American Journal of Medical Case Reports, 2014, Vol. 2, No. 11, 229-231
Available online at http://pubs.sciepub.com/ajmcr/2/11/1

DOI:10.12691/ajmcr-2-11-1

Torsion of Arteriovenous Malformation – A Rare Case of Acute Abdomen

Linda Kokaine[1,*], Andis Lemanis[1], Sergejs Sapovalovs[1], Arnis Abolins[2], Arturs Balodis[3]

[1]Department of Surgery, Pauls Stradins Clinical University Hospital, Riga, Latvia
[2]Department of Pathology, Pauls Stradins Clinical University Hospital, Riga, Latvia
[3]Department of Diagnostic Radiology, Pauls Stradins Clinical University Hospital, Riga, Latvia
*Corresponding author: linda.kokaine@gmail.com

Received August 31, 2014; Revised October 25, 2014; Accepted October 28, 2014

Abstract Arteriovenous malformation (AVM) is a rare finding in gastrointestinal tract usually asymptomatic, although sometimes causes gastrointestinal bleeding or pain. Even more rarely it can be found in other abdominal organs like liver, pancreas, spleen etc. We present a unique case of acute abdominal pain – a patient with torsion of arteriovenous malformation of gastroepiploic arteries with following ischemia and thrombosis causing severe pain. A search at the literature has not yielded any other case report describing similar cause of the acute abdomen.

Keywords: *abdominal / gastroepiploic arteriovenous malformation, AVM, abdominal pain*

Cite This Article: Linda Kokaine, Andis Lemanis, Sergejs Sapovalovs, Arnis Abolins, and Arturs Balodis, "Torsion of Arteriovenous Malformation – A Rare Case of Acute Abdomen." *American Journal of Medical Case Reports*, vol. 2, no. 11 (2014): 229-231. doi: 10.12691/ajmcr-2-11-1.

1. Introduction

Acute abdominal pain is a common situation in emergency medicine. It can represent a spectrum of conditions from benign and self-limited disease to surgical emergencies. In most of cases the localization and character of the pain has a very strong predictive value. [4] However it should be considered that still there are cases of atypical course of frequent diseases and rare cases of acute illnesses.

Intraabdominal arteriovenous malformation (AVM) is a rare cause of acute abdominal pain. In this article we present a patient with abdominal mass and acute abdominal pain caused by torsion of AVM of gastroepiploic arteries. A search at the medical literature did not yield any similar case report.

2. Case Report

A 54 year old male was admitted to the Emergency Department (ED) with acute onset of abdominal pain. One week ago during the lifting of heavy weight he felt discomfort in hypogastrium and left lateral flank of the abdomen which turned into pain on the next day. Two days before the delivery to the ED the pain became unbearable. Patient was having a feeling like „something inside the stomach has curled up into a ball". There was no nausea and vomiting, no defecation and urination problems. The body temperature was normal.

History of previous illnesses involved infectious myelitis of spinal cord (year 2000) with partial loss of sensation of lower limbs and urinary incontinence. The patient was in overall healthy condition, had no other diseases or previous operations. He didn't take any medication, had no allergies, didn't have bad habits – no smoking, alcohol or drug abuse.

The physical examination revealed palpable and painful, non-pulsatile, immobile mass in the left flank of the abdomen with local rebound tenderness. The rest of the abdomen was soft, non-tender, bowel sounds were present. There were no other specific physical findings.

The laboratory data on admission showed normal complete blood count, liver and kidney biochemical tests, electrolytes, coagulation and urine test. There was an elevation of CRP – 50 mg/dl. The x-ray of thorax and abdominal cavity was without pathology.

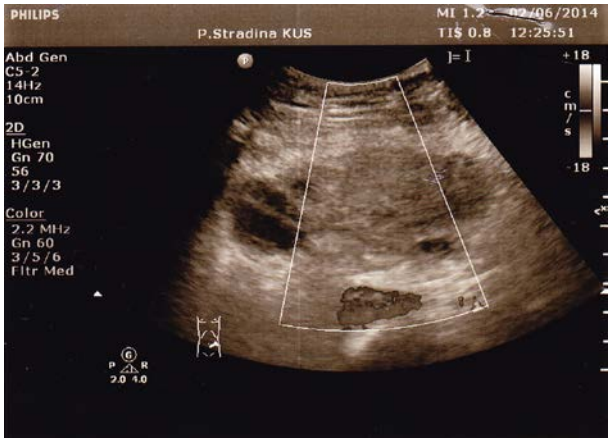

Figure 1. Abdominal US demonstrating the unclear abdominal mass

The US of the abodminal cavity was carried out which revealed non-homogenous mass, ~5x7 cm (Figure 1), with

cystic components up to 3 cm in diameter in the area of sigmoid colon, left to the abdominal aorta. There was no free fluid in the abdominal cavity and no other US pathology.

