

CLINICAL CASE

DEEP VEIN THROMBOSIS – UNEXPECTED COMPLICATION OF RECURRENT DIVERTICULITIS

Daniel Ion^{1,2}, Răzvan Vasile Stoian^{1,2}, Claudia Nistor³, Livia Florentina Trașcă^{1,3}, Alexandra Bolocan^{1,2}, Octavian Andronic^{1,2}, Florentina Mușat^{1,2}, Cosmin Alexandru Palcău^{1,2}, Dan Nicolae Păduraru^{1,2}

¹“Carol Davila” University of Medicine and Pharmacy, Bucharest, Romania

²IIIrd Department of General Surgery, Bucharest University Emergency Hospital, Bucharest, Romania

³“Elias” University Emergency Hospital, Bucharest, Romania

Corresponding author: Claudia Nistor

E-mail: claudian94@yahoo.com

Abstract

Diverticular disease of the colon is an important cause of hospitalization. Most patients can be treated with pharmacological therapy but others require surgical management because of the complications that occur. The main complications of colon diverticulitis are: perforation, fistulae, colonic stenosis, hemorrhage, phlebitis or septic intrabdominal thrombophlebitis. Deep vein thrombosis is a rare complication of diverticulitis, especially with sigmoid localization. To our knowledge, there are a few cases cited of deep vein thrombosis secondary to external compression, but none with severe inflammation as the only local favoring factor. We present the case of a 68 years-old woman with known history of multiple episodes of conservatively treated acute sigmoid diverticulitis admitted with swelling, pain, functional impotence of the lower left limb and only mildly abdominal symptoms. After ultrasound doppler echography and CT scan the patient was diagnosed with acute diverticulitis, complicated with iliofemoral vein thrombosis, diagnostic that changed our perspective in the management of the case.

Keywords: *iliofemoral deep vein thrombosis, sigmoid diverticulitis, complications, recurrent diverticulitis*

Introduction

Diverticulitis (inflammation of colonic diverticula) is one of the most common bowel emergencies presenting with acute abdominal manifestation. In many cases the pharmacologic therapy is enough. Recurrence is an easily recognizable risk factor for further complications. Recurrent attacks of acute diverticulitis are seen in 20–35% of patients after the first episode of acute diverticulitis and the majority of recurrences occur after non-surgically managed acute attacks [1]. The

complications are highly variable, and despite most common (perforation, phlegmon, abscess, phyle-phlebitis, bleeding, intestinal obstruction or fistula [2]), there are some unusual complications which can occur as dominant manifestations and lead the patient to the hospital. An example of unusual form of presentation is iliofemoral thrombosis, a condition well known as having multiple etiologies (venous stasis, hypercoagulability and vessel wall abnormalities). There are a few cases published of venous stasis and thrombosis secondary to external obstruction of iliofemoral

vein [3],[4] but none secondary to severe inflammation alone. We report a case of acute unilateral iliofemoral deep vein thrombosis (DVT) caused by recurrent acute diverticulitis. The CT scan and Doppler Ultrasound played an essential role in the diagnosis and management of this patient.

Case presentation

A 68 years-old female, known with multiple episodes of conservatively treated acute sigmoid diverticulitis, presented with a 3-day history of swelling, pain and functional impotence of the lower left limb. Examination showed swollen and painful left thigh and diffuse abdominal pain, spontaneous and to palpation, accompanied by tenderness in left iliac fossa. Venous Doppler Ultrasound showed a dilated femoral vein with loss of compressibility, highly suggestive for DVT. The CT scan of the abdomen and pelvis revealed multiple diverticula in the descending and sigmoid colon (on a length of 12cm) and diffuse bowel wall thickening (Figure 1.) with important inflammation of the perivascular fatty tissue (Figure 2.). The inflammation was extended to the distal portion of the external iliac vessels and was associated with dilated external iliac and common femoral veins and inhomogeneous content highly suggestive of endoluminal thrombus (over a distance of 25mm). The paraclinical findings led to the diagnosis of acute diverticulitis complicated with iliofemoral vein thrombosis. Facing the facts, the appropriate management we considered was the surgical intervention.

Intraoperative, descending and sigmoid colon diverticulitis was confirmed at the 1/3 distal sigmoid level, without decalibration (multiple perforated, covered, inflamed diverticula causing partial stenosis). The sigmoid inflammatory block was adherent to the left ilio-femoral axis and sigmoidectomy with termino-terminal colorectal anastomosis was performed. No perioperative complications occurred and first bowel movement appeared 8 days later. In the meantime, the patient received parenteral anticoagulation with Unfractionated Heparin (UFH) with activated partial thromboplastin time monitoring. After 7 days of UFH the switch to oral anticoagulation with Rivaroxaban was

made. The evolution of the patient was favorable with remission of lower limb thrombosis signs and symptoms.

