OLGU SUNUMU / CASE REPORT **Genel Cerrahi** / General Surgery

A Rare Complication After Laparoscopic Appendectomy: Superior Mesenteric Vein Thrombosis

Ozan Akıncı, Sina Ferahman, Sefa Ergün, Pınar Çiğdem Kocael, Osman Şimşek, Ahmet Kocael

Istanbul University, Faculty of Medicine, Department of General Surgery, Istanbul, Turkey

Ozan Akıncı, MD.
Sina Ferahman, MD.
Sefa Ergün, Dr.
Pınar Çiğdem Kocael, Assoc. Prof.
Osman Şimşek, Assoc. Prof.
Ahmet Kocael, MD.

Correspondence:
MD, Ozan Akıncı
Istanbul University, Faculty of Medicine, Department of General Surgery, Istanbul, Turkey
Phone: +90 537 749 06 41
E-mail: ozanakinci1987@hotmail.com

Received : April 06, 2016
Revised : May 01, 2016
Accepted : May 09, 2016

ABSTRACT

Appendectomy is the most commonly applied surgical procedure. Pylephlebitis is a rarely seen complication after appendectomy and thrombophlebitis of portal venous system. Pylephlebitis generally develops based on the secondary infections of the anatomical region drained by portal venous system. Anamnesis, physical examination and computed tomography (CT) plays an important role in the diagnosis. It is a significant clinical occurrence due to the high mortality rate; although, due to its rarity, pylephlebitis is hard to diagnose and does not often come to mind in a patient presenting post-appendectomy with abdominal pain, for it has no specific signs or symptoms. In our present case report, we aimed to share our experience regarding the diagnosis and treatment processes of a patient developing superior mesenteric vein (SMV) thrombosis after laparoscopic appendectomy.

Keywords: Laparoscopic appendectomy, superior mesenteric vein, pylephlebitis

LAPAROSKOPİK APENDEKTOMİ SONRASI NADİR BİR KOMPLİKASYON: SUPERİOR MEZENTERİK VEN TROMBOZU

ÖZET

Apendektomi dünyada en yaygın uygulanan cerrahi prosedürdür. Pyleflebitis; apendektomi sonrası nadir görülen bir komplikasyon olup portal venöz sistemin tromboflebitidir. Pyleflebitis genellikle portal venöz sistemin drene ettiği anatomik bölgenin sekonder enfeksiyonlarına bağlı gelişir. Tanıda anamnez, fizik muayene ve bilgisayarlı tomografi (BT) önemli yer tutar. Nadiren rastlanması, spesifik semptom ve belirtilerinin olmaması nedeniyle apendektomi sonrası karın ağrısıyla başvuran olguların ayırıcı tanısında genellikle ön planda düşünülmemekle beraber, mortalite oranının yüksek olması nedeniyle dikkate değer bir klinik antitedir. Bu olgu sunumumuzda, laparoskopik apendektomi sonrasında superior mezenterik ven (SMV) trombozu gelişen bir hastanın tanı ve tedavi süreçleri ile ilgili deneyimimizi paylaşmayı amaçladık.

Anahtar sözcükler: Laparoskopik apendektomi, superior mezenterik ven, pyleflebitis

Acute appendicitis is on the top of the list when the causes of surgical acute abdominal pain are arranged. Appendectomy is the most commonly applied surgical procedure. Due to the frequency of its performance, it is inevitable that the complications are various and frequent. Portal venous system thrombophlebitis is also one of the rare but life-threatening complications of acute appendicitis. Incidence of SMV thrombosis is 2.7/100 000 in the society (1). SMV pylephlebitis is generally seen in intraperitoneal septic manifestations such as colonic diverticulitis,

inflammatory bowel disease, acute appendicitis, acute cholangitis, acute pancreatitis, pelvic infection and intestinal perforation. It is rarely encountered, thanks to the improvements in the radiological imaging technology and the recent developments in the broad spectrum antibiotic treatment modalities, and it has a very high mortality risk. In the study by Plemmons et al., due to the possibility of being forgotten in the definitive diagnosis since it has a mortality rate of 32% (2) and is rarely encountered, and does not have specific signs and symptoms; in our present case report, we aimed to share our experience regarding the diagnosis and treatment processes of a patient developing superior mesenteric vein (SMV) thrombosis after laparoscopic appendectomy.