As the diagnosis still remained unclear the CT of the abdomen, retroperitoneal space and pelvis was performed. The CT imaging showed uneven tumor mass 4,8 x 11,2 cm in area of sigmoid colon. After injection of contrast agent the tumor presented regions of irregular density – between the areas of tissue of higher density, some cystic lesions of lower density were identified. The tumor was closely localized to the wall of sigmoid colon but without conclusive proof of the infiltration of the colon wall. (Figure 2A) The mass had poor signs of vascularization, it received blood supply from few branches of the right and left gastroepiploic artery. (Figure 2B) There were no signs of lymphadenopathy or any other intraabdominal pathology.

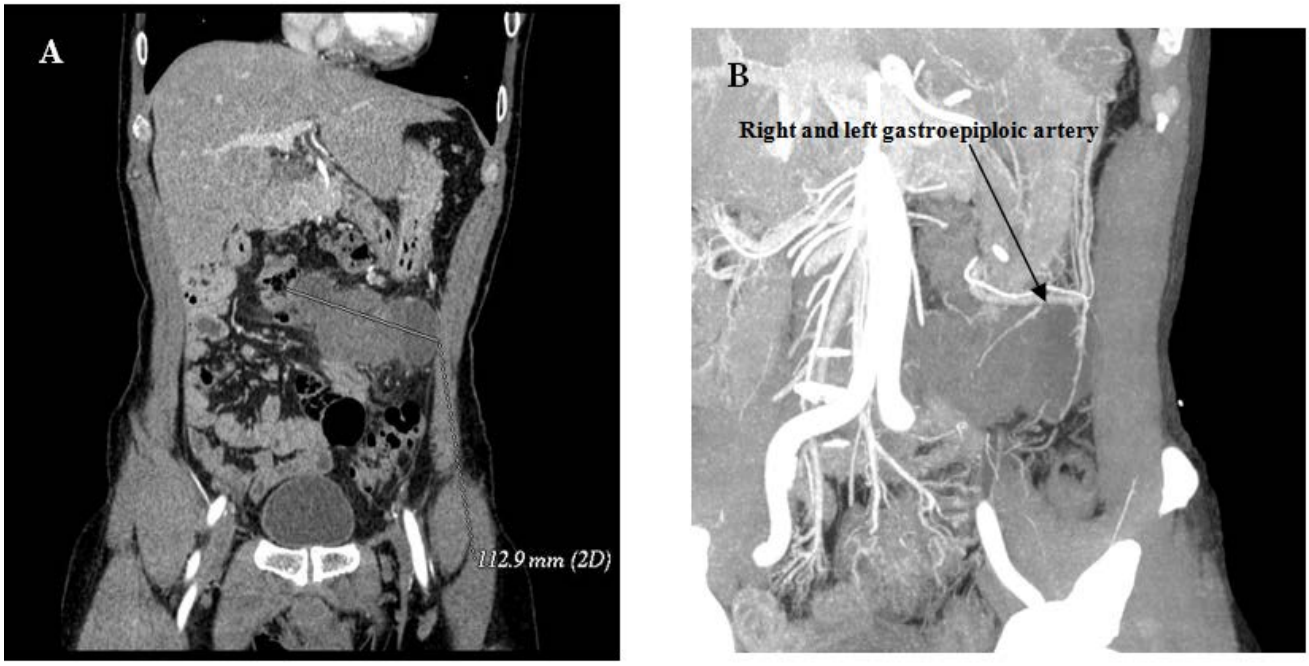

Figure 2. Abdominal CT (native and with i/v sol.Visipaque 320/100 ml in arterial and venous phase): A – showing the tumor mass in frontal plane; B – poorly vascularized mass with few branches of the right and left gastroepiploic artery

As the CT scan did not solve the problem of differential diagnosis (sigmoid colon tumor or neoplasm of other primary localization?) and the patient had remarkable acute pain, the decision to apply a surgical treatment was made and exploratory laparotomy was done.

