SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Urology

Splanchnic Vein Thrombosis in A Patient with Renal Cell Carcinoma: A Case report and Literature Review

Ilias Hassan[1*], Anouar Elghazzali[1], Larbi Hamedoun[1], Mrabti Mohammed[1], Nabil Louardi[1], Abdessamad El Bahri[1], Ahmed Ameur[1], Mohammed Alami[1]

[1]Urology Department, Mohammed V Military Hospital, Rabat, Morocco

DOI: 10.36347/sasjs.2024.v10i06.013 | **Received:** 21.04.2024 | **Accepted:** 29.05.2024 | **Published:** 20.06.2024

***Corresponding author:** Ilias Hassan
Urology Department, Mohammed V Military Hospital, Rabat, Morocco

Abstract **Case Report**

***Introduction*:** Splanchnic vein thrombosis (SVT) is rare in the general population. It often occurs in the context of liver cirrhosis. The association between clear-cell renal cell carcinoma and splanchnic vein thrombosis is very rare, and most data come from case reports. We surgically treated a 53-year-old man who presented with a left middle renal tumor with extensive venous thrombosis of the portal vein extended to the superior mesenteric vein and its collaterals, we also provided a brief review of the literature on this topic. ***Conclusion*:** SVT is rare, especially in the absence of liver pathology. There is a well-defined relationship between cancer and thrombosis, but the association between clear-cell renal cell carcinoma and DVT is poorly described. The management of DVT must be individualized, assessing the benefits and risks in each case. Early anticoagulation combined with local treatment of the tumor improves recanalization of splanchnic vein thrombosis.

Keywords: Splanchnic vein thrombosis, Renal tumor, Anticoagulation, Surgical treatment.

INTRODUCTION

Although portal vein thrombosis generally occurs in the context of liver cirrhosis, it is not uncommon to encounter it in other, less characteristic circumstances.

Portal vein thrombosis (PVT) is a cruoric obstruction, total or partial, of the portal vein or one of its branches, which may extend into the spleno-mesenteric network, in which case it is referred to as splanchnic vein thrombosis (SVT).

It may be acute, characterized by the recent formation of a thrombus in the portal system, or chronic, characterized by the presence of a portal cavernoma (portal collateral venous network).

This condition is rare in the general population. PVT incidence varies according to the characteristics of the patients evaluated. In one Swedish study, PVT prevalence was 1%, while in another retrospective study, the PVT prevalence rate was 3.7 per 100,000 population. In another Italian study, the overall incidence rate was 3.7 per 100,000 inhabitants in men and 1.7 per 100,000 inhabitants in women [1].

Multiple factors may contribute to the development of SVT, whether they are local or systemic.

Few studies report an association between SVT and renal tumours. In this report, we describe a case of localized clear-cell renal cell carcinoma associated with chronic portal vein thrombosis extending to the mesenteric and splenic veins.

CASE PRESENTATION

A 53-year-old man, a chronic smoker who weaned off smoking 6 months ago, with no notable medical history, presented to our center with abdominal pain and left lower back pain.

On clinical examination, the abdomen was soft with slight tenderness in the left lumber region. There were no signs of splenomegaly or hepatomegaly and bowel sounds were present.

Abdominal ultrasound showed a mass in the left hypochondrium.

An abdominal CT scan confirmed the presence of a left medio-renal mass with exophytic development, heterodense, measuring 53×61 mm in an axial plane and

61 mm in height, with no evidence of extracapsular invasion (Figure 1). Also found are extensive venous thrombosis of the portal vein (with portal cavernoma), spleno-mesenteric trunk, splenic vein, superior mesenteric vein and its proximal dividing branches (Figure 2).

