

Case Report

Wunderlich syndrome secondary to renal artery angioplasty: A case report

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Abstract: Wunderlich syndrome is an uncommon pathology that is characterized by spontaneous hemorrhage in the subcapsular and perirenal spaces. We present the case of a 76-year-old woman who developed abdominal pain associated with hypotension after undergoing percutaneous transluminal angioplasty (PTA), with stenting in the right renal artery by means of puncture of the left brachial artery. An extensive retroperitoneal hematoma was identified on emission tomography in the topography of the right kidney, thus corroborating the diagnostic hypothesis of the aforementioned syndrome. As an outcome of the case, a surgical reapproach was required to drain a hematoma and hemostatic suture to resolve the condition.

Keywords: Wunderlich Syndrome; Perirenal hematoma; Angioplasty; Urology; Surgery.

1. Introduction

Wunderlich syndrome (WS) is a rare condition in which spontaneous renal hemorrhage occurs in the subcapsular and perirenal spaces. This can present severely in the form of hypovolemic shock and pose a high risk to the patient's life.(1) Its presentation is characterized as heterogeneous and depends on several factors, the main one being its etiology, which guides the clinical picture of the degree and duration of the hemorrhage presented. Although Computed tomography is used for the diagnosis of spontaneous retroperitoneal hemorrhage, the exam cannot identify, for example, segmental arterial mediolysis as the cause of hemorrhage.(2)

According to scientific studies, the underlying causes of this syndrome are mostly tumors, but they can also be caused by vascular diseases, inflammatory processes, and cysts, which are the least common.(3) The clinical picture often presents in symptomatic patients as Lenk's Triad, whose classic picture includes abdominal or flank pain, palpable tender mass, and macroscopic hematuria. Other associated symptoms are nausea, vomiting, fever, anemia, renal failure, and hypotension, which are observed less frequently.(4)

The objective of this article is to highlight the relevance of the occurrence of Wunderlich Syndrome within urological medical practice and how to perform its respective diagnosis and treatment.

2. Materials and Methods

The database used to describe the present report was the analysis of medical records, evolution, laboratory tests, and imaging tests performed, which were applied to determine the respective diagnosis.

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For a better understanding of the subject, previous studies on Wunderlich Syndrome were used as bibliographic references, which were made available in the PubMed and Scielo databases.

3. Case Report

ICR, 76 years old, female, white, retired, widowed, born and resident of Guaratingueta-SP. It denies habits and vices such as smoking and alcoholism. She uses daily medications such as acetylsalicylic acid, rivaroxaban, rosuvastatin, losartan, and atenolol. The patient was referred to the Regional Hospital service due to bilateral renal artery stenosis and difficult-to-control arterial hypertension, to be monitored by the Vascular Surgery team.

On admission, the patient was in good general condition, ruddy, hydrated, acyanotic, afebrile, anicteric, normotensive, and eupneic on room air. Flaccid, painless abdomen, no palpable masses or visceromegaly, no signs of peritonitis, negative Giordano. The extremities were free of lower limb edema, free calves, bilateral palpable femoral pulse, and other non-palpable ones. The patient had an angiography exam in hand performed on 01/24/23, which showed stenosis of 90% of the right renal artery and 60% of the left renal artery.

As a therapeutic plan, a percutaneous transluminal angioplasty (PTA) was proposed, performed on 03/05/24, with stenting in the right renal artery puncture of the left brachial artery, under local anesthesia, a procedure performed without intercurrents. On the same day, the patient developed abdominal pain and refractory hypovolemic shock. Diagnostic investigation was initiated using high-resolution computed tomography(CT) of the abdomen with intravenous contrast and laboratory tests. CT (figure 1) revealed an extensive hematoma in the right retroperitoneum, around the right kidney. Thus, the patient and family members were informed about the need for a surgical approach and possible risks due to the condition.

The patient underwent surgery, in which, through a right lumbotomy, the right perirenal retroperitoneal hematoma was explored, with identification of active bleeding at the insertion of the right renal vein into the vena cava, where hemostatic suture was performed. No lesion was identified in the right renal artery or other structures. After the end of the surgical procedure, she was sent to the intensive care unit.

On the following day, the patient remained in an ICUbed, hemodynamically compensated with a low dose of vasoactive amine. She was extubated, in regular general condition, pale (+1/+4), hydrated, acyanotic, afebrile, anicteric and eupneic in an O2 nasal catheter, lucid and oriented. On abdominal examination, the same flaccid wound was painless to palpation, with the presence of an operative wound in good appearance and with well-coapt edges, with no secretion outlet. The extremities were free of lower limb edema, free calves, bilateral palpable femoral pulse, and other non-palpable pulses.

On the sixth day of hospitalization, after stabilization of the clinical condition, the patient showed good postoperative evolution and was discharged from the hospital on 03/11/24.