Case report

a forty-three years old male patient applied to the urgent surgery clinic due to right upper quadrant abdominal pain accompanied by nausea and vomiting continuing for 3 days. A known coagulation defect was not present in the family history of the patient who did not have any disease or other surgical history in his background. His body temperature, pulse, respiratory rate and blood pressure were 38.1°C, 94/min, 17/min and 125/65, respectively. Sensitivity and rebound were present in the abdominal right upper quadrant in the physical examination. In the complete blood count, white blood cell, platelet, C-reactive protein (CRP), prothrombin time and international normalized ratio (INR) were 11,200/mm^3 (neutrophil percentage 65%), 176,000/mm^3, 148 mg/L, 11.9 sec and 1.0, respectively. Uncompressed, blind-ending tubular structure reaching 11 mm, in which wall thickening was seen, was monitored in the broadest area of abdominal right upper quadrant in abdominal ultrasound. Echogenity increase and minimal free fluid were monitored in pericecal fat planes. The findings were consistent with acute appendicitis. After blood cultures were taken, single dose intravenous (IV) cefazolin was applied for preoperative prophylaxis. The patient was taken into urgent surgery, and laparoscopic appendectomy was performed. Preoperative complication was not seen. Findings consistent with acute appendicitis were detected in the pathological examination of appendectomy specimen. In the postoperative period, antibiotherapy was continued with 3rd generation cephalosporin (2 g/day) and metronidazole (500 mg, thrice a day). The patient, whose oral intake was started on the 1st postoperative day, had spontaneous gas discharge but did not have stool discharge yet. On the 3rd postoperative day, diffuse abdominal pain, nausea, and vomiting complaints developed. There was diffuse sensitivity in the abdominal examination. There was not rebound or defense. In the laboratory examinations revealed, leukocyte, hemoglobin, platelet, CRP, lactate dehydrogenase (LDH), aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), total bilirubin, prothrombin time, and INR were 11.3 mm^3 (neutrophil 71%), 12.6 g/dl, 168,000 mm^3, 178 mg/L, 309 IU/L, 55, 44, 145 U/L, 0.79 mg/dl, 12.1, and 1.0, respectively. No finding except for minimal fluid consistent with postoperative period was encountered in the right lower quadrant in abdominal USG. In the contrast abdominal CT imaging, filling defect consistent with thrombus was detected in SMV and primary branches (Figure 1). No images regarding ischemia or bleeding was encountered in the small bowel and colon.

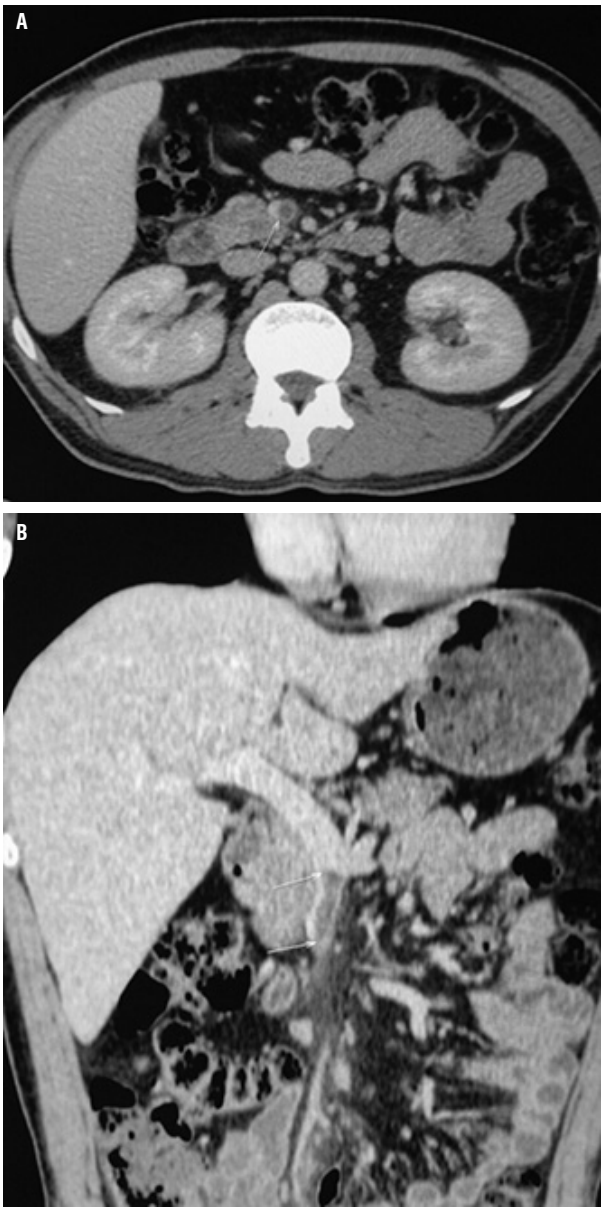

Figure 1. a, b. Superior mesenteric vein thrombosis in contrast abdominal CT.