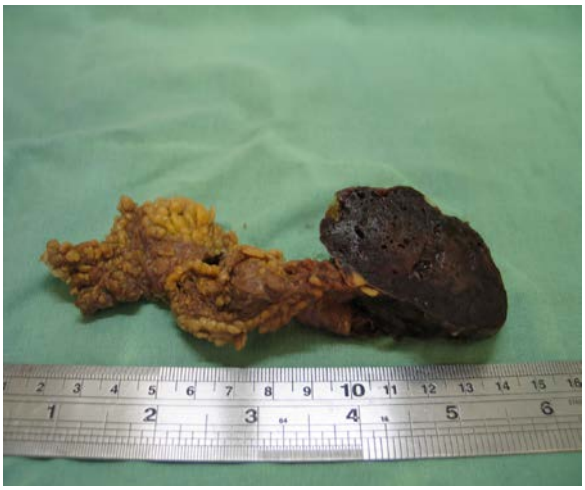

Figure 3. The extirpated abdominal mass

The intraoperative findings revealed mobile, non-invasive formation 12 x 5,5 x 3 cm between the greater curvature of the stomach, greater omentum and transverse colon which had wrapped into the intestine and greater omentum. (Figure 3) The neoplasm was originating from the greater curvature of the stomach on a thin stalk about 1,5 cm in diameter that had rotated 360 degrees. The obvious cause of the pain was the torsion and secondary ischemia and thrombosis of the abdominal polypoid neoplasm. The extirpation of the neoplasm and partial resection of the greater omentum was done. There were no other pathological intraabdominal findings.

The postoperative period went without complications. The patient was discharged from the hospital on the 5th day after surgical intervention.

The morphological exploration (hematoxylin-eosin and immunohistochemical staining) of the specimen revealed arteriovenous malformation with obturating thrombosis, foci of hemosiderosis and hyalinosis of blood vessel wall. (Figure 4 – Figure 6)

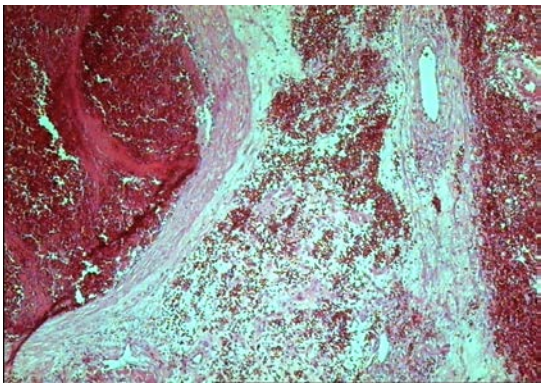

Figure 4. Multiple blood vessels with signs of thrombosis (HE staining, 50x)

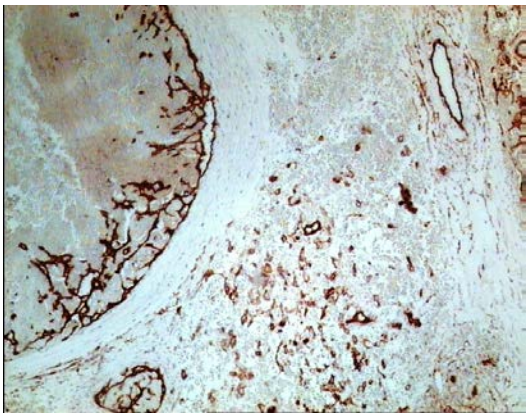

Figure 5. Vacular endothelium (IHC staining CD 34 – positive; 50x)

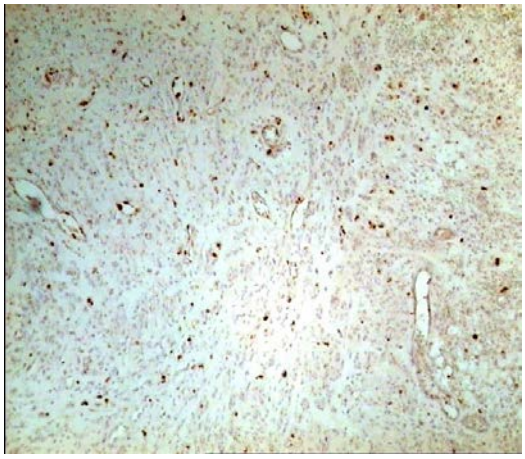

Figure 6. Proliferation of vascular endothelium (IHC staining, Ki 67 – positive; 50x)

3. Discussion

AVM is an anomaly occurring during embryonic or fetal development that can form in many different areas of the body. [6] Most of intraabdominal AVM are localized in small intestine which mostly are asymptomatic or manifest with gastrointestinal bleeding because of their typical localization in the mucous of the gut. [8] The rest of described intraabdominal AVM involve liver, pancreas, kidney, colon, stomach, spleen, uterus and spermatic cord. [2,3,6,7,9,11,12,13] Pelvic AVM have been described as well. [1] The usual clinical manifestations of mentioned AVM were pain caused by increased blood flow in these formations and intraabdominal bleeding caused by the rupture of the undeveloped blood vessel wall [3,11,13].

