Splenic artery pseudoaneurysm as a complication of pancreatic pseudocyst

Pseudoaneurizma slezinske arterije kao komplikacija pseudociste pankreasa


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Abstract

Introduction. Pancreatic pseudocyst presented as pseudoaneurysm of the splenic artery is a potential serious complication in patients with chronic pancreatitis.

Case report. A 42-year-old male patient with a long-standing evolution of chronic pancreatitis and 8-year long evolution of pancreas pseudocyst was referred to the Military Medical Academy, Belgrade due to worsening of the general condition. At admission, the patient was cachectic, febrile, and had the increased values of amylases in urine and sedimentation (SE). After clinical and diagnostic examination: laboratory assessment, esophagogastroduodenoscopy (EGDS), ultrasonography (US), endoscopic ultrasonography (EUS), multislice computed scanner (MSCT) angiography, pseudoaneurysm was found caused by the conversion of pseudocyst on the basis of chronic pancreatitis. The patient was operated on after founding pancreatic pseudocyst, which caused erosion of the splenic artery and their mutual communication. Postoperative course was duly preceded without complications with one year follow-up.

Conclusion. Angiography is the most reliable and the safest method for diagnosing hemorrhagic pseudocysts when they clinically present as pseudoaneurysms. A potentially dangerous complication in the presented case was treated surgically with excellent postoperative results.

Key words: pancreatitis, chronic; pancreatic pseudocyst; aneurysm, false; hypertension, portal; splenic artery; splenic vein; venous thrombosis; digestive system surgical procedures; diagnosis; treatment outcome.

Introduction

In recent decades, pancreatic pseudocyst and complications which accompany it 1–2 have been successfully treated using conservative treatment without surgery 3–5. There are clear advantages of new techniques development and modern achievements over the conventional surgical management, but only in clearly defined indications with acceptable risk of complications 6. However, in cases with the pseudocyst additionally complicated with hemorrhage 1, 2, in the literature
the state known as conversion of pseudocyst in pseudoa-
aneurism, and evolution of regional left-sided portal hyper-
tension (LPH), surgery takes place as the most important
method for treatment of this serious complication 7–9. One of
a few surgical procedures that may be a method of choice in
hemorrhage and/or rupture of cysts and/or pseudoaneurysms
is distal spleno-pancreatectomy 1, 2, 9.

Case report

A patient, at the age of 42, was admitted to the Clinic
for Gastroenterology, Military Medical Academy, Belgrade,
due to chronic pseudocyst in pancreatic tail region for eight
years. Lately, the patient had attacks of pain followed by
nausea and vomiting. In the last 15 years the patient con-
sumed alcoholic drinks regularly and in several occasions he
had attacks of acute pancreatitis. On admission, he had ab-
dominal pain without jaundice, febrile to 38.5°C. Objective
findings were palpable and painful tumefaction and rough
systolic auscultation with murmur in the region of epiga-
strium. Pancytopenia dominated in laboratory status with an
emphasis on the fall of platelets (PLT) of 50×10^9/L, sedi-
mentation (SE) 79 mm/Lh, international normalized ratio
(INR) 1, and the value of urinary amylase of 1,129 IU/L.

Esophagogastroduodenoscopy (EGDS) verified the existence
of outside pressure on the fundus area and back wall of the
stomach body. Ultrasonography (US) of the abdomen
showed the presence of massive calcification, particularly in
the area of the pancreatic tail with the existence of pulsating
tumefaction with thickened wall in the area of the tail of
pancreas. Endoscopic ultrasonography (EUS) showed col-
lection of fluid in the bursa omentalis, close to the region of
the tail of the pancreas and in the exact region there was a
large partially septated collection with flow. Multislice com-
puted tomography (MSCT) angiography of the portal basin
showed the number of calcification in the pancreas, enlarged
spleen and thrombosis of the splenic vein. Drainage of the
spleen was made through the well-developed collaterals
around cardio and fundus region of the gizzard and the net-
work of blood vessels which partially went through the
frontal abdominal wall. The superior mesenteric vein and
portal vein were viable without signs of thrombosis. In the
arterial phase there was normal arborization of truncus coe-
licus and arterial plexus of the liver. Pseudoaneurysm was
found in the splenic artery of the size 85 mm × 60 mm which
was pulsating (Figure 1).