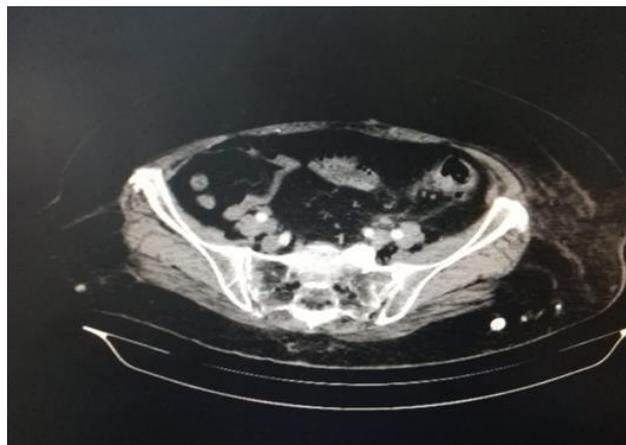


Figure 1 – Descendent and sigmoid colon – multiple diverticular sacs and diffuse bowel wall thickening

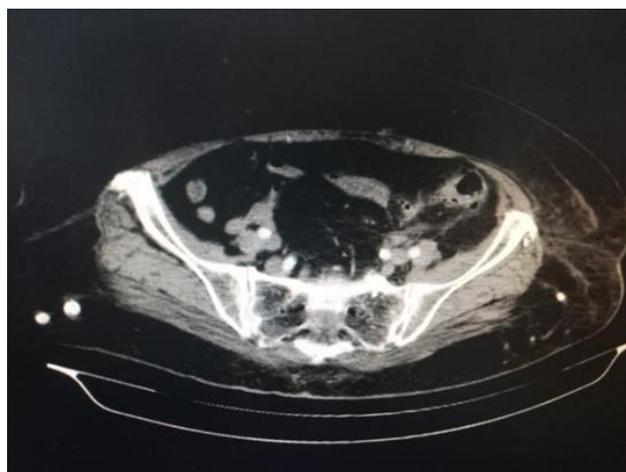


Figure 2 – Descendent and sigmoid colon – densification of fatty tissue adjacent to iliofemoral axis

Discussions

Due to changes in lifestyle in the latest years, left-sided colonic diverticulosis has an increasing prevalence throughout the world and is a very common pathology encountered by surgeons in the acute setting [5]. Even if selected patients can be managed conservatory, there is always a chance of failure and clinical and imagistic monitoring is mandatory. The use of modified Hinchey classification it is not sufficient to predict the outcome of conservative management so constant research is made in order to identify other factors such as inflammatory markers, age,

recurrent episodes for the failure of conservative management [6].

A retrospective cohort study of patients who presented with acute diverticulitis and treated conservatively during 2006 to 2010 tried to identify the risk factors predicting complicated recurrence of acute diverticulitis [7],[8]. The results of this study showed that the risk factors for complicated and uncomplicated recurrence are different and proved a simple risk score for grouping patients into lower and higher risk patients [8]. When choosing management strategy for recurrent diverticulitis [8], prophylactic sigmoid resection will lower uncomplicated recurrence rate, but might not be as effective in preventing complicated recurrence [9], [10]. In our case the patient was referred to surgical treatment when an acute complicated episode of diverticulitis occurred.

A thromboembolic event being the first form of manifestation it is a rare phenomenon, and only a few cases were reported [11]. Cases of superior and inferior mesenteric thrombosis are cited in literature and are associated with high morbidity and mortality [12].

There were several studies who tried to find an association between diverticular disease and venous thromboembolic events. Although the exact pathogenic mechanisms remain unknown, there are a few possible explanations. One theory is that diverticular disease changes the intestinal microbiota with a predisposition to chronic intestinal and systemic inflammation [13] which may be the trigger for DVT, without forgetting the common risk factors of both pathologies (obesity, smoking, sedentary life-style and diet). Particularly in this case, the probability for inflammation being the generating cause of DVT is very high, related to the severe and recurrent inflammation adjacent to iliofemoral axis.

Regarding the management of acute diverticulitis, although most patients can be treated conservatively, approximately 15% require surgical management (emergency/elective surgery) [7] for various indications such as: persistent or chronic symptoms [14], refractoriness to pharmacologic therapy, immunocompromised patients or life-threatening acute complications. Our patient had criteria for surgical therapy. The presence of DVT was a decisive factor in favor of surgery given the high risk of recurrence and complications of DVT

(pulmonary embolism, post-thrombotic syndrome etc.) [15].

Patients with diverticular disease are known to have a higher risk for developing venous thromboembolism compared to general population [16]. Studies have shown a doubled risk of subsequent cancer compared with the general population [17],[18]. Given this facts, diverticular disease in association with a venous thromboembolic event requires advanced follow-up strategies.

