Angioplasty of v. mesenterica sup. Occlusion: clinical case report

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ABSTRACT
Cases of symptomatic v. mesenterica sup. (VMS) occlusion is rare. Patients usually complain of abdominal pain and present gastrointestinal bleeding. Occlusion can cause v. portae thrombosis and even lead to congestive bowel infarction [1,2]. We present a case of 49-year-old man, who complained about recurrent gastrointestinal bleeding throughout the period of two years and was finally treated with revascularisation of VMS at the Hospital of Lithuanian University of Health Sciences (HLUHS) Kauno klinikos.

Keywords: V. mesenterica sup. Angioplasty, v. mesenterica sup. Occlusion.

INTRODUCTION

V. mesenterica superior (VMS) collects blood from the jejunum, ileum and, when it joins with the v. splenica, forms v. portae. Impaired blood drainage occurs due to mesenteric venous hypertension, then patients complain of abdominal pain and bleeding from the lower gastrointestinal tract. Also varicose veins in the small intestine could be observed [1]. Symptomatic VMS occlusion is rare and endovascular treatment is complicated and very limited [1,3,4]. With the progression of critical stenosis, v. portae thrombosis and bowel infarction may occur [1,2]. Non-malignant causes of occlusions are pancreatitis, surgical interventions and abdominal trauma. Malignant causes usually are pancreatic adenocarcinoma and other abdominal tumours [2].
Occlusion can be visualised by performing indirect angiography of the portal system by contrasting arteries or magnetic resonance angiography, but these techniques are used less frequently [5]. When it comes to diagnosing this disease, computer tomography with intravenous contrast is the modality of choice. Direct angiography is only possible by transjugular route or through v. portae percutaneous puncture, but this is only for diagnostic purposes prior to treatment. Patients with progressing symptoms may be treated with VMS revascularisation. In such cases, implantation of a balloon expandable stent is a minimally invasive alternative to open surgery [5].
We report a 49-year-old man who was treated throughout the period of 2 years for recurrent gastrointestinal bleeding. For the scarcity of information, our purpose is to improve medical staff knowledge of VMS occlusion examination and treatment.

CASE DESCRIPTION

In 2011 a 49-year-old male underwent pancreatoduodenal resection due to abdominal trauma. Later he was operated again due to anastomosis stricture. In January 2016, the patient was hospitalised to HLUHS Kauno klinikos Surgery department because he began to complain of gastrointestinal bleeding. EGD was performed and varicose veins were found at the gastrointestinal junction. After two weeks laparotomy was performed with adhesiotomy and anastomosis reconstruction. After 6 months gastrointestinal bleeding occurred again. Selective a. mesenterica sup. Et inf. And truncus coeliacus angiography was performed - no extravasation was found. After one month, on the 2th August 2016, the patient underwent fibrocolonoscopy, large intestine to the ileum terminale was examined. Dark coloured contents, blood clots with fresh blood admixture were visible throughout the large in-

testine, but during a more detailed examination bleeding sites could not be determined. On the same day a. mesenterica sup. Et inf. and truncus celiacus angiography was performed, but no extravasation was noticed. It was decided to perform a. lienalis embolisation due to a possible fistula in the colon. 3 days after, the patient again had gastrointestinal bleeding and urgent angiography was performed, but no extravasation was seen, only a distal a. gastroduodenalis filling from a. mesenterica inf. Was noticed and a denser network of small arteries in the lienal corner of the colon. The area was embolised with two coils. There was no recurrence of bleeding after the procedure. Bleeding occurred again after a month, and the patient was treated conservatively.

On 18th February 2017 patient again had gastrointestinal bleeding, but intestinoscopy showed no results. A day after, an abdominal CT with arteriography was performed, which found that VMS does not differentiate, no clear filling defects in v. portae and v. lienalis were found.