The patient was presented at a meeting of gastroenter-
ologists, radiologists and surgeons who decided to make surgi-
cal intervention.

Intraoperatively, a pulsating formation was found in the
region of the body and tail of the pancreas completely filling
the space of bursa omentalis, forming a hard fibrous struc-
ture that was adhered to the transverse colon and transverse
mesocolon and the whole back wall of the gizzard. The
spleen was dark violet and enlarged of the size about
16 cm × 12 cm × 10 cm with tortuous and rigid splenic ar-
tery. The whole pancreas was enlarged and fibrous. Ex-
pressed and congested venous collaterals in the gastrosplenic
ligament, down to the great curvature of gizzard (vv. gastri-
cae breves) were found to the great omentum (gastroepiplo-
ica) and in retroperitoneum (Figure 2). The gizzard was
edematous with hypertrophic front and rear wall.

Using transgastrocolic approach we performed meticu-
lous dissection of the gizzard, colon and body and tail of
the pancreas, mobilizing the duodenum and the head of the
pancreas. Two fine-needle biopsies for ex tempore examina-
tion were taken from the head and from the junction of the
body and tail of the pancreas revealing benign tumor. The splenic
artery was double clamped at its beginning and in the splenic
hilum (Figure 3). We opened pseudocystic formation at the
junction of the body and the tail of the pancreas, which was
partly filled with fresh blood, partly with thrombotic masses.
After evacuation of the cavity content, the communication

between the lumen of pseudocyst and splenic artery was determined just before branching of the artery. Thrombosis of the splenic vein in the region of pancreatic tail was found. After carefully performed mobilization of the spleen we made splenectomy and distal pancreatectomy with extirpation of pseudoaneurism and proximal ligation of splenic artery. Wirsung's duct was identified and managed with transfixon suture-ligation.

Fig. 3 – Clamping of the splenic artery at each side of pseudoaneurysm

Postoperative course was in order, without bleeding. No pancreatic fistula was registered. The patient was put back to oral food on the 4th postoperative day, and antiaggregation therapy was introduced. The patient was discharged on the 13th postoperative day with thrombocytosis of 950 x 10^9/L. One month after discharging thrombocytosis of 1075 x 10^9/L was registered in the patient. The value of amylase in urine and serum was within normal range. US of abdomen registered state after distal splenopancreatectomy without pathological collections in the abdomen. The patient received polyvalent pneumococcal vaccine in dispensary.

Histopathological examination of the extirpated pseudocyst is showed on Figure 4.

Fig. 4 – Histopathological examination of the extirpated pseudocyst (HE, 5x)

Discussion

Bleeding from pseudoaneurysm based on splenic artery lesions is a potentially fatal complication in patients with chronic pancreatitis. Although rare, it might be caused by trauma 10, 11. Pseudoaneurysm can be developed with or without existing pseudocystic formations. If it comes to conversion (erosion of pseudocyst into the adjacent court or blood vessels wall) it may cause fatal complications due to rupture and massive hemorrhage (intraperitoneal, retroperitoneal, into the nearby organs and/or ducts) 12. Bleeding in the bile duct was firstly described by Lower and Farrell 13 in 1931, and named as “haemosuccus pancreaticus” by Sandblom 14 in 1970. Pseudoaneurysm is present in about 10% of patients with chronic pancreatitis 15. Pseudoaneurysm is caused by enzymatic digestion of blood vessel 16, 17 and/or local compression of the blood vessel wall by pseudocyst 18. Because of its proximity, the splenic artery is the most frequently affected, about 40% 19. Further, the incidence of isolated pseudoaneurysms of the splenic artery is low 16.

