



NEPHROLITHIASIS MASQUERADING AS RENAL THROMBUS IN A HYPERCOAGUABLE PATIENT

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KEYWORDS :

BACKGROUND

Nephrolithiasis originating from ureter or renal calculus with flank pain, radiating groin pain and hematuria, is often mistaken with renal vein thrombosis, especially in patients with history of Deep vein thrombosis and Pulmonary embolism; clinicians are easily misdiagnosed by clinical presentation and past medical history.

INTRODUCTION

Nephrolithiasis (NT) and Renal Vein Thrombosis (RVT) can both present with sudden onset severe flank pain, hypertension (HTN), and hematuria. As a result, the pathology can be misdiagnosed. While NT is the presence of crystalline stones (calculi) within the renal pelvis and tubular lumens that precipitates into the urine, RVT describes a condition in which a thrombus forms in the renal veins or its branches. Likewise, both conditions have similar risk factors including obesity, Type 2 diabetes mellitus (T2DM), and inadequate hydration. In fact, acute RVT most often presented from trauma, severe dehydration, and a generalized hypercoagulable state. A pulmonary embolus (PE) may be the only clinical clue indicating the presence of RVT or deep vein thrombosis (DVT) [1]. We present a case of an adult male patient with these risk factors and clinical presentation.

CASE PRESENTATION

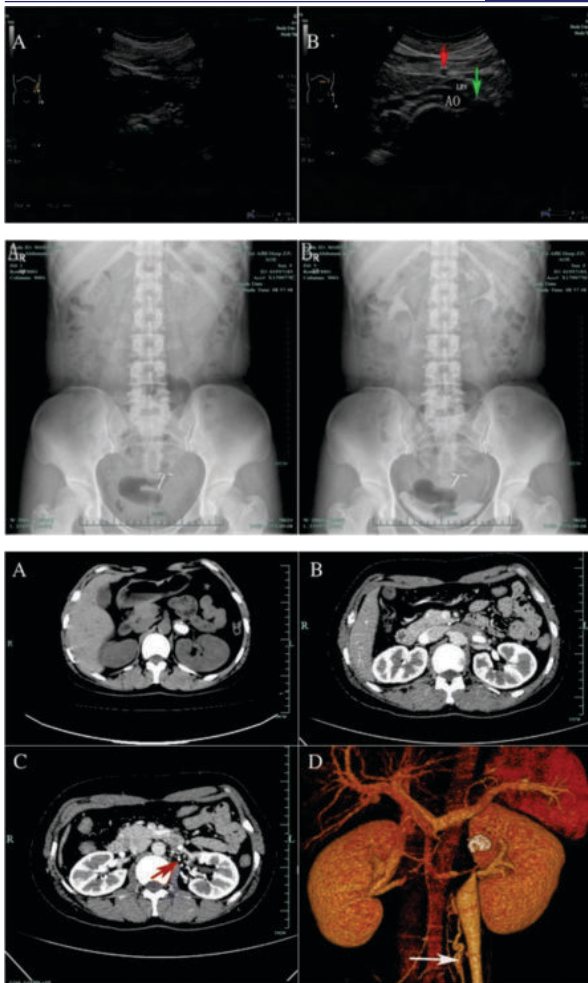
A 61-year-old male with a history of DVT of bilateral lower extremities and Pulmonary Embolism presented to the hospital with right-sided low back pain that awakened him at night. The patient describes the pain as sharp and shooting, radiating to his abdomen and down his right testicle. The patient denies any fever or dysuria but does experience some nausea and vomiting. He noted 2-3 days of dark colored urine. The patient also mentioned in the hospital 3 months ago, he had a right kidney stone. The patient has a past medical history of HTN, T2DM, hypercholesterolemia, history of phlebitis and thrombophlebitis, and left renal atrophy.