A year later, on 13th February 2018, an abdominal CTA was performed in which a potentially thrombotic VMS was found (Fig. 1). On the 10th April 2018, the patient was discussed in a multidisciplinary consilium for further treatment tactics: it was decided to revascularize VMS. The patient was hospitalised on 14th of April 2018; his condition was satisfactory. On the 17th April 2018, VMS occlusion was recanalised through a percutaneous transhepatic route using Boston scientific "Mustang" 5x40 mm and 8x40 mm balloon catheters and Alvimedica CID "Isthmus" 9x19 mm carbon-coated stent (Fig. 2). For postoperative care analgesics and fraxiparine 0.6 ml were administered. After two days, fraxiparine was discontinued, clopidogrel was prescribed after VMS stenting gastrointestinal bleeding did not reoccur.

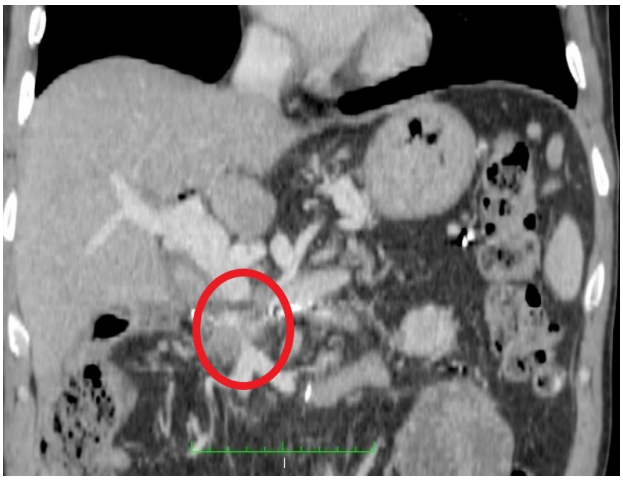

Fig. 1. CT angiography 13th February 2018 distal part occlusion of v. mesenterica sup.

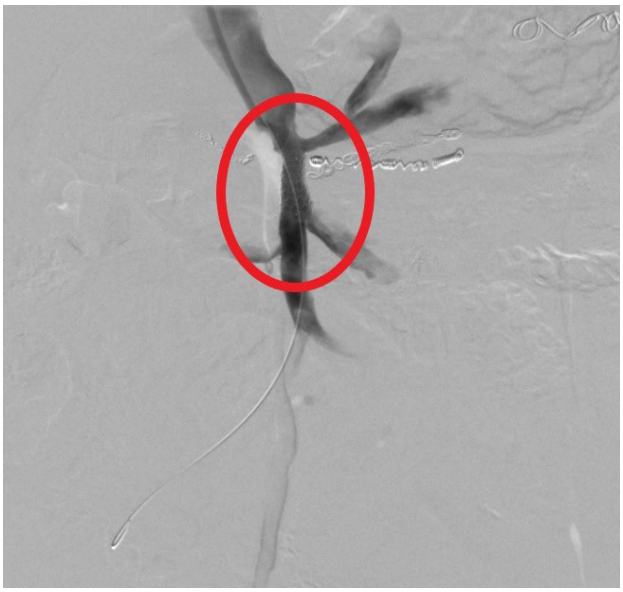

Fig. 2. V. mesenterica sup. Angiography. 17th April 2018 after v. mesenterica sup. Stenting. Blood flow was restored to the distal part of the vessel.

DISCUSSION

Mesenteric venous thrombosis 95 % of the cases involves VMS, and only 5 % of the cases involve v. mesenterica inferior because the distal part of the colon has a good collateral system [6]. In an acute situation, there would be insufficient time to develop collateral circulation, and a symptomatic VMS thrombosis may result in a transmural bowel infarction [5].

According to Singal et al., chronic VMS is typically found accidentally in cirrhotic patients during CT imaging with evidence of sequelae of portal hypertension, such as gastrointestinal varicose veins and splenomegaly [5]. In our case, the patient did not have chronic liver disease, but he had undergone pancreatoduodenal resection in 2011, which could have led to VMS occlusion. The main symptom was reoccurring gastrointes-

tinal bleeding which lasted for nearly two years. Other researchers like Russell et al. and Lennard et al., presented case reports in which patients presented symptoms of epigastric pain, nausea and vomiting [7,8]. The main difference was that both patients had acute VMS thrombosis oppose to our chronic case and therefore showed different disease signs.