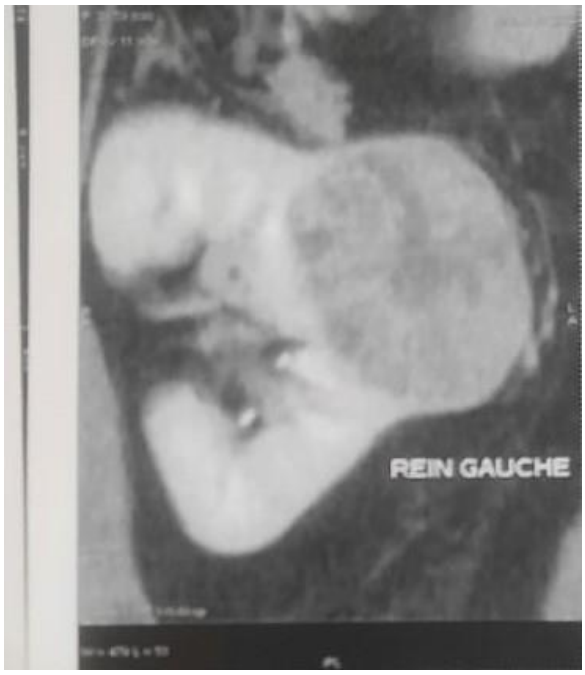

Figure 1: CT scan left of medio-renal mass

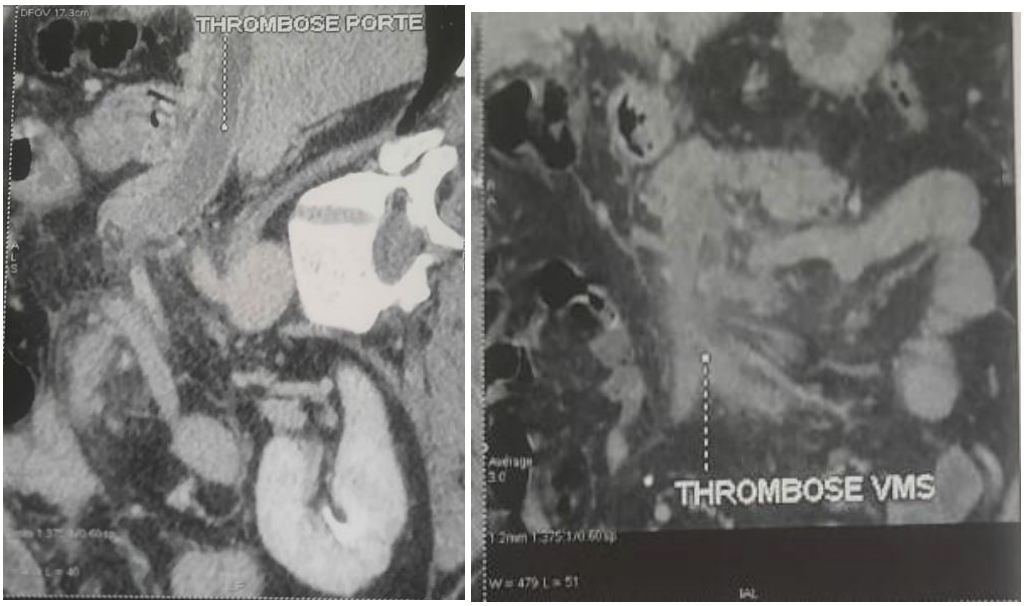

Figure 2: Extensive venous thrombosis of the portal vein (with portal cavernoma) and superior mesenteric vein and its proximal dividing branches

In terms of biology, the blood count indicated a white blood cell count at 5720/mm3, hemoglobin at 16 g/dl, and platelets at 226,000/mm3. Normal erythrocyte sedimentation rate, normal C reactive protein, and normal liver function tests.

An Esophagogastroduodenoscopy was performed to exclude esophageal varices, which returned normal.

After discussing the case, the patient was put on curative Enoxaparin anticoagulation, before undergoing radical nephrectomy.

10 days later, the patient underwent a laparoscopic radical nephrectomy. The procedure passed without incident. The post-operative course was favorable, and the patient was discharged on Enoxaparin 2 days later.

A histological examination of the surgical specimen revealed a clear cell renal cell carcinoma, ISUP grade 2 (pT1b, R0).

The patient was asymptomatic at the 6-month follow-up visit with no sign of tumor recurrence on imaging, however the portal cavernoma persisted, with repermeabilization of the spleno-mesenteric trunk, splenic vein, and superior mesenteric vein. Biological parameters were normal.

DISCUSSION

Worldwide, renal cell carcinoma (RCC) is the ninth most frequently diagnosed cancer in men and 14th in women [2].

An increase in incidental detection of renal masses by abdominal imaging has contributed to the increased incidence rates of RCC.

Currently, the triad of hematuria, flank pain and flank mass is rarely seen, as the majority of cases are detected incidentally on abdominal imaging for other reasons before symptoms develop [3].

Splanchnic vein thrombosis (SVT) includes portal, mesenteric and splenic vein thrombosis, and Budd-Chiari syndrome (BCS) is a manifestation of venous thromboembolism at an unusual site [1].

Venous thromboembolic disease is frequently associated with neoplasia. Patients with active cancer are at increased risk for venous thromboembolic disease [4].

Several causes may be involved in SVT pathogenesis. Local (70%) and systemic (30%) risk factors are distinguished. The most common local thrombotic risk factors include abdominal inflammation, liver cirrhosis, and tumors [5].

Malignant tumors, often of hepatic or pancreatic origin, account for 21% to 24% of all PVT cases. Cancer patients are at a higher risk of mortality and disease progression.

It is classically reported that PVT of unusual locations are mainly of paraneoplastic origin. The mechanism of thrombosis is related to secondary hypercoagulability, inflammation or venous stasis due to direct compression by the tumour [1].

The association between clear cell renal cell carcinoma and splanchnic vein thrombosis is very rare, and most data come from case reports.

Sakamoto et al reported a case of hepatic metastasis of renal cell carcinoma 13 years after total nephrectomy with tumor thrombus of the portal vein [6].

Pancreatic metastases of renal cell carcinoma with portal tumor thrombus after radical nephrectomy have been described [7, 8].

In 2014, D'Elia *et al*., reported the case of a 62-year-old patient followed for thromboembolic disease and presented with a 5.5 cm right renal mass localized with thrombosis of the portal vein, splenic vein and superior mesenteric vein. After total nephrectomy, histological examination revealed clear-cell renal cell carcinoma [9].

Our patient represents a rare case of splanchnic vein thrombosis associated with primary clear cell renal cell carcinoma in a young man with no significant pathological history.

SVT treatment recommendations are unclear. The American Society of Clinical Oncology [10] suggests that treatment of incidentally discovered PVT should be offered on a case-by-case basis, taking into account the potential benefits and risks of anticoagulation. According to the American College of Chest Physicians [11], anticoagulation is recommended for patients with symptomatic SVT.

A meta-analysis has demonstrated that anticoagulation treatment improves SVT recanalization and reduces thrombosis progression risk without increasing major bleeding [12]. Types of anticoagulation remain controversial, however [13].

The control of local disease by the radical nephrectomy and the early anticoagulation treatment initiated in our patient may explain the partial revascularization on follow-up imaging.

CONCLUSION

The condition of SVT is rare, especially when it occurs without liver disease. There is a well-defined relationship between cancer and thrombosis, but the association between clear-cell renal cell carcinoma and SVT is poorly described. Managing SVT should be individualized, weighing up benefits and risks in each case.

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