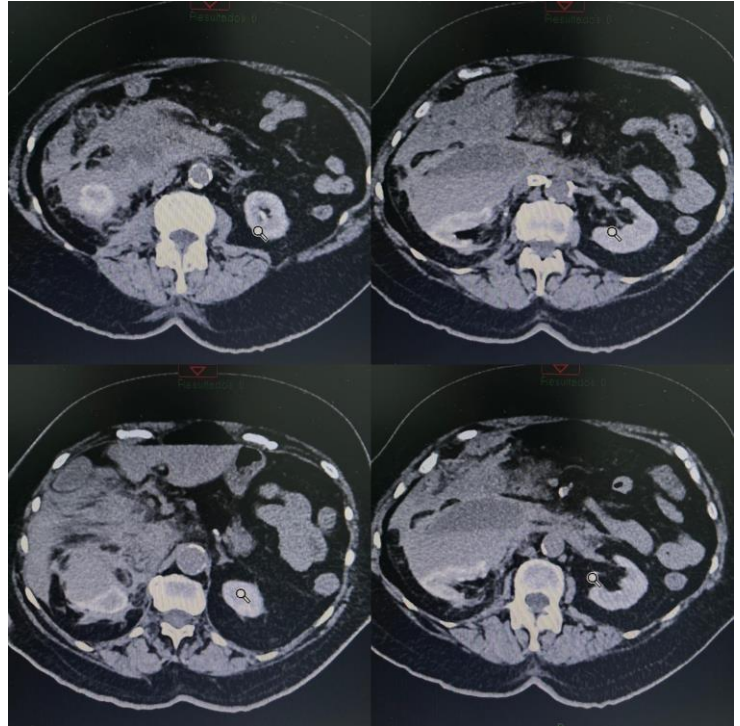


Figure 1. Abdominal Computed Tomography exam exemplifying perirenal hematoma on the right

Table 1. Laboratory tests were requested from the patient during the days of hospitalization.

| | 06/03/24 | 07/03/24 | 08/03/24 | 09/03/24 | 10/03/24 | 11/03/24 |
|-------------------|----------|----------|----------|----------|----------|----------|
| Hemoglobin, g/dl | 10,5 | 7,7 | 8,7 | 7,6 | 8,9 | 9,6 |
| Hematocrit, % | 30,3 | 23,1 | 25,3 | 23,7 | 26,1 | 28,5 |
| Leukocytes, ml | 14.900 | 17.200 | 13.600 | 11.300 | 10.000 | 12.600 |
| Na, mEq/L | 141 | 142 | 140 | 137 | 139 | 136 |
| K, mEq/L | 4,5 | 4,1 | 3,6 | 3,9 | 3,2 | 3,1 |
| Urea, mg/dl | 32 | 35 | 43 | 30 | 40 | 43 |
| Creatinine, mg/dl | 0,61 | 0,62 | 0,31 | 0,39 | 0,7 | 0,9 |

4. Discussion

The case described here exemplified a combination of signs and symptoms known as Wunderlich Syndrome, which in the case mentioned was developed secondary to renal artery angioplasty. Wunderlich syndrome is a rare and potentially fatal disease, which depends on a rapid diagnosis and targeted treatment for effective results. Non-traumatic spontaneous bleeding confined to the subcapsular and/or perinephric space in patients with no known underlying cause was first described as "spontaneous renal capsule apoplexy" by Carl Reinhold August Wunderlich in 1856. (4,5)

The etiology of the condition is extensive and includes benign and malignant renal neoplasms, vascular diseases (vasculitis, renal artery arteriosclerosis, and rupture of renal artery

aneurysm), nephritis, infections, undiagnosed hematological disorders, and anatomical lesions. The clinical presentation is heterogeneous and varies depending on the degree and duration of bleeding. Acute lumboabdominal pain, nausea, vomiting, hematuria, hemodynamic instability, anemia, and hypovolemic shock are commonly observed.

Investigation for the condition that is most widely used today is abdominal ultrasound. Although the results are nonspecific, it is a fast, available, and inexpensive test, which often allows the diagnosis but not the etiology. Abdominal computed tomography, on the other hand, has greater specificity to visualize peri- and pararenal bleeding, as well as its underlying cause.(3,5)

Initial treatment should include fluid resuscitation, blood transfusion, and normalization of clotting factors, preferably in the intensive care unit. Depending on the extent of the hemorrhage, conservative treatment may be considered. In cases of hemodynamic instability, surgical intervention becomes necessary.(4,6)

5. Conclusions

A case of Wunderlich syndrome associated with retroperitoneal hemorrhage after renal artery angioplasty is reported. Wunderlich syndrome is one of the complications that need to be treated quickly and aggressively since it is associated with high morbidity and mortality, requiring a high index of suspicion. This condition depends on the accuracy of the diagnosis and the determination of its cause. In cases of conservative or surgical treatment, close follow-up examinations, including imaging tests, are required.

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