In the current literature, we can find many v. portae stenting examples. Usually, these are the cases of portal vein obstruction due to malignant masses and anastomotic stenosis after liver transplantation [9–11]. In the case of VMS thrombosis, it is treated with thrombolysis, thrombectomy, resection and anastomosis or transjugular intrahepatic portosystemic shunt [5,12].

Only a few clinical cases and one peer-reviewed study describe VMS stenting confirming technical success and clinical effectiveness [3,5,13]. Hellman et al. described seven VMS stenting cases with carcinomas of the abdominal cavity resulting in small bowel venous stasis. For treatment, a 10x60 mm Luminex stent was used. For five patients, symptoms have resided; for the other two, the symptoms persisted [1]. Our patient was stented transjugular using a balloon-expandable stent. Stent diameter was selected accordingly to v.portae and VMS. Thickness. The radius of these vessels is rarely less than 1 cm. Other authors also recommend the use of a stent of at least 10 mm in diameter to prevent acute occlusion after the procedure [13]. In our case, a 9 mm stent was used, no complications were observed after the procedure.

CONCLUSIONS

VMS occlusion is a rare medical disease. Due to the lack of clinical cases and articles, there are currently no precise guidelines for endovascular treatment. Based on analysed articles and our own experience we can say that VMS stenting is a minimally invasive and clinically effective alternative to open surgery.

REFERENCES

1. Hellman P, Hessman O, Åkerström G, Stålberg P, Hennings J, Björck M, et al. Stenting of the superior mesenteric vein in midgut carcinoid disease with large mesenteric masses. World J Surg. 2010;34(6):1373–9.

2. Woodrum DA, Bjarnason H, Andrews JC. Portal Vein Venoplasty and Stent Placement in the Nontransplant Population. J Vasc Interv Radiol. 2009;20(5):593–9.

3. Mauri G, Monti L, Pedicini V. Interventional management of in-stent thrombosis after superior mesenteric vein stenting. EJVES Extra. 2011;22(3):231–239.

4. Zhang WG, Liu DM, Li Z, Wang YL, Ding PX, Zhou PL, et al. Endovascular treatment for extrahepatic portal vein bifurcation stenosis after a whipple procedure using the kissing stents technique. Ann Vasc Surg. 2014;28(1):264.e13-264.e16.

5. Singal AK, Kamath PS, Tefferi A. Mesenteric venous thrombosis. Mayo Clin Proc. 2013;88(3):285–94.

6. Harnik IG, Brandt LJ. Mesenteric venous thrombosis. Vasc Med. 2010;15:407–418.

7. Russell CE, Wadhera RK, Piazza G. Mesenteric venous thrombosis. Circulation. 2015;131(18):1599–603.

8. Lee LYW, Aubrey-Jones H, Lacey R, De Silva A. Mesenteric vein thrombosis; not going with the flow. Vol. 16, BMJ Case Reports. 2014. p. 206–10.

9. Wei BJ, Zhai RY, Wang JF, Dai DK, Yu P. Percutaneous portal venoplasty and stenting for anastomotic stenosis after liver transplantation. World J Gastroenterol. 2009;15(15):1880–5.

10. Yang J, Xu MQ, Yan LN, Lu WS, Li X, Shi ZR, et al. Management of venous stenosis in living donor liver transplant recipients. World J Gastroenterol. 2009;15(39):4969–73.

11. Sakurai K, Amano R, Yamamoto A, Nishida N, Matsutani S, Hirata K, et al. Portal vein stenting to treat portal vein stenosis in a patient with malignant tumor and gastrointestinal bleeding. Int Surg. 2014;99(1):91–5.

12. Hmoud B, Singal AK, Kamath PS. Mesenteric Venous Thrombosis. J Clin Exp Hepatol. 2014;4(3):257–63.

13. Beyer LP, Wohlgemuth WA, Uller W, Pregler B, Goessmann H, Niessen C, et al. Percutaneous treatment of symptomatic superior mesenteric vein stenosis using self-expanding nitinol stents. Eur J Radiol. 2015;84(10):1964–9.