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A rare case of Wunderlich syndrome five days after left hemicolectomy for colorectal cancer



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ABSTRACT

INTRODUCTION: Wunderlich syndrome (WS) is a surgical emergency characterized by spontaneous, non-traumatic retroperitoneal hemorrhage. Angiomyolipoma (AML), a benign mesenchymal tumor, is the most frequent cause of WS. We present a case of WS, appearance five days after a left hemicolectomy for cancer.

PRESENTATION OF CASE: A 66 years-old man with a sigmoid adenocarcinoma and a small left AML (3.4 cm) was undergone to left hemicolectomy. He was subjected to bridging therapy with high doses of low-molecular-weight heparin for prosthetic replacement of heart valve secondary to endocarditis and atrial fibrillation. Five days after surgery he presents retroperitoneal hemorrhage due to rupture of AML diagnosed by a CT scan and scintigraphy with labeled red blood cells. Total left nephrectomy was performed as the patient became unstable.

DISCUSSION: Rupture of a renal AML is the main cause of WS. This risk increases with the size of the tumor (>4 cm) and during pregnancy. CT scan is the best imaging modalities for diagnosis. The bridging therapy increases the perioperative bleeding risk. These patients are conservative treated with selective transarterial embolization. Nephrectomy is limited for the patients hemodynamically unstable or in case of failed embolization.

CONCLUSION: This is an unusual case of WS after surgery in patients with small AML and treated with high dose of anticoagulant for cardiac disease. There are no other similar cases in literature.

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1. Introduction

Wunderlich syndrome (WS) is a surgical emergency characterized by spontaneous, non-traumatic retroperitoneal hemorrhage. Its symptoms vary from mild to very severe. Renal Angiomyolipoma (AML), a benign mesenchymal tumor, is the most frequent cause of WS [1]. The incidence of this tumor is 0.3–3% with a female to male gender ratio 4.5:1, it is estimated that ten million people worldwide have such lesion [2–3]. We present a case of WS, appearance five days after a left hemicolectomy for cancer.

2. Presentation of case

2.1. Background and past medical history

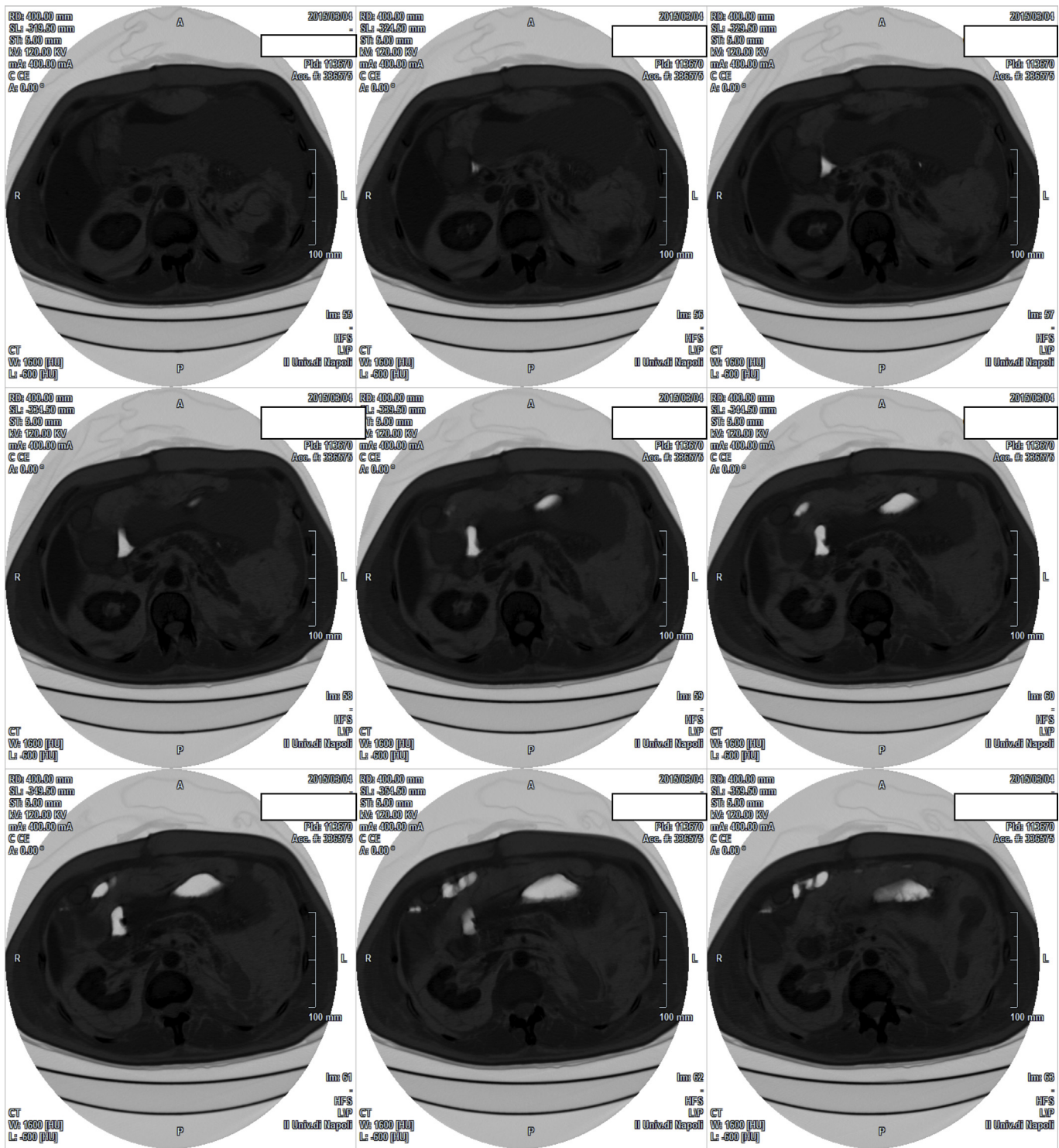
A 66-years-old Caucasian man presented to our department for an Adenocarcinoma of the sigmoid colon associated with an asymptomatic small left renal Angiomyolipoma (3.4 cm) diagnosed accidentally by preoperative CT. About fifteen years before, the patient was subjected to mitral valvuloplasty with implantation of prosthetic annulus for ruptured of chordae tendineae; two years later he was reoperated for a staphylococcal endocarditis on prosthetic annulus of mitral valve. A preoperative echocardiography showed an atrial fibrillation with ejection fraction of 55% and moderate aortic regurgitation; for his high thrombo-embolic risk (based on CHADS2 VASc score) he was under warfarin treatment.