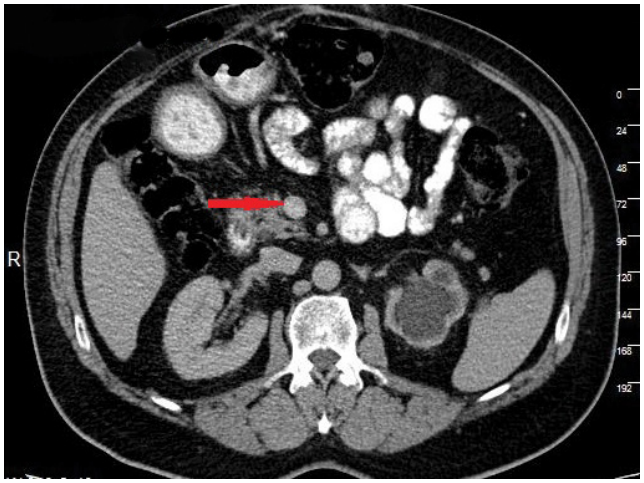

Figure 2. SMV thrombosis completely disappeared in the contrast abdominal CT performed after six weeks.

Systemic IV antibiotherapy of the patient was continued. Moreover, cardiovascular surgery unit was consulted, and low molecular weight heparin (LMWH) of 1 mg/kg dose in the form of subcutaneous injection to be administered every 12 hours was added to the treatment. Oral nutrition was interrupted, and total parenteral nutrition was started.

Symptoms of the patient abated on the 5th postoperative day. His laboratory findings disappeared. Oral nutrition was restarted with the patient on the 6th day, and he was discharged with oral antibiotic treatment (Cefuroxime 500 mg, thrice a day). After 2 weeks, SMV thrombosis was observed to be persistent in the IV contrast abdominal CT imaging. Oral anticoagulant treatment was started and the patient was again called for follow-up after 4 weeks. It was observed that thrombosis completely disappeared in SMV in the control abdominal CT (Figure 2). Anticoagulant treatment was continued for additional 4 weeks upon the recommendation of cardiovascular surgery.

Discussion

Portal venous system thrombophlebitis, also known as pylephlebitis, is a rare complication encountered in the septic manifestations of the anatomical structures in which portal drainage is provided. Pylephlebitis may develop in colonic diverticulitis, inflammatory bowel disease, acute appendicitis, acute cholangitis, acute pancreatitis, pelvic infection, and intestinal perforation cases (2–4). Although broad spectrum new generation antibiotics lead to a decrease in the incidence of pylephlebitis, its mortality rate still varies between 30% and 50% (2,5). Pylephlebitis may manifest itself in various and non-specific signs and symptoms. Most of the patients suffer from diffuse abdominal pain, nausea, vomiting and fever. Just as an increase can be observed in leukocytosis and acute phase reactants, its specific laboratory test is not available. Moreover, Escherichia coli, Bacteroides fragilis, Klebsiella pneumoniae, proteus mirabilis and Enterobacter spp. are the most isolated bacteria types in blood cultures (6,7). While according to Baril et al. (6), bacteremia is seen in less than half of the pylephlebitis cases, according to Balthazar and Gollapudi (7), blood culture is positive in 80% of the cases. In our case, the patient did not have any complaints except for diffuse abdominal pain and nausea. There was a diffuse sensitivity in the abdominal examination. There was not rebound or defense. Despite leukocytosis and CRP elevation, reproduction did not occur in the blood cultures.

In the study by Morasch et al., in the diagnosis of SMV thrombosis, contrast CT and angiography had a sensitivity of 90% and 55.5%, respectively (8). In the study by Kumar et al., the sensitivity of contrast CT was detected as 67% (9). Abdominal CT is the first preferred imaging method due to being capable of making the differentiation of the pathological images such as intestinal ischemia, necrosis, mesenteric edema, increase in small bowel wall thickness, bowel lumen dilatation, and intra-abdominal abscesses in addition to showing the mesenteric vascular structures well (7,10). MRI, angiography and nuclear scintigraphy are the other methods that can be utilized. Doppler US is not preferred due to the fact that its sensitivity depends on CT and MRI, and it is dependent on the experience of the radiologist.

As soon as the pylephlebitis diagnosis is made, it should be immediately treated considering its high mortality risk. The main principle of the treatment is to prevent the complications, and to provide continuation of the venous circulation. Thus, parenteral antibiotic and anticoagulant treatment is the first choice (5,11,12). According to Baril et al., since anticoagulants may lead to complications in 20% of the patients, they should be used carefully, and while they require to be used in superior-inferior mesenteric vein thrombi due to intestinal necrosis risk, starting anticoagulant treatment is not required in the isolated portal vein thrombi (6). Lim et al., on the other hand, recommended anticoagulant treatment in order to be protected from septic pulmonary embolism (13). According to Crowe et al., anticoagulant treatment may not be required if primary disease is controlled (14). After LMWH was applied to our patient on the first 14 days, oral anticoagulant was started, and continued for 8 weeks.

