

Pancreatitis

The pancreas is a glandular organ which sits deep in the abdomen, lying behind the stomach. In health, its functions fall into two major categories: digestive, and endocrine. The latter consists primarily of secreting insulin, glucagon and other hormones important to the blood sugar balance. This is further discussed under diabetes. The digestive functions concern the production of enzymes such as amylase important to the chemical digestion of fats and other nutrients.

When the pancreas becomes inflamed, its own enzymes are released into the blood, as well as within the organ itself; though the highly active enzymes are usually contained in protected ductal areas, in the inflamed pancreas they may actually start to attack the organ itself.

Symptoms

Almost all victims of acute pancreatitis suffer very severe mid and upper abdominal pain, frequently radiating straight through to the back. Vomiting is common, and often early signs of shock are seen. Large amounts of fluid may pour into the abdominal cavity which, when combined with the vomiting and poor intake, leave the circulation with inadequate volumes to maintain a normal blood pressure. Ultimately, shock and death may occur. The intensely tender abdomen may mimic that seen in many other conditions, and requires careful differentiation from surgically treatable diseases; surgery in the presence of pancreatitis is very dangerous.

Diagnosis

In the face of the symptoms mentioned above, the physician may ask for additional history based on the causative factors listed below. Laboratory tests often show characteristic abnormalities, including elevated levels of amylase and white blood cells. Analyses of blood, urine, and the exam findings, with a consistent history are usually adequate for diagnosis.

Determining whether the patient has simple pancreatitis or has an associated disease often requires further studies specific to the disease being sought.

Causes

The vast majority of patients with recurrent pancreatitis, as well as many of those with even an isolated episode, are serious alcohol abusers. Alcohol has a direct toxic effect on the pancreas, among other organs. In one study, the average intake of pure alcohol equivalent was over five ounces daily, with many consuming much higher amounts. As these patients are often plagued with other complications of alcoholism, the outcome may be very serious.

In the non-alcohol-abusing population with pancreatitis, the commonest cause is the presence of a large gall stone blocking the duct draining the pancreas of its enzyme juices. These then back up into the pancreas, causing the same symptoms discussed above. Tumors of the liver, pancreas, or gallbladder may cause similar blockage.

Occasionally an ulcer on the rear wall of the stomach may penetrate through the wall and allow stomach acid to enter the neighboring pancreas, setting off the inflammatory process mentioned above. Yet another cause is the presence of very high levels of triglycerides (a form of blood fat) due to familial abnormalities; the exact connection between the two diseases is not entirely understood, but the association is quite striking.

Finally, many drugs can cause pancreatitis as a side effect. It is unusual for any given drug to do this, but because so many do, drugs must be considered an important cause. These include thiazide diuretics, estrogens, tetracycline, and certain cancer drugs.

Treatment

Given the sequence of events mentioned above, it is not surprising that treatment is aimed at replacing large amounts of body fluid by vein. The pancreas and digestive system in general should be "shut down" to minimize enzyme production through the use of a stomach tube and/or regular antacids to neutralize acid production. Large doses of injected narcotic pain relievers may be necessary. After days or weeks, things have usually calmed down enough to resume a normal diet, and full recovery is common. Complicating diseases may be treated either urgently (gall stone or tumor) or later (alcoholism).

Complications

In a minority of patients, infection may set in from bacteria in the intestinal tract, requiring massive antibiotic treatment, which is not always successful. Still others develop severe bleeding from the raw and inflamed pancreas, or develop a highly aggressive pus-forming pancreatic involvement. With these complications, up to 90% of patients may die.

Long Term Effects

In recurrent or prolonged pancreatitis the cumulative damage to the pancreatic tissue can result in loss of pancreatic function. Malabsorption of fats and some vitamins may occur, and be serious or even fatal. Oral pancreatic supplements can be helpful. See the discussion on malabsorption for further details.

If the damage includes the insulin producing cells, diabetes may result.

Prognosis

If the acute disease is not complicated as noted above, the mortality is about one in twenty; broader prognosis depends on the underlying situation. Alcoholics generally do poorly with recurrences, complications, and decreased survival. Tumors in this area are generally very serious, and have a poor prognosis. Gall stones offer a totally curable situation, with removal of the stone and gallbladder being a routine procedure.

In summary, pancreatitis is a very painful and serious disease, sometimes presenting major diagnostic problems. It can be a very serious disease, and is commonly associated with alcohol abuse, gall stones, and certain drugs. The final prognosis in most cases is dependent on the cause.

Gall Bladder Disease

The overwhelming majority of gallbladder problems are related to the formation of "stones." An understanding of the basics of gallbladder function is essential to discussion of these diseases.

