

Case Report**Post-Partum Flank Pain: Think Renal Vein Thrombosis - Case Report**

Douaa Kamal(MD)^{1*}, Ghizlane Lembarki(MD)¹, Othmane Jbara(MD)¹, Leila Noureddine(MD)², Mouna Sabiri(MD)¹, Mohamed Labied(MD)¹, Samia El Manjra(MD)¹, Samira Lezar(MD)¹, Fatiha Essodegui(MD)¹

¹Central Unit of Radiology, Ibn Rochd University Hospital, Casablanca, Morocco

²Central Department of Radiology, Ibn Rochd University hospital, Casablanca, Morocco

Article History

Received: 02.12.2022

Accepted: 10.01.2023

Published: 17.01.2023

Journal homepage:<https://www.easpublisher.com>**Quick Response Code**

Abstract: Renal vein thrombosis (RVT) in the post-partum period is rarely reported. It is majorly a complication of the hypercoagulability associated with both pregnancy and postpartum state. We report the case of a primiparous 19-year-old woman, who presented to the Emergency Department complaining of acute right flank pain. Doppler ultrasonography revealed thrombosis of the right renal vein with extension into the inferior vena cava (IVC). Contrast-enhanced abdominal computerized tomography (CT) confirmed the diagnosis. The outcome was favorable after anticoagulation therapy by Heparin was initiated. Practitioners need to be aware of the diagnosis of RVT. Imaging tests, especially contrast CT scans play a major role in the diagnosis and post-therapeutic assessment.

Key words: Post-partum, pain, renal vein thrombosis, Doppler, CT scan.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

CLINICAL PRESENTATION

An abdominal ultrasound scan showed discrete pyelo-calyceal cavities dilation with a slightly enlarged left kidney and without visible urinary obstruction. A CT urography and angiography scan was performed and showed an ectatic left renal vein, seat of a large hypodense thrombus extending from the segmental renal veins to the inferior vena cava, with a large heterogeneous and hypodense region located in the medium and lower poles of the left kidney without urinary tract dilatation or tumoral lesions; this aspect concluded in a perfusion abnormality (renal venous infarction) (Figures 1 and 2). An abdominal ultrasound scan showed discrete pyelocalyceal cavities dilation with a slightly enlarged left kidney and without visible urinary obstruction. A CT urography and angiography scan was performed and showed an ectatic left renal vein, seat of a large hypodense thrombus extending from the segmental renal veins to the inferior vena cava, with a large heterogeneous and hypodense region located in the medium and lower poles of the left

kidney without urinary tract dilatation or tumoral lesions; this aspect concluded in a perfusion abnormality (renal venous infarction) (Figures 1 and 2).

A primiparous 19-year-old woman, with no prior medical or surgical history, gave birth to twins through a natural vaginal delivery, after a full-time pregnancy. There were no complications in the immediate postpartum period.

The patient presented to the hospital 5 days post-partum with acute right flank pain. Clinical examination revealed a conscious patient with pale conjunctivae. Blood pressure, respiratory rate, heart rate, and cardio-pulmonary auscultation were all normal. Body temperature was 37°C, and oxygen saturation was 98% in room air. The right flank pain was exacerbated by palpation. There was no pathological finding in her gynecologic examination and she had no buccal ulcers, no malar rash or arthralgia, no swelling or lower limb cramping pain.