In selected cases, radiological and surgical treatment methods can be applied (15). In the cases where there

are non-responsiveness to medical treatment and there are diagnoses of persistent abdominal pain, peritonitis, intestinal ischemia, and necrosis, diagnostic laparotomy should be made immediately. In our case, no surgical or radiological interventional treatment method was applied due to the lack of peritonitis and intestinal necrosis, and rapid and positive patient response to the medical treatment.

Result

Septic pylephlebitis of superior mesenteric vein is a complication which is rarely seen after appendectomy but has a high mortality risk. In the definitive diagnosis, colonic diverticulitis, acute cholangitis, inflammatory bowel disease, and appendicitis should be considered. Of the imaging methods, abdominal CT is the first choice. From the moment the diagnosis is made, broad spectrum antibiotherapy and anticoagulant treatment should be started, and the patient should be closely followed. In case of peritonitis or intestinal necrosis suspicion, urgent diagnostic laparotomy should be made.

Conflict of interest

Authors did not state any conflict of interest.

References

1. Harnik IG, Brandt LJ. Mesenteric venous thrombosis. Vasc Med 2010;15:407–18. https://doi.org/10.1177/1358863X10379673
2. Plemmons RM, Dooley DP, Longfield RN. Septic thrombophlebitis of the portal vein (pylephlebitis): diagnosis and management in the modern era. Clin Infect Dis 1995;21:1114–20.
3. Giuliano CT, Zerykier A, Haller JO, Wood BP. Radiological case of the month. Pylephlebitis secondary to unsuspected appendiceal rupture. Am J Dis Child 1989;143:1099–100.
4. Baddley JW, Singh D, Correa P, Persich NJ. Crohn's disease presenting as septic thrombophlebitis of the portal vein (pylephlebitis): case report and review of the literature. Am J Gastroenterol 1999;94:847–849. https://doi.org/10.1111/j.1572-0241.1999.00959.x
5. Chang PK, Hsu KF, Yu JC, Chang YM, Chan DC, Liao GS. Acute appendicitis with superior mesenteric vein septic thrombophlebitis. J Chin Med Assoc 2012;75:187–9. https://doi.org/10.1016/j.jcma.2012.02.012
6. Baril N, Wren S, Radin R, Ralls P, Stain S. The role of anticoagulation in pylephlebitis. Am J Surg 1996;172:449–52;discussion 452–3. https://doi.org/10.1016/S0002-9610(96)00220-6
7. Balthazar EJ, Gollapudi P. Septic thrombophlebitis of the mesenteric and portal veins: CT imaging. J Comput Assist Tomogr 2000;24:755–60.
8. Morasch MD, Ebaugh JL, Chiou AC, Matsumura JS, Pearce WH, Yao JS. Mesenteric venous thrombosis: a changing clinical entity. J Vasc Surg 2001;34:680–4. https://doi.org/10.1067/mva.2001.116965
9. Kumar S, Kamath PS. Acute superior mesenteric venous thrombosis: one disease or two? Am J Gastroenterol 2003;98:1299–304. https://doi.org/10.1111/j.1572-0241.2003.07338.x
10. Saxena R, Adolph M, Ziegler JR, Murphy W, Rutecki GW. Pylephlebitis: a case report and review of outcome in the antibiotic era. Am J Gastroenterol 1996;91:1251–3.
11. Stitzenberg KB, Piehl MD, Monahan PE, Phillips JD. Interval laparoscopic appendectomy for appendicitis complicated by pylephlebitis. JSLS 2006;10:108–13.
12. Condat B, Pessione F, Helene Denninger M, Hillaire S, Valla D. Recent portal or mesenteric venous thrombosis: increased recognition and frequent recanalization on anticoagulant therapy. Hepatology 2000;32:466–70. https://doi.org/10.1053/jhep.2000.16597
13. Lim HE, Cheong HJ, Woo HJ, Kim WJ, Kim MJ, Lee CH, Park SC. Pylephlebitis associated with appendicitis. Korean J Intern Med 1999;14:73–6.
14. Crowe PM, Sagar G. Reversible superior mesenteric vein thrombosis in acute pancreatitis. The CT appearances. Clin Radiol 1995;50:628–33.
15. Wichman HJ, Cwikiel W, Keussen I. Interventional treatment of mesenteric venous occlusion. Pol J Radiol 2014:30;79:233–8 https://doi.org/10.12659/PJR.890990