2.2. Procedure and complication

Warfarin treatment was stopped five days before the operation and a bridging anticoagulation therapy, with low-molecular-weight heparin (enoxaparin 6000UI × 2/die), was introduced. The

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CT reconstruction.

Fig. 1. Computer tomography (CT) scan of abdomen and pelvis, showing a large rear renal hematoma (maximum diameter of 7 cm) with perirenal diffusion and thickening of the front and rear renal fascia.

last dose was given 24 h before the procedure and at this time the International Normalized Ratio (INR) value was 1.3 with platelet count of 295.000. Therefore, he was undergone to left hemicolectomy, performed without difficulty and the day after he restarted the bridging therapy; the first four postoperative days were regular. Only on the fifth postoperative day, the patient complained

pain in the left flank with tachycardia, low blood pressure and oliguria. His hemoglobin decreased from 9.2 g/dl to 6.5 g/dl with an INR value of 1.7 and platelet count of 132.000, and it was necessary a blood transfusion. Computer tomography (CT) scan of abdomen and pelvis was performed, revealing a large rear renal hematoma (maximum diameter of 7 cm) with perirenal diffusion

and thickening of the front and rear renal fascia (Fig. 1). For further evaluation, a scintigraphy was made with labeled red blood cells that showed an active renal bleeding. These findings were highly suggestive of the rupture of the Angiomyolipoma of the left kidney with massive retroperitoneal hemorrhage, a condition known as Wunderlich syndrome. Clarified the clinical picture and due to worsening of the symptoms a total emergency nephrectomy was carried out. Histological examination confirmed the AML and the signs of renal and perirenal hematoma. After nephrectomy, the patient was transferred to intensive care where unfortunately died 10 days after for cardiac complications.