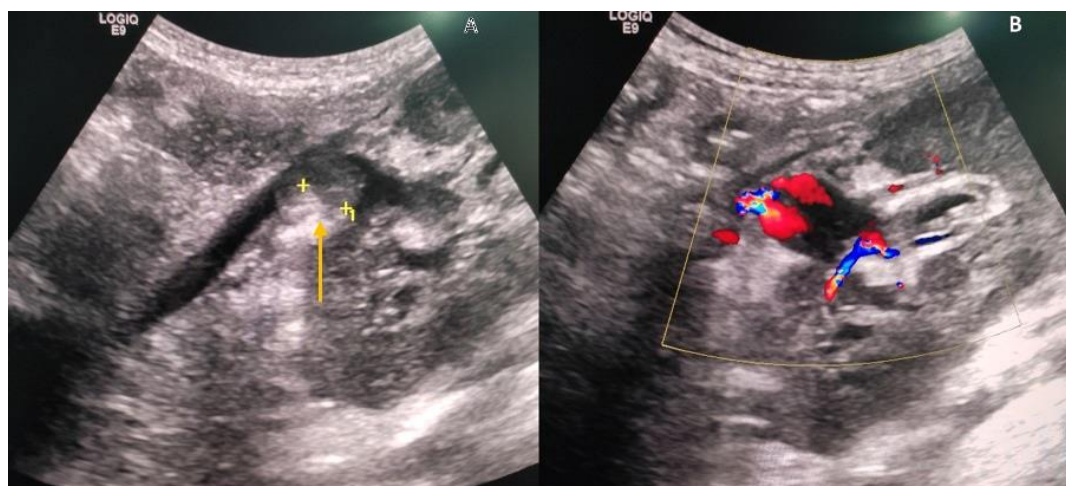


FIGURE 1

Figure 1: Ultrasound in grayscale (a) and color Doppler US mode (b) showing a thrombus (arrow) within an ecstatic right renal vein, extending to the IVC

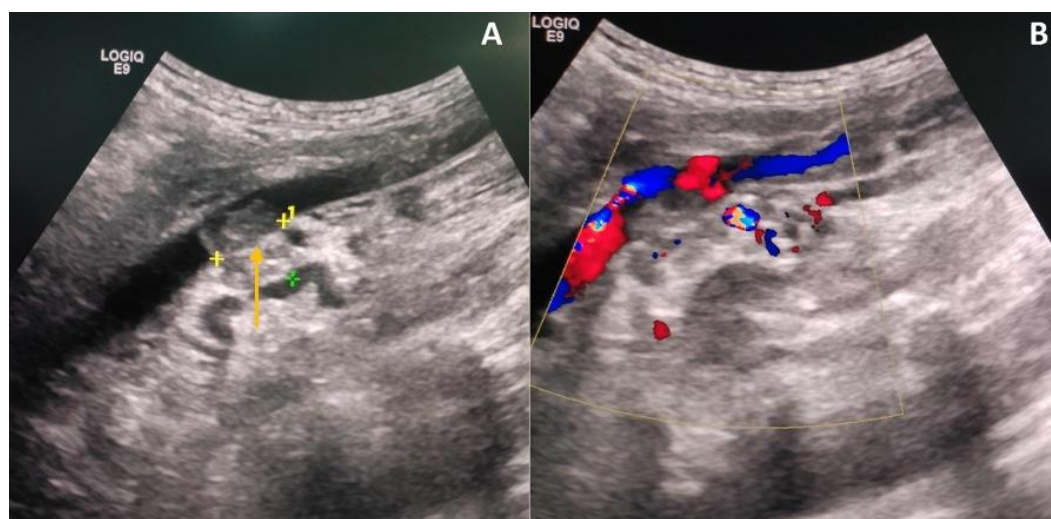


FIGURE 2

Figure 2: US Gray scale mode (a) and Doppler color US (b) showing the thrombus extension to the IVC (arrow)

Investigations/Imaging Findings

The patient's blood cell counts revealed anemia with Hemoglobin at 9g/dl. Blood electrolytes and renal function with serum creatinine levels were normal.

An ultrasonographic examination showed in gray-scale mode the presence of a large echogenic material within the right renal vein (Fig.1), extending to the inferior vena cava (IVC) (Fig.2), in addition to an enlargement of the right kidney. Further observation with color Doppler US showed a lack of venous flow in the right renal hilum (Fig.1B), although the arterial flow remained normal. Color Doppler evaluation of the left kidney showed normal venous flow. Contrast-enhanced abdominal CT was then performed and showed an

ecstatic right renal vein, containing a large hypodense thrombus, extending from the main renal vein to the IVC, measuring 18.5x12.3 mm (Fig.3). The right kidney was slightly enlarged without evidence of any tumor, renal venous infarction, or obstruction of the urinary tract. Both ovarian veins were clear.