There are still controversy and disagreement in which cases surgery is needed and what is the gold timing for surgery. Several important factors increase the risk of serious acute hemorrhage: duration of chronic pancreatitis, closeness of pseudocyst to the blood vessels (erosion of pancreatic pseudocyst into a nearby blood vessel is a complication with high mortality rate caused by intraabdominal hemorrhage), communication of pseudocyst with the pancreatic and biliary duct, thrombosis and occlusion of the splenic blood vessels 16, 20.

In 30% of patients the most common clinical manifestation of pseudoaneurysms is abdominal pain 21. The incidence of intracystic hemorrhage despite the management and diagnosis varies from 6% to 17% 22, 23. Rupture of pseudoaneurysms was found in 31% of patients with pseudocystic complications of the chronic pancreatitis 24. According to some authors, the size of pseudoaneurysms from 2 cm to 17 cm is not the cause of their rupture 10, 25. The frequency of fatal hemorrhage, as complications of chronic pancreatitis, varies from 1.2% to 14.5% (Table 1) 20, 26. Surgical procedures carry a morbidity and mortality risk of 1.3% - 9% 27, 28. Endovascular techniques were successfully applied in 75%–85% of patients with morbidity rate of 14%–25%, and mortality rate of 0%–14% 4, 28. The results of these studies do not recommend percutaneous angiembolisation (PAE) as adequate therapy due to the high percentage of failure, more than 20% 16. In treatment of the splenic artery pseudoaneurysm surgical or radiological procedures may be used equally 29. While the effectiveness of embolization is undeniable, it depends on the competence of radiologist. Minimally invasive surgical techniques are used as spare solution for patients with good general condition without other complications of pancreatitis 30. Previous studies have shown effective and lasting control of bleeding pseudoaneurysm by applying embolization 29, 31, even this procedure has been used as the first treatment with success 32. Others point out surgery which is always indicated 17, 10, 32. Distal pancreatectomy and
splenectomy is the method of choice for complicated hemorrhagic pseudocyst localized in the tail of the pancreas, with very low morbidity and mortality rate.

There are several possibilities to solve complicated pseudocysts (greater than 6 cm): 1) percutaneous US application of trombine (when surgery and endovascular embolization are not feasible or not possible), for first-line treatment; 2) endoscopic drainage (very effective in many patients with acceptable complication rate; without possibility to control bleeding, this procedure is contraindicated in hemorrhagic pseudocysts); with endoscopic retrograde cholangiopancreatography (ERCP) is effective in the most cases after embolization; 3) surgery (invasive, more traumatic but successful if other procedures fail; there is the possibility to control bleeding); 4) laparoscopic procedures, but successful if other procedures fails; there is the possibility to control bleeding; 5) endovascular treatment (transcatheter angioembolisation), can be used as the first line approach.

The high incidence of morbidity and mortality rate requires an essential and active management and multidisciplinary approach to solving complicated pancreatic pseudocysts and complications which accompany it. An optimal approach is determined by the presentation of patients. Surgery and PAE have complementary role. PAE is recommended as the method for hemodynamically stable patients. Surgery is reserved for active bleeding, hemodynamically unstable patients, severe pain, poor or failed PAE, as well as other complications such as infection and/or external compression of the surrounded organs. In the regional LPH as the result of splenic vein thrombosis is the most common pathology regarding chronic pancreatitis and/or the existence of pseudocyst localized in the tail of the pancreas. The incidence of isolated splenic vein thrombosis at autopsies in patients with the history of chronic pancreatitis was 20%–40%. Splenectomy with distal pancreatectomy is the gold standard for resolving vascular lesions of the pancreas. Also, splenectomy with distal pancreatectomy (treatment in pancreatic pathology) is a curative method for solving regional LPH.

Conclusion

Angiography is the most reliable and the safest method for diagnosing hemorrhagic pseudocysts when they clinically present as pseudoaneurysms. Chemoembolization is a method of choice for uncomplicated pseudoaneurysms. In the presented case, a potentially dangerous complication was treated surgically with an excellent postoperative result.

R E F E R E N C E S