3. Discussion

The spontaneous retroperitoneal hemorrhage was first described by Carl Reinhold August Wunderlich, a German physician, in 1856. The Lenk's triad, characterized by flank pain, abdominal tenderness and signs of internal bleeding, is usually associated with this syndrome [1,4,5]. Several causes are involved, including benign and malignant renal neoplasm, vascular disease (vasculitis, arteriosclerosis, renal artery aneurism rupture), renal infection, undiagnosed hematological disease, renal cysts, anticoagulant therapy [4,5]. The most frequent cause of WS is the AML, a solid "triphasic" tumor composed of varying amounts of three elements: dismorphic blood vessels, smooth muscle components and mature adipose tissue [6]; today it is considered among the family of perivascular epithelioid cell tumors (PEComa) [7]. While 80% of AMLs are sporadic and approximately 20% are associated with tuberous sclerosis complex, in this cohort the tumors are usually small, multiple and bilateral [8]. The CT scan is a good choice of imaging modalities, because it is sensitive to demonstrate the fat contained in the renal mass with the presence of perirenal and retroperitoneal hemorrhage, which is characteristic of Wunderlich's syndrome due to spontaneous angiomyolipoma rupture [9]. The frequency of symptoms and risk of bleeding increase with the size of the AML. The lesions <4 cm have a 13% risk of bleeding versus a 51% risk if >4 cm. The asymptomatic patients are managed conservatively with annual CTs (tumors <4 cm) or semester CTs (>4 cm). There are documented evidences that 27% of lesions smaller than 4 cm and 46% of lesions bigger have been shown to grow up to 4 cm for year over a mean follow up period of 4 years [2]. Other authors have classified AMLs larger than 4 cm into three groups based on their vascularity at angiography: (1) minimal vascularity characterized by few, small and stretched pathological vessels, (2) moderate vascularity with abundant, medium size, tortuous vessels with or without small aneurysms <5 mm, (3) marked vascularity as having multiple, large tortuous vessels with or without large aneurysms >5 mm. AMLs larger than 4 cm with "minimal vascularity", was significantly less likely to require intervention due to bleeding (14.3%) than those with "marked vascularity" (50%) [10]. Another factor that increases the risk of rupture of AML is pregnancy; the main causes are increased growth rate, blood volume and renal blood flow. The greater growth during pregnancy, the predominance in women in childbearing age and the rarity before puberty suggest clear hormone dependence [11]. The symptomatic patients generally have tumours of >8 cm, these patients are treated by angiography with selective transarterial embolization as first line, because of their high risk of spontaneous or traumatic rupture and consequent retroperitoneal hemorrhage. In most of the cases of ruptured AML nephrectomy was done by open surgery [1]. Nephrectomy, partial or radical is limited to hemodynamically unstable patients, suspicion of malignancy or failed embolization [3]. In our case, according to the size, the AML was at low risk of bleeding; so, we have hypothesized that the low-molecular-weight heparin has played an important role in

tumor rupture. As already said anticoagulant therapy is one of the causes of WS [5]. However, to date there are no evidences for a direct correlation between anticoagulant therapy and rupture of a small AML. "The BRIDGE trial" is a recent randomized, double blind, placebo-controlled trial. It shows that for patients with atrial fibrillation who require temporary interruption of warfarin treatment for an elective operation or other elective invasive procedure, a strategy of forgoing bridging anticoagulation was non inferior to perioperative bridging with low-molecular-weight heparin for the prevention of arterial thromboembolism [12]. The strategy of forgoing to the bridging treatment also decreased the risk of major bleeding [12]. Thus, was the bridging therapy appropriate to our patient? We think yes, because patients undergoing to major surgical procedures (as a left hemicolectomy for cancer) were not represented in the "BRIDGE trial", as well as, patients with mechanical heart valves were specifically not included. Another study, focused on predictors of major bleeding events (MBEs) in patients with mechanical heart valves (MHV) undergoing invasive procedures, with periprocedural bridging with low-molecular-weight heparin (LMWH), shows that the bleeding risk is independent to LMWH dose and the major predictor for MBE is the bleeding risk of the surgery [13]. It shows that the bleeding risk is independent from LMWH dose and the major predictor for MBEs is the bleeding risk of the surgery [13].

4. Conclusion

We have reported a rare case of WS due to rupture of small AML occurred five days after a left hemicolectomy for cancer. The bleeding of AML <4 cm is a very rare event but is a potentially life threatening condition. In our case surgery is been mandatory, so, we have carried out a nephrectomy because the patient became hemodynamically unstable. In conclusion, we suppose that the breaking of the lesion is been favored by bridging therapy with LMWH, but we cannot know well the determining causes because there are no other cases in literature of AML's rupture after colo-rectal surgery. Moreover, we know that the bridging therapy increases the perioperative bleeding risk, regardless of LMWH dose, but in correlation with the kind of surgery and Its bleeding risk.

Conflicts of interest

None.

Funding

None.

Ethical approval

None.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Michele Grassia: participated substantially in conception, design, and execution of the study and in the analysis and interpretation of data; also participated substantially in the drafting and editing of the manuscript.

Angela Romano: participated substantially in conception, design, and execution of the study and in the analysis and interpretation of data; also participated substantially in the drafting and editing of the manuscript.

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Giuseppe Izzo: participated substantially in conception, design, and execution of the study and in the analysis and interpretation of data.

Roberto Alfano: participated substantially in conception, design, and execution of the study and in the analysis and interpretation of data.

Natale Di Martino: participated substantially in conception, design, and execution of the study and in the analysis and interpretation of data; also participated substantially in the drafting and editing of the manuscript.

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Prof. Natale Di Martino.

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