The patient had no history of kidney stones except 3 months ago and significant coronary artery disease in the family. The patient was a chronic smoker with a 32-pack year smoking history, drinking alcohol (8.3 standard drinks every other day), diet which consists mainly of fast and processed food, and little to no physical activity. The INR level was 1.0 (2.0-3.0). Given the patient's history of hypercoagulability, the patient is taking Coumadin 7.5mg daily, which he discontinued one week prior to this episode due to not refilling his prescription. The patient was sent to the emergency room (ER) immediately for further evaluation. Conventional Ultrasonography shows obstruction but Imaging studies with CT angiography did not demonstrate a RVT but revealed a right prox-mid 5mm ureteral stone. The patient was then referred to urology and underwent conservative treatment.

DISCUSSION

Renal Vein Thrombosis is the most frequent vascular abnormality seen in newborns. In most infants, RVT is bilateral and is accompanied by dehydration after massive

diarrhea or vomiting. RVT is rarely observed in healthy adults; in most affected adults, it is unilateral and may be accompanied in 15–20 % of patients by nephrotic syndrome. RVT is associated with abdominal surgery, including laparoscopic cholecystectomy, trauma, tumor invasion of the renal vein or invasion by primary retroperitoneal diseases. In this case, on initial evaluation there was a strong suspicion of RVT. This diagnosis was supported by the patient's history of DVT's, family and social history (i.e. smoking, alcohol, diet/exercise), and a known hypercoagulable state with subtherapeutic INR. This clinical picture instigated an immediate transfer to the ER for a prompt diagnosis. Despite all these clinical clues pointing to an RVT, the patient's final diagnosis was an NT. When examining the case from an outside perspective, flank pain that radiates to the groin is a big indication for Nephrolithiasis [2]. Having one kidney also increases the risk of kidney stones. This case highlights the challenges of differentiating between two clinical diagnoses that have similar clinical presentations. It emphasizes the importance of developing thorough differentials regardless of PMH and not be tunnel vision on one particular diagnosis without the process of exclusion. RVT is defined as thrombus formation in the main and/or branch renal veins. This may result in full or partial blockage of renal veins and, subsequently, to a series of pathological changes and clinical manifestations. Because it is non-invasive, can be done quickly, and has a high diagnostic accuracy, CT is currently the imaging method of choice for diagnosing RVT. CT scans are recommended as an initial diagnostic tool due to their high sensitivity (92 percent) and specificity (100 percent) in identifying these lesions [3]. On noncontrast CT scans, our findings indicated that a renal calcified RVT may resemble a ureter calculus; subsequent CT angiography was used to make the definitive diagnosis of a calcified RVT. RVT can be diagnosed with nearly 100% sensitivity using CT angiography [4]. The diagnostic accuracy of CT angiography is comparable to that of renal venography; however, CT angiography offers additional advantages due to its rapidity, low cost, and non-invasive nature for simultaneously evaluating the renal vasculature and identifying renal tumors and other pathologies. The use of nephrotoxic iodinated contrast media, a potential risk factor in patients with impaired renal function, and exposure to radiation are among the CT's drawbacks [5]. In the absence of specific diagnostic laboratory tests and the paucity of clinical manifestations, imaging remains the cornerstone of diagnosing RVT. The gold standard method for diagnosing RVT is selective renal venography, but this is not often performed because of the invasiveness of this procedure, including exposure to high levels of radiation, injection of iodinated contrast, and the potential risk of venous injury causing de novo RVT [6]. Imaging remains the primary method for diagnosing RVT despite the absence of specific diagnostic laboratory tests and clinical manifestations. Selective renal venography is the gold standard for diagnosing RVT; however, this procedure is rarely carried out due to its invasive nature, which includes radiation exposure, injection of iodinated contrast, and the possibility of venous injury resulting in de novo RVT [6].



CONCLUSION

This case shows that a calcified RVT might mimic a urinary calculus on conventional ultrasonography and ureteric calculus on noncontrast computed tomography. Subsequent computed tomography angiography reveal normal renal vein. Hence, it is suggested that the possibility of a RVT needs to be considered in the differential diagnosis whenever one detects an uncommon shape for a urinary calculus.

Consent

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

Competing Interests: The authors declare that they have no competing interests.

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