Treatment of Aneurysm of the Pancreaticoduodenal Artery by Excision

JAMES W. HENDRICK, M.D.

San Antonio, Texas

ANEURYSMS of the intraabdominal vessels, other than the aorta, are rare surgical lesions. Of the smaller vessels, the celiac and hepatic arteries are the vessels most frequently affected. There have been fewer than 150 cases of aneurysms of the hepatic [7] artery and 40 cases of aneurysms of the celiac artery [2] reported. Only one case of aneurysm of the gastroduodenal or pancreaticoduodenal artery has been reported to date.[13] It is for this reason that a second case is being reported in which the lesion was successfully removed surgically.

In the reported cases of aneurysms involving the celiac,[3] hepatic [2, 8] and pancreaticoduodenal artery,[13] the diagnosis was established in most instances at necropsy following sudden death from rupture of the aneurysm into the peritoneal cavity,[5] gastro-intestinal tract, or bile duct.[9]

Marked progress has been made during the past few years in the treatment of arterial aneurysms by resection [7] of the involved segment and restoration of the vessel continuity to reestablish its function. We were fortunate in establishing a diagnosis in the case being reported before perforation of the aneurysm occurred which would have resulted in a surgical emergency or death from hemorrhage. When such vessels perforate into the peritoneal cavity or into the gastro-intestinal or biliary tract, sudden shock ensues and usually death results.

CASE REPORT

A. G. T., white male, age—40 years, occupation —engineer. Patient was first observed October 16, 1954 with a history of recurring attacks of indigestion, pain in the gallbladder region that radiated to the back and across the left upper abdomen. The episodes of pain were accompanied by nausea and vomiting. Frequently the pain was so severe sedatives were required. On occasions the episodes of nausea and vomiting persisted for several days during which time there was mild jaundice with clay colored stools. Six years before observation by us the nausea, pain and vomiting were thought to represent chronic appendicitis; an appendectomy was performed elsewhere with no relief of symptoms. The episodes of pain were aggravated by over-eating, and relieved to a degree by a bland diet and antispasmodic drugs. Three months before registering at our office, the pain had become more severe and the symptoms of indigestion more constant. The past history was negative except for usual childhood diseases.

Physical examination revealed a well developed, poorly nourished white man. The various systems of organs were normal except marked tenderness and muscle spasm was present over the epigastric and gallbladder areas. Roentgenographic studies of the gallbladder, stomach and colon did not disclose any abnormalities. The serum bilirubin, sulfobromophthalein excretion, prothrombin time and pancreatic function tests were normal. The erythrocyte count, hemoglobin, serological test and urine studies were normal. Amoeba were present in the stools on two occasions.

The patient was placed on medical management for amebiasis infection and chronic recurring pancreatitis with no relief of symptoms. On November 27, 1954 his previous symptoms were aggravated, with more severe pain in the epigastric area referred to the back and left upper abdomen. Roentgenographic studies of the stomach and duodenum at that time revealed a rather marked exaggeration of the duodenal sweep with no other evidence of an extrinsic lesion in the area. Intravenous pyelogram was normal. It was felt at that time the patient had a lesion of the pancreas that required exploration. This was done at the Baptist Memorial Hospital, December 7, 1954. The spleen, stomach, biliary system and duodenum were found to be normal; normal bile was aspirated from the gallbladder and common duct. On palpation of the head of the pancreas, a pulsating tumor mass could be felt. The gastrocolic ligament was severed. There were marked inflammatory adhesions between the posterior wall of the stomach and the body and tail of the pancreas which were almost

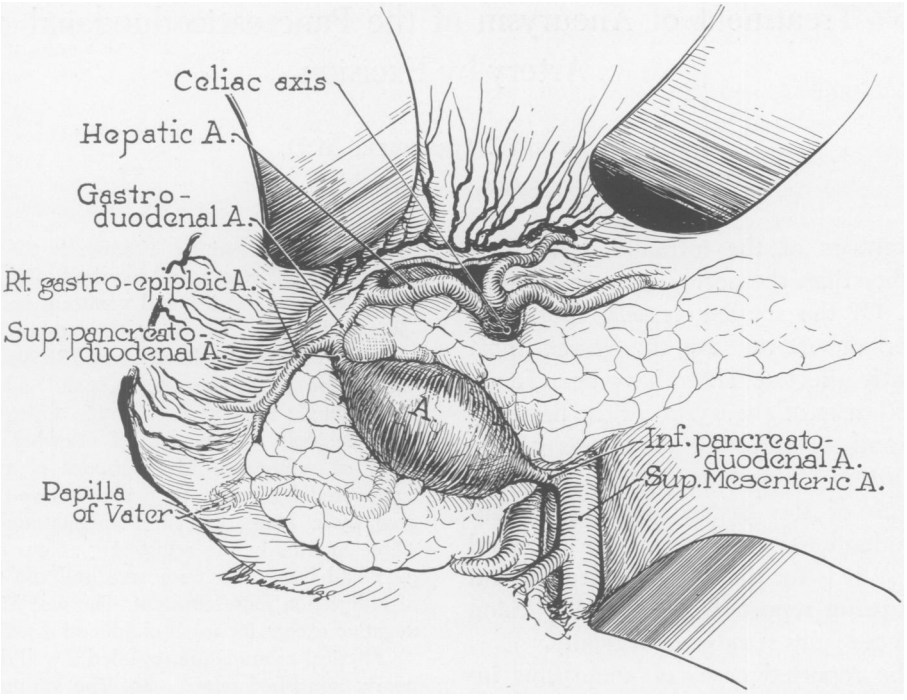

FIG. 1. Aneurysm of the gastroduodenal or superior pancreaticoduodenal artery. Aneurysm was 4 cm. in diameter and 6 cm. long, producing pressure over the neck of the pancreas. The body and tail of the pancreas were thickened, enlarged and nodular. The aneurysm was producing partial obstruction of the pancreatic duct resulting in recurring attacks of pancreatitis.