The thrombophilia assessment, with protein C or S deficiency, mutation of coagulation factors II.

The thrombophilia assessment, with protein C or S deficiency, mutation of coagulation factors II.

Thrombophilia assessment with lupus, antiphospholipid antibody syndrome, protein C and S j.



FIGURE 3

Figure 3: Axial (a) and coronal (b) contrast enhanced CT scan at the level of the right renal hilum showed a hypodense thrombus in the right renal vein extended the IVC (arrow)

Treatment

Enoxaparin (60 mg every 12 hours by subcutaneous route) associated with analgesic drugs were initiated. After her discharge, the patient was put on oral anticoagulation therapy (Acenocumarol 4mg/day, international normalized ratio (INR) of 2-3).

Outcome and Follow Up

The outcome was favorable after treatment initiation. Our patient was discharged 5 days following her admission. There was no other complication during a 3-month follow-up.

DISCUSSION

Virchow's triad consists of three factors that may predispose to the constitution of venous thrombosis. These factors include hypercoagulability, stasis, and endothelial injury. We believe that the simultaneous presence of at least two factors is sufficient for thrombosis to occur [1].

Studies have shown that in comparison to the nonpregnant state, the 6-week postpartum period is associated with an increase by a factor of 9 to 22 of the risk of venous thromboembolism [2]. The post-partum period is associated with a hypercoagulable state and an increased risk of thrombosis compared to the antepartum period. During the first 6 weeks postpartum, the risk is 20 to 80-fold higher [3, 4]. However, in the first week, the risk is 100-fold higher [3]. In addition to the enlarged gravid uterus and the prolonged bed rest, venous stasis is promoted by the increased concentration of coagulation factors VII, VIII, X, Von Willebrand factor and by a marked increase of fibrinogen [5]. However, at the expense of an increased risk of thromboembolism, the hypercoagulable state reduces the risk of hemorrhage during delivery and the postpartum period.

Clinical presentation of RVT varies by the rapidity of venous occlusion. It can be asymptomatic or occur insidiously with nonspecific signs in the case of chronic RVT. Acute RVT may be confused with acute renal colic. It usually presents with symptoms of renal infarction, including fever, flank pain, macroscopic hematuria, anemia, and proteinuria. It is important to know that if anticoagulation therapy is not initiated as soon as possible, this clinical situation can lead to rapid deterioration of renal function especially if thrombosis is bilateral or if it occurs on a single anatomical or functional kidney [6].

The most important step in the diagnostic workup of RVT is imaging tests. They play a fundamental role in the detection and management of patients with RVT. In the past, venography was used for the diagnosis of RVT. However, due to its invasive nature with a potential risk of causing de novo RVT due to venous injury, noninvasive diagnostic techniques have gained place [6]. The US offers the promise of being of value in establishing the diagnosis. It is a safe non-invasive technique and it is usually the initial examination performed in cases of clinically suspected RVT. In the acute phase of RVT, the ultrasound scan shows an enlarged kidney in approximately 90% of the patients [7], in addition to a loss of corticomedullary differentiation. Color Doppler US helps visualize the thrombus that may be seen as a filling defect within the renal vein, sometimes extending into the IVC. It often shows an absent venous flow along with reversed, flattened diastolic arterial flow [7]. In some cases, Color Doppler US may remain normal. Chronic venous occlusion will lead to the development of collateral veins near the ureters [8].

CT scan is currently the procedure of choice for the diagnosis of RVT, with a sensitivity and specificity approaching 100%. On CT images, acute RVT is diagnosed directly by visualizing the thrombus as a hypoattenuating filling defect within a widened

renal vein with or without extension into the IVC. Indirect signs of acute RVT include ipsilateral renal enlargement, delay, reduction, or absence of opacification of the collecting system, a persistent nephrogram due to poor venous drainage, delayed renal cortical enhancement with poorly defined corticomedullary differentiation, and thickening of the renal fascia [9]. In the chronic phase of RVT, CT images demonstrate “cobwebs” representing perirenal venous pathways developing in the perinephric space.

