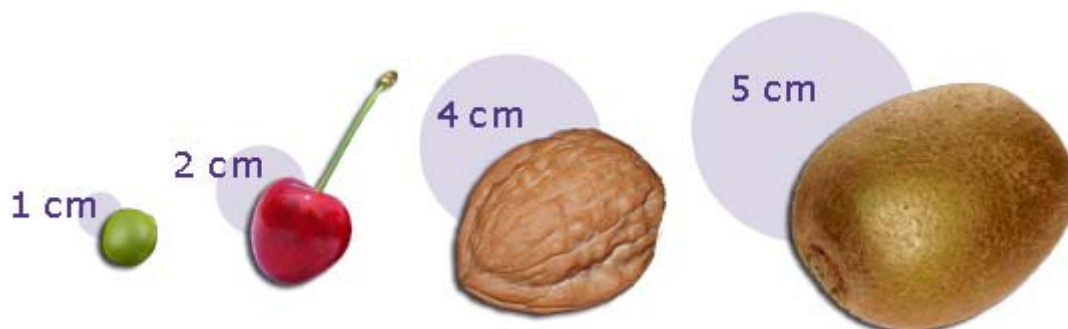
There are no early symptoms of pancreatic cancer. Pancreatic cancer is often diagnosed at the advanced stages. Common symptoms include. Upper abdominal pain that radiates to the back, loss of appetite, depression, poor appetite, vomiting, diarrhea, loss stools, weight loss, jaundice (yellowish tint of the eye, yellowish skin or darkened urine), diabetes mellitus (elevated sugar level). [6][7][8][9][10]

2.1 Risk factors of Pancreatic Cancer

Family history: 5 to 10 % of pancreatic cancer patients have a family history of pancreatic cancer. But the gene causing pancreatic cancer has not been identified.

- 1) Age: Mostly pancreatic cancer is seen in patients above 60 yrs and less common in patients below 60 yrs.
- 2) Obesity: obesity plays a major role
- 3) Chronic pancreatitis: The risk of pancreatic cancer is familiar in patients with pancreatitis.[11][12][13][14][15]

2.2 Stages of Pancreatic Cancer



Stage 0: In stage 0 abnormal cells are found in the lining of the pancreas. These abnormal cells may become cancer cells. Stage 0 is also called as carcinoma in situ.

Stage 1: Stage 1 pancreatic cancer is divided into stage 1A and Stage 1B its divided on the bases of size.

Stage 1 A: The size of the tumor cell is 2 centimeters or smaller. It is limited to pancreas

Stage 1 B: The size of the tumor cell is larger than 2 centimeters.

Stage II: In stage II cancer has spread to nearby tissue and organs. Stage II is divided into stage IIA and stage IIB its divided based on where the cancer has spread.

Stage IIA: Cancer extends beyond the pancreas (no superior mesenteric artery or celiac axis involvement) but not to the lymph nodes.

Stage IIB: Cancer has spread to the nearby lymph nodes.

Stage III: In stage III cancer has spread to the nearby major blood vessels and to the nearby lymph nodes.

Stage IV: Cancer may be any size and has spread to distinct organs such as lungs, liver and peritoneal cavity.[16][17]

3. Diagnosis

Pancreatic cancer is not diagnosed in the early stage it is diagnosed in later stage only. In order to plan treatment it is important to the stage of the disease and whether or the cancer can be removed by surgery.

The following test can be done to diagnose pancreatic cancer:

- 1) Physical exam and history: An exam of the body to check general signs of health, including checking for signs of disease, such as lumps or anything else that seems unusual. A history of the patient health habits and past illness and treatments will also be taken.
- 2) 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 body.[18]
- 3) CT scan: A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. A spiral or helical CT scan makes a series of very detailed pictures of areas inside the body using an x-ray machine that scans the body in a spiral path. [19].
- 4) Endoscopic ultrasound (EUS): A procedure in which an endoscope is inserted into the body, usually through the mouth or rectum. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram. This procedure is also called endosonography.[20][21]