twice their normal size, tense and firm; the head of the pancreas was slightly enlarged. The hepatic artery was enlarged; there was a large dilated artery over the neck of the pancreas producing a distinct groove in the neck of the pancreas. This vessel was dissected out and found to be an aneurysm of the gastro-duodenal, or pancreaticoduodenal, artery where it runs over the neck of the pancreas (Fig. 1). The aneurysm was 4 cm. in diameter and 6 cm. long, producing pressure over the neck of the pancreas, resulting in partial obstruction of the pancreatic ducts. The artery was ligated on each side of the aneurysm and the dilated area removed. Before the sutures were tied they were brought taut over the vessel, to determine if the blood supply to the duodenum would be affected; the color of the duodenum and head of the pancreas remained normal. After excision of the aneurysm the neck and body of the pancreas assumed a normal appearance.

The patient had a normal convalescence and returned to work. He has been observed at bimonthly intervals and is completely relieved of the preoperative symptoms. Roentgenographic studies of the upper gastro-intestinal tract are entirely normal at this time; the former wide sweep of the duodenum has disappeared.

DISCUSSION

Very comprehensive reports on aneurysms of the celiac, hepatic and gastroduodenal arteries have demonstrated that there is a lack of definitive [1, 4, 10] symptoms to establish a diagnosis before perforation occurs in most patients. When the condition was recognized during operation the results have been unsatisfactory in most of the reported cases; 80 per cent of the patients expired from hemorrhage. Of the 22 patients with aneurysm of the hepatic artery that was recognized during life, only eight survived operation.[7]

It was formerly taught that ligation of the hepatic artery proximal to the gastroduodenal and right gastric arteries was unsafe.[6, 11] During the past few years that theory has been disproved by the work of Rienhoff,[12] the author, and others who have treated portal hypertension by ligation of the hepatic and splenic arteries. These pa-

tients were protected with massive doses of antibiotics.

This case illustrates how symptoms can result from an aneurysm producing pressure on adjacent organs. It is our thought that the aneurysm produced sufficient pressure over the neck of the pancreas partially or, at times, completely to obstruct the flow of pancreatic secretions resulting in recurring attacks of pancreatitis. This was demonstrated by the enlarged, tense body and tail of the pancreas and the inflammatory adhesions between the posterior wall of the stomach and the pancreas observed at operation. Immediately after the aneurysm was removed, the pancreas assumed a normal appearance. It is probable that the mild attacks of jaundice, clay colored stools and hematemesis resulted from pressure over the lower end of the common bile and pancreatic ducts. The relief of symptoms following excision of the aneurysm was dramatic.

SUMMARY

An aneurysm of the pancreaticoduodenal artery producing pressure over the neck of the pancreas, resulted in recurrent attacks of pancreatitis. The aneurysm was successfully excised with relief of the patient's symptoms.

BIBLIOGRAPHY

1. Anderson, E. M.: Abdominal Aneurysms: Report of Cases. Am. J. Surg., 33: 129, 1919.
2. Barnett, W. O. and J. A. Wagner: Aneurysm of the Hepatic Artery: A Cause of Obscure Abdominal Hemorrhage. Ann. Surg., 137: 561, 1953.
3. Donaldson, G. A. and E. Hamlin, Jr.: Massive Hematemesis Resulting from Rupture of a Gastric Artery Aneurysm: Report of Three Cases. New England J. Med., 243: 369, 1950.
4. Dwight, R. W. and J. W. Ratcliffe: Aneurysm of the Hepatic Artery: Report of a Case Treated by Wiring. Surgery, 31: 915, 1952.
5. Garland, E. A.: Aneurysm of the Celiac Artery. J. Internat. Coll. Surgeons, 21: 67, 1954.
6. Graham, R. R. and D. Cannell: Accidental Ligation of the Hepatic Artery: Report of One Case with a Review of the Cases in the Literature. Brit. J. Surg., 20: 566, 1933.
7. Kirklin, John W., Everett Shocket, Mandred W. Comfort and Kenneth A. Huizenga: Treatment of Aneurysm of the Hepatic Artery by Excision. Annals of Surgery, 142: 110, 1955.
8. Malloy, H. R., and R. S. Jason: Aneurysm of the Hepatic Artery. Am. J. Surg., 57: 359, 1942.
9. McGregor, A. L.: Fatal Hemorrhage from Bile Duct. J. Internat. Coll. Surgeons, 18: 838, 1952.
10. Paul, M.: A Large Traumatic Aneurysm of the Hepatic Artery. Brit. J. Surg., 39: 278, 1951.
11. Popper, H. L., N. C. Jefferson and H. Necheles: Liver Necrosis Following Complete Interruption of Hepatic Artery and Partial Ligation of Portal Vein. Am. J. Surg., 86: 309, 1953.
12. Rienhoff, W. F., Jr. and A. C. Woods, Jr.: Ligation of Hepatic and Splenic Arteries in the Treatment of Cirrhosis with Ascites. Jour. Am. Med. Assoc., 152: 687, 1953.
13. Sampsel, J. W., F. M. Barry and H. D. Steele: Aneurysm of an Anomalous Pancreaticoduodenal Artery: Case Report and Review of the Literature. Arch. Surg., 64: 74, 1952.