Magnetic resonance imaging (MRI) is a good alternative to CT angiography, especially to avoid exposure to radiation and the use of nephrotoxic iodinated contrast media. Its sensitivity and specificity for the diagnosis of RVT are similar to those of CT [10]. It gives high-contrast images of the kidneys, flowing blood, and vessel walls.

Anticoagulant therapy by Heparin is the treatment of choice. It should be initiated early to prevent the propagation of thrombus, leading to pulmonary embolism which is a life-threatening condition [6]. It should be relayed by oral anticoagulation after 3 to 10 days and must be taken long-term. Anticoagulation therapy aims to obtain an INR (international normalized ratio) in the range between 2 and 3 [6].

Learning Points

- The case presented illustrates acute post-partum renal vein thrombosis, a rarely observed post-partum condition.
- Practitioners should be well aware of the diagnosis with every patient expressing flank pain in the post-partum period.
- Imaging tests, particularly a CT scan with intravenous contrast remain the cornerstone of diagnosis and the post-therapeutic assessment.
- It is a life-threatening condition due to its risk of pulmonary embolism. Thus, anticoagulation therapy must be initiated as soon as possible.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

ACKNOWLEDGMENTS

- The authors do not have any sources of funding.

- The authors declare that they have no competing interests.

REFERENCES

1. Kumar, D. R., Hanlin, E., Glurich, I., Mazza, J. J., & Yale, S. H. (2010). Virchow's contribution to the understanding of thrombosis and cellular biology. *Clinical medicine & research*, 8(3-4), 168-72.
2. Sultan, A. A., West, J., Tata, L. J., Fleming, K. M., Nelson-Piercy, C., & Grainge, M. J. (2012). Risk of first venous thromboembolism in and around pregnancy: a population-based cohort study. *Br J Haematol*, 156, 366–73.
3. Heit, J. A., Kobbervig, C. E., James, A. H., Petterson, T. M., Bailey, K. R., & Melton III, L. J. (2005). Trends in the incidence of venous thromboembolism during pregnancy or postpartum: a 30-year population-based study. *Annals of internal medicine*, 143(10), 697-706.
4. Pomp, E. R., Lenselink, A. M., Rosendaal, F. R., & Doggen, C. J. M. (2008). Pregnancy, the postpartum period and prothrombotic defects: risk of venous thrombosis in the MEGA study. *Journal of Thrombosis and Haemostasis*, 6(4), 632-637.
5. Cohen, H., & Hannah O'Brien, P. (2015). Disorders of thrombosis and hemostasis in pregnancy: a guide to management. London: Springer-Verlag; pp. 81-104.
6. Asghar, M., Ahmed, K., Shah, S. S., Siddique, M. K., Dasgupta, P., & Khan, M. S. (2007). Renal vein thrombosis. *European journal of vascular and endovascular surgery*, 34(2), 217-223.
7. Al-Katib, S., Shetty, M., Jafri, S. M. A., & Jafri, S. Z. H. (2017). Radiologic assessment of native renal vasculature: a multimodality review. *Radiographics*, 37(1), 136-156.
8. Froment, J. C., Zergui, F., & Makhlof, M. B. (1983). Urographic signs of thrombosis of the inferior vena cava and renal veins. *Journal de Radiologie*, 64(12), 729-732.
9. Alvarez-Castells, A., Sebastia, C. C., & Quiroga, G. S. (2001). Computerized tomography angiography of renal vessels. *Arch Esp Urol*, 54, 603–615.
10. Zhang, L. J., Wu, X., Yang, G. F., Tang, C. X., Luo, S., Zhou, C. S., ... & Lu, G. M. (2013). Three-dimensional contrast-enhanced magnetic resonance venography for detection of renal vein thrombosis: comparison with multidetector CT venography. *Acta Radiologica*, 54(10), 1125-1131.

Cite This Article: Douaa Kamal, Ghizlane Lembarki, Othmane Jbara, Leila Noureddine, Mouna Sabiri, Mohamed Labied, Samia El Manjra, Samira Lezar, Fatima Essodegui (2023). Post-Partum Flank Pain: Think Renal Vein Thrombosis - Case Report. *EAS J Radiol Imaging Technol*, 5(1), 19-22.