

MDCT in Estimation of an Angle size of Blood Vessels Invasion by Pancreatic Carcinoma

Dusan Saponjski

Allama Iqbal Open University, Pakistan

According to the NCCN criteria, resectability of Pancreatic Carcinoma (PC) is commonly assessed by MDCT and depends on tumor's relation to neighboring blood vessels, such as Celiac Trunk (CT), Hepatic Artery (HA), Superior Mesenteric Artery (SMA), Portal Vein (PV) and Superior Mesenteric Vein (SMV). The aim of this study was to investigate methodology of the assessment of local vascular invasion of pancreatic carcinoma by MDCT using the angle measuring tool. 50 consecutive 64-MDCT scans of patients with the PC were retrospectively analyzed. Maximal angle of blood vessel's circumference that was in direct contact with the tumor was measured using the angle measuring tool on axial section and length of direct contact on MPR-reconstructed section. Accordingly, resectability was estimated using the NCCN criteria. Frequencies and correlations were statistically analyzed using Spearman's (r_s) and Pearson's correlation coefficient (r). Average size of tumor was 36 ± 13 mm (10-68 mm). Majority of PCs were in advanced stage (60% T3 and 36% T4), located in the head of the pancreas (62%). 22% tumors were estimated as resectable, 48% borderline resectable and 30% unresectable. SMV and PV were invaded most frequently (50% and 46%) and surrounding arteries in lower percent (SMA in 26%, HA in 22% and CT in 16%). Location, size and T-stage correlated with the frequency of local vascular invasion ($r_s > 0.450$). Maximal angle correlated with the length of the vascular infiltration ($r > 0.450$). Precise estimation of vascular invasion in PC by MDCT is possible using the angle measuring tool. Pancreatic cancer begins in the tissues of your pancreas — an organ in your abdomen that lies behind the lower part of your stomach. Your pancreas releases enzymes that aid digestion and produces hormones that help manage your blood sugar. Several types of growths can occur in the pancreas, including cancerous and noncancerous tumors. The most common type of cancer that forms in the pancreas begins in the cells that line the ducts that carry digestive enzymes out of the pancreas (pancreatic ductal adenocarcinoma). Pancreatic cancer is seldom detected at its early stages when it's most curable. This is because it often doesn't cause symptoms until after it has spread to other organs. Pancreatic cancer treatment options are chosen based on the extent of the cancer. Options may include surgery, chemotherapy, radiation therapy or a combination of these. Signs and symptoms of pancreatic cancer often don't occur until the disease is advanced. They may

include: Abdominal pain that radiates to your back, Loss of appetite or unintended weight loss, Yellowing of your skin and the whites of your eyes (jaundice), Light-colored stools, Dark-colored urine, Itchy skin, New diagnosis of diabetes or existing diabetes that's becoming more difficult to control. Blood clots & Fatigue pancreas is about 6 inches (15 centimeters) long and looks something like a pear lying on its side. It releases (secretes) hormones, including insulin, to help your body process sugar in the foods. Pancreatic cancer occurs when cells in your pancreas develop changes (mutations) in their DNA. A cell's DNA contains the instructions that tell a cell what to do. These mutations tell the cells to grow uncontrollably and to continue living after normal cells would die. These accumulating cells can form a tumor. When left untreated, the pancreatic cancer cells can spread to nearby organs and blood vessels and to distant parts of the body. Most pancreatic cancer begins in the cells that line the ducts of the pancreas. This type of cancer is called pancreatic adenocarcinoma or pancreatic exocrine cancer. Less frequently, cancer can form in the hormone-producing cells or the neuroendocrine cells of the pancreas. These types of cancer are called pancreatic neuroendocrine tumors, islet cell tumors or pancreatic endocrine cancer. As pancreatic cancer progresses, it can cause complications such as:

Weight loss. A number of factors may cause weight loss in people with pancreatic cancer. Weight loss might happen as the cancer consumes the body's energy. Nausea and vomiting caused by cancer treatments or a tumor pressing on your stomach may make it difficult to eat. Or your body may have difficulty processing nutrients from food because your pancreas isn't making enough digestive juices. Jaundice. Pancreatic cancer that blocks the liver's bile duct can cause jaundice. Signs include yellow skin and eyes, dark-colored urine, and pale-colored stools. Jaundice usually occurs without abdominal pain. Doctor may recommend that a plastic or metal tube (stent) be placed inside the bile duct to hold it open. This is done with the help of a procedure called endoscopic retrograde cholangiopancreatography (ERCP). During ERCP an endoscope is passed down your throat, through your stomach and into the upper part of your small intestine. A dye is then injected into the pancreatic and bile ducts through a small hollow tube (catheter) that's passed through the endoscope. Finally, images are taken of the ducts. Pain. A growing tumor may press on nerves in your abdomen, causing pain that

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can become severe. Pain medications can help you feel more comfortable. Treatments, such as radiation and chemotherapy, might help slow tumor growth and provide some pain relief. In severe cases, your doctor might recommend a procedure to inject alcohol into the nerves that control pain in your abdomen (celiac plexus block). This procedure stops the nerves from sending pain signals to your brain. Bowel obstruction. Pancreatic cancer that grows into or presses on the first part of the small intestine (duodenum) can block the flow of digested food from your stomach into your intestines.

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