Conclusion

Iliofemoral deep vein thrombosis may be a sign of a locally inflammatory/compressive process. Recurrent diverticulitis proved to be the trigger factor in this case. It is important to actively search the non-obvious causes of DVT. Only finding the real cause, further complications or bad outcomes can be avoided, by selecting the adequate therapeutic strategy. When assessing the severity of the acute diverticulitis episode, level of inflammation must be considered.

References

- [1]H. Al Harakeh, A. J. Paily, S. Doughan, and I. Shaikh, "Recurrent Acute Diverticulitis: When to Operate?," 201.
- [2]M. R. Onur, E. Akpınar, A. Devrim Karaosmanoglu, C. Isayev, and M. Karcaaltincaba, "Diverticulitis: a comprehensive review with usual and unusual complications," *Insights Imaging*
- [3]C. Wittram, "Sigmoid Diverticulitis Presenting as Unilateral Iliofemoral Vein Thrombosis," *Abdom Imaging*, vol. 19, pp. 257–258, 1994.
- [4]V. Gupta, I. Shaik, J. Abbas, and M. Nazzal, "Iliofemoral venous thrombosis from external compression by a vesical diverticulum," *J. Vasc. Surg.*, vol. 52, no. 6, pp. 1671–1673, 2010
- [5]R. Vilallonga, J. A. Baena, J. M. Fort, O. Gonzalez, E. Gemar, and M. Armengol Carrasco, "2020 update of the WSES guidelines for the management of acute colonic diverticulitis in the emergency setting," *Int. J. Colorectal Dis.*, vol. 24, no. 5, pp. 599–600, 2020
- [6]Y. Y. Park, S. Nam, J. H. Han, J. Lee, and C. Cheong, "Predictive factors for conservative treatment failure of right colonic diverticulitis," *Ann. Surg. Treat. Res.*, vol. 100, no. 6, pp. 347–355, 2021

- [7] A. M. Morris, S. E. Regenbogen, K. M. Hardiman, and S. Hendren, "Sigmoid Diverticulitis A Systematic Review Clinical Review & Education Review," *JAMA*, vol. 311, no. 3, pp. 287–297, 2014.
- [8] V. Sallinen, J. Mali, A. Leppäniemi, and P. Mentula, "Assessment of risk for recurrent diverticulitis," *Med. (United States)*, vol. 94, no. 8, p. e557, 2015.
- [9] P. Pessaux et al., "Risk Factors for Mortality and Morbidity after Elective Sigmoid Resection for Diverticulitis: Prospective Multicenter Multivariate Analysis of 582 Patients," *World J. Surg.*, vol. 28, no. 1, pp. 92–96, 2004.
- [10] J. Chapman et al., "Complicated diverticulitis: Is it time to rethink the rules?," *Ann. Surg.*, vol. 242, no. 4, pp. 576–583, 2005.
- [11] S. Pinto, T. Lerner, G. Lingamaneni, and K. Richards, "Superior mesenteric vein thrombosis as a complication of cecal diverticulitis: A case report," *Int. J. Surg. Case Rep.*, vol. 25, pp. 71–74, 2016.
- [12] "Nashat, M; Mushtaq, S. Inferior mesenteric vein thrombosis secondary to acute sigmoid diverticulitis: a rare complication.. Abstract published at Hospital Medicine 2019, March 24-27, National Harbor, Md.. Abstract 879 . <https://shmabstracts.org/abstract/i>."
- [13] L. L. Strate, R. Erichsen, E. Horváth-Puhó, L. Pedersen, J. A. Baron, and H. T. Sørensen, "Diverticular Disease Is Associated With Increased Risk of Subsequent Arterial and Venous Thromboembolic Events," *Clin. Gastroenterol. Hepatol.*, 2013.
- [14] B. J. M van de Wall et al., "Articles Surgery versus conservative management for recurrent and ongoing left-sided diverticulitis (DIRECT trial): an open-label, multicentre, randomised controlled trial," *Lancet Gastroenterol. Hepatol.*, 2016,
- [15] S. M. Waheed, P. Kudaravalli, and D. T. Hotwagner, "Deep Vein Thrombosis," *StatPearls*, Aug. 2021, Accessed: Oct. 12, 2021. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK507708/>.
- [16] L. Thomsen, F. S. Troelsen, D. Nagy, N. Skajaa, D. K. Farkas, and R. Erichsen, "Venous thromboembolism and risk of cancer in patients with diverticular disease: A danish population-based cohort study," *Clin. Epidemiol.*, vol. 13, pp. 735–744, 2021.
- [17] H. T. Sørensen et al., "Superficial and deep venous thrombosis, pulmonary embolism and subsequent risk of cancer," *Eur. J. Cancer*, vol. 48, no. 4, pp. 586–593, 2012.
- [18] S. Noble and J. Pasi, "Epidemiology and pathophysiology of cancer-associated thrombosis," *Br. J. Cancer*, vol. 102, no. S1, pp. S2–S9, 2010.