We present a case of AVM with rare localization and uncommon pathogenesis of the acute pain. There have been published few case reports of gastric AVM causing gastrointestinal bleeding but the search of the literature revealed only two cases of extraluminal gastric AVM and only one of them – gastroepiploic AVM. [2,5,9,10] There has been presented a case of posterior gastric AVM (Tagami et al., 2012) and a case of gastroepiploic AVM causing massive intraperitoneal hemorrhage (Doi et al., 2004). [5,10] In our case the pathogenesis of the acute onset of the AVM clinical presentation was caused by the torsion of the mobile extraluminal gastroepiploic AVM followed by ischemia and thrombosis of the formation. The specific anatomical features – long stalk, great mass and non-invasive character of the AVM – established the atypical clinical manifestation of the AVM. Searching the medical literature for articles describing such clinical manifestation of AVM has not found any similar descriptions. We assume that typical asymptomatic course of described congenital anomalies provide the rare occurrence of their clinical manifestation.

References

[1] Agarwal, S., Magu, S., Goyal, M., "Pelvic arteriovenous malformation: an important differential diagnosis of a complex adnexal mass," *J Ultrasound Med*, 28 (8), 1111-4, Aug. 2009.

[2] Araki, T., Wakabayasni, T., "Gastric Arteriovenous Malformation," *Int Med*, 46 (12), 915-916, Feb. 2007.

[3] Arora, A., Tyagi, P., Kirnake, V., et al., „Unusual cause of massive upper gastrointestinal bleeding: a pancreatic arteriovenous malformation," *JOP*, 14 (3), 292-5, May 2013.

[4] Cartwright, S.H., Knudson, M.P., "Evaluation of Acute Abdominal Pain in Adults," *Am Fam Physician*, 77 (7), 971-978, Apr. 2008.

[5] Doi, K., Yoshida, M., Nakamura, T., et al., "A case of gastroepiploic arteriovenous malformation causing massive intraperitoneal hemorrhage," *Jap J Gastroent*, 101 (5), 525-9, May 2004.

[6] Elazary, R., Verstandig, A., Rivkind, A.I., Almogy, G., "Gastric arterio-venous malformation emerging from splenic artery," *World J Gastroenterol*, 14 (25), 4091-92, Jul. 2008.

[7] Hatanaka, M., Nakazawa, A., Nakano, N., et al., "Successful living donor liver transplantation for giant extensive venous malformation," *Pediatr Transplant*, 18 (5), E152-6, Aug. 2014.

[8] Jacobson, T.B., Kolade, V.O., „Massive GI bleeding in a patient with 2 small AVMs in the small intestine: a case report," *Cases J*, 3 (39), Jan.2010.

[9] Latar, N.H., Phang, K.S., Yaakub, J.A., Muhammad, R., "Arteriovenous malformation of the stomach: a rare cause of upper gastrointestinal bleding," *Med J Malaysia*, 66 (2), 142-3, Jun. 2011.

[10] Tagami, Y., Ogata, S., Bando, Y., "A case of posterior gastric arteriovenous malformation causing massive intraperitoneal hemorrhage," *Jap J Gastroent*, 109 (9), 1556-60, Sep. 2012.

[11] Takeuchi, N., Nomura Y., "Ruptured renal arteriovenous malformation successfully treated by catheter embolization: a case report," *BMC Res Notes*, 7 (19), Jan. 2014.

[12] Soeda, S., Ushijima,J., Furukawa, S., et al., "Uterine arteriovenous malformation formed in a large uterine cervical myoma," *Tohoku J Exp Med*, 228 (3), 181-7, Nov. 2012.

[13] Sountoulides, P., Bantis, A., Asouhidou, I., Aggelonidou, H., "Arteriovenous malformation of the spermatic cord as the cause of acute scrotal pain: a case report," *J Med C Rep*, 1 (110), Oct. 2007.