4. Treatment

a) Surgery

Whipple procedure: A surgical procedure in which the head of the pancreas, the gallbladder, part of the stomach, part of the small intestine, and the bile duct are removed. Enough of the pancreas is left to produce digestive juices and insulin.[22][23]

b) Total pancreatectomy

This operation removes the whole pancreas, part of the stomach, part of the small intestine, the common bile duct, the gallbladder, the spleen, and nearby lymph nodes.[24]

c) Distal pancreatectomy:

The body and the tail of the pancreas and usually the spleen are removed. If the cancer has spread and cannot be removed, the following types of palliative surgery may be done to relieve symptoms and improve quality of life.[25]

d) Surgical biliary bypass:

If cancer is blocking the small intestine and bile is building up in the gallbladder, a biliary bypass may be done. During this operation, the doctor will cut the gallbladder or bile duct and sew it to the small intestine to create a new pathway around the blocked area.[26]

e) Endoscopic stent placement:

If the tumor is blocking the bile duct, surgery may be done to put in a stent (a thin tube) to drain bile that has built up in the area. The doctor may place the stent through a catheter that drains to the outside of the body or the stent may go around the blocked area and drain the bile into the small intestine.[27]

f) Gastric bypass:

If the tumor is blocking the flow of food from the stomach, the stomach may be sewn directly to the small intestine so the patient can continue to eat normally.

g) Radiation therapy:

Radiation therapy is a cancer treatment that uses high-energy x-rays or other types of radiation to kill cancer cells or keep them from growing. There are two types of radiation therapy. External radiation therapy uses a machine outside the body to send radiation toward the cancer. 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.[28]

h) Chemotherapy:

Chemotherapy is a cancer treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them 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 chemotherapy is placed directly into the cerebrospinal fluid, an organ, or a body cavity such as the abdomen, the drugs mainly affect cancer cells in those areas (regional chemotherapy). Combination chemotherapy is treatment using more than one anticancer drug. The way the chemotherapy is given depends on the type and stage of the cancer being treated.[29]

i) Chemoradiation therapy

Chemoradiation therapy combines chemotherapy and radiation therapy to increase the effects of both.

j) Targeted therapy

Targeted therapy is a type of treatment that uses drugs or other substances to identify and attack specific cancer cells without harming normal cells. Tyrosine kinase inhibitors (TKIs) are targeted therapy drugs that block signals needed for tumors to grow. Erlotinib is a type of TKI used to treat pancreatic cancer.[30]

5. Conclusion

Pancreatic cancer proximately 29,000 patients per year and is the fourth leading cause of cancer related-mortality. Despite recent advantages management, 5-year survival rates remain essentially unchanged from a historical 5-year survival of 5%. Identifying patients who would best benefit from a surgical procedure as opposed to palliative treatment has remained problematic. Despite the best efforts, most patients are found to have unresectable tumors at the time of surgery.

Traditionally, computed tomography (CT), endo-scopic retrograde cholangiopancreatography (ERCP), and angiography have been the mainstays of preoperative staging and management in patients with pancreatic cancer. CT scan detection rates for pancreatic tumors of any size, for those smaller than 3 cm, and for those smaller than 2 cm are approximately 78%, 50%, and 29%, respectively. Similarly, transabdominal ultrasound (US) detection rates are 70%, 50%, and 29%, respectively. Additionally, helical CT scan has also been compared to EUS and has not been shown to be as sensitive in detecting tumors smaller than 3 cm. Thus, for pancreatic carcinomas smaller than 2 cm, conventional CT or transabdominal US is inadequate for detection. When considering that these patients with small tumors are also the most likely to benefit from surgical resection, this low sensitivity is clinically relevant.

Likewise, ERCP also has a lower diagnostic sensitivity for small pancreatic tumors and offers no information regarding vascular invasion and lymph node involvement. Overall, conventional diagnosis using CT, ERCP, or US seems to identify patients at a late stage in diagnosis, when surgical interventions may have little benefit and may consume resources.[37].

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