The gallbladder sits just off the tube leading from the bile ducts of the liver to the small intestine (duodenum, more specifically). Its function is not essential, and perhaps was more useful to us in primitive times when digestive needs were different. In essence, the gallbladder traps the bile from

the liver, storing and concentrating it in anticipation of a food load. During meals, the gallbladder contracts, releasing the contents into the duct and the digestive system. This may function as a "boost" to the usual digestive enzymes. Certain foods, notably fats, provide more of a stimulation to the gallbladder than others.

When the bile from the liver has a very high saturation of cholesterol due to some metabolic abnormality, the action of certain oestrogen hormones or some other reason, or unknown factors, the saturation is further increased as the bile gets concentrated in the gallbladder. When the solution can no longer hold the dissolved cholesterol, it begins to crystallize, much the way rock candy does in sugar water. The result is a cholesterol gallstone, the most common kind. Although bile and its other products can sometimes form stones as well, this is usually only in the presence of some excess in the amount of bile presented to the gallbladder, or some abnormal concentration of one of its ingredients (for example, excess bilirubin released by dying blood cells in certain types of anaemia).

Once formed, gallstones can take a widely variable pattern. They may be big, small, or even remain as a "sludge-like" substance in the gallbladder. They may remain unnoticed for life, or cause disease as discussed below. The term cholelithiasis refers to the presence of stones in the gallbladder; cholecystitis refers to inflammation or infection of the gallbladder, related 95% of the time to cholelithiasis.

Symptoms

Contemporary opinion based on recent data suggests that most patients without symptoms (who have gallstones diagnosed incidental to some other test, for example) will not develop problems. Some exceptions are noted, including diabetics. Whether such patients should be advised to undergo preventive removal of the gallbladder is not known, but opinion may be shifting away from the routine performance of such surgery.

When symptoms do occur, they range from intermittent right upper abdominal pain after meals, especially fatty foods, lasting up to an hour, to acute excruciating pain, unremitting, with fever, vomiting, and severe prostration. The former probably represents reversible temporary blockage of the gallbladder's opening by a stone, whereas the latter ("acute cholecystitis") represents a stone impacted in the opening. As with all syndromes, many variations and atypical presentations are seen.

Additional symptoms may include pale stools due to loss of pigment from the bile, and dark urine, since this blocked pigment is reabsorbed by the blood and secreted in the urine. Jaundice is yellowing of the skin which may occur from this same pigment in the blood becoming visible in the skin or the whites of the eyes.

Who Gets Them

Women get stones three times more frequently than men, possibly because of a contributory role of oestrogens; the childbearing years are therefore the highest risk period. Obesity increases oestrogen levels and is also a risk for gallstones. Certain American Indian and Inuit groups are afflicted in as many as 70% of the females.

The symptoms of gallstones may be caused by other disease including hepatitis, pancreatitis, tumours and more. Thus, confirmatory tests are necessary. They may include blood tests for specific chemicals from the liver and pancreas. Ultrasound tests of the area will detect 90% or more of the stones; this involves aiming a microphone-like device against the skin near the involved area. Nuclear studies using intravenous agents which are slightly radioactive are becoming increasingly useful. The older

gallbladder x-ray taken after the ingestion of an oral "dye" is still useful the patient is not acutely ill, and time is not of the essence.

Treatment

Acute gallbladder attacks are treated with intravenous fluids and pain relievers, and sometimes with antibiotics if an infectious component is suspected because of fever or high white cell count. Once the episode has subsided, removal of the gallbladder is indicated in almost all cases, since recurrences are common. Acute cases which do not respond to conservative treatment may require emergency surgery, the risk of which may be considerably higher than that done electively.

In the chronic case, surgery is curative and quite safe if done electively. Unfortunately, some patients with stones have had suspicious pain for years; with gallbladder removal the pain may persist, suggesting that it was due to some other problem, such as irritable bowel syndrome, all along.

The occurrence of asymptomatic gallstones was mentioned above. Probably only one in five will develop symptoms over a 15-year period, and very few if any will develop serious complications. These factors must be born in mind in decisions over whether to operate.

MEDICAL TREATMENT

Recent years have seen the development of a drug called chenodeoxycholic acid, which was said to dissolve up to three quarters of gallstones when given to appropriate patients orally. Unfortunately, despite great initial interest, the drug was noted to raise cholesterol levels, and follow-up studies of higher quality revealed that in fact only 14% of patients had total dissolution of their stones, even after 2 years, and stones tended to recur after the pills were stopped. Quite a few patients developed diarrhoea from the medication.

Thus, except for a few special cases such as an elderly person with high risks for elective surgery, the medication is rarely indicated. The routine elective removal of the gallbladder is a curative treatment, and for most patients with symptomatic gallstones remains the treatment of choice.