

Urothorax in a Patient with Familial Nephrolithiasis and Ectopic Kidney

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Article History:

Received: Jan 04, 2024
Accepted: Feb 12, 2024
Available Online: Mar 02, 2024

Declaration of conflicting interests:

The authors declare that there is no conflict of interest.

How to cite this case report:

Tayyab M, Shah SA, Taimur M, Naz S, Haleema, Ullah R. Urothorax in a Patient with Familial Nephrolithiasis and Ectopic Kidney. Pak J Chest Med. 2024;30(01): 136-139.

A B S T R A C T

Urothorax, or urine trapped inside the pleural space, is a rare cause of pleural effusion that is frequently linked to urinary trauma or obstructive uropathy. Urological symptoms frequently predominate, with respiratory symptoms not usually present. A strong index of suspicion is necessary for the diagnosis, and a pleural fluid creatinine-to-serum creatinine ratio of more than 1.0 is usually required for confirmation. Here we are putting forward a case study of a 32-year-old man who initially appeared to have either a malignant or parapneumonic pleural effusion due to his dry cough and dyspnoea. On the other hand, a thoracotomy showed pleural fluid that was compatible with urine, which was verified by lab testing.

Keywords: Urinothorax; Pleural Effusion; Obstructive Uropathy

Introduction

A rare cause of pleural effusion that is mostly described in case reports is urothorax. Patients with traumatic or obstructive uropathy usually experience it.¹ Through studies involving ureteral blockage in mongrel dogs, Corriere et al. first reported urothorax in 1968 and established a clear link between hydronephrosis and the development of pleural effusion.² Based on the underlying cause, there are two main forms of urothorax: traumatic urothorax, which arises from urinary tract damage, and obstructive urothorax, which results from obstructive uropathy.^{3,4} Urine leaking from urinary tract damage into the peritoneal cavity may pool in the pleural space, particularly on the ipsilateral side, via diaphragmatic pores or lymphatic connections. The intricate anatomical links between the peritoneal, pleural, and urinary compartments are highlighted by this phenomena.^{5,6} Pleural effusion is rarely caused by urothorax.⁷ We report a case of urothorax in a patient who had an ectopic kidney and familial nephrolithiasis.

Case Presentation

A male patient, age thirty-two, arrived at our department complaining of dyspnoea and chest pain that had gotten worse over the previous fifteen days. He had a history of 15 years ago, for a ureteric stone, a Double J Stent (DJS) implantation, and familial nephrolithiasis. The patient gave a rating of 3 out of 10 for substernal chest pain and did not report any accompanying symptoms such as a high fever, chills, cough, nausea, or diaphoresis. Vital signs revealed a 92% oxygen saturation level on room air

and an average respiration rate of 20 breaths per minute. Upon physical examination, both sides had reduced breath sounds, with the right lung field showing the most noticeable reduction. Imaging research revealed:

US chest and chest x-ray: pleural effusion on the right side Figure 1.

CT Chest: effusion on the right side Figure 2 CT KUB: Right-sided hydronephrosis, right blocking staghorn calculi in the proximal ureter, and left ectopic kidney with stone.

For renal and perinephric collection, a percutaneous nephrostomy tube was inserted. Deranged RFTs (urea 130 mmol/L, creatin 1.41 mg/dl), a complete blood count, and a comprehensive metabolic panel were all found to be within normal ranges in the laboratory. There were no anomalies on the electrocardiogram (EKG), and there was no detectable troponin level. He began taking antibiotics with a broad spectrum. Pleural Fluid R/E had an ADA Level 35 U/L, a fluid creatinine of 4.61 mg/dl, and a transudative neutrophilic nature. The cytology revealed no cancer cells. The creatinine ratio of pleural fluid to serum was 3.2, and urothorax was determined to be the cause. A pigtail catheter of a 12 French size was inserted for pleural effusion.

A strategy for percutaneous nephrolithotomy (PCNL) was developed after consulting with the urology department in order to treat the underlying genitourinary pathology that was causing the urothorax.

Discussion

A rare condition known as urothorax refers to the pee seeping into the pleural space and causing pleural

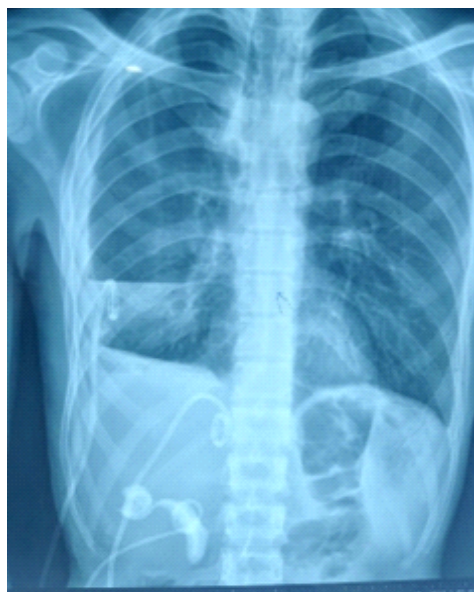


Figure 1. Chest Xray showing IPC and perinephric collection

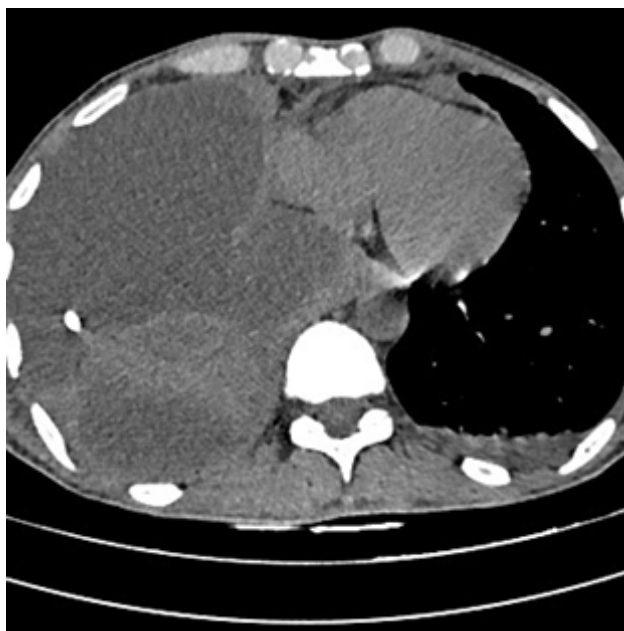


Figure 2. CT chest shows right-sided pleural effusion

effusion.⁸ Dyspnoea, chest pain, coughing, fever, abdominal pain, and decreased urine output are some of the clinical symptoms of urinothorax.⁸ One condition to distinguish between pulmonary consolidation, haemothorax, and chylothorax is urinothorax.⁹

The goal of treatment is to treat the genitourinary tract's underlying problem, whether or not the urinothorax needs to be drained. The prognosis varies according to the underlying cause, although early detection and treatment usually result in resolution before lung problems develop.⁹ The two primary types of urinothorax are traumatic uropathy and obstructive uropathy. Common causes of obstructive uropathy include renal cysts, malignancies,

kidney stones, retroperitoneal fibrosis, and congenital abnormalities. On the other hand, traumatic urinothorax is commonly caused by incidents such as bladder damage, extracorporeal shockwave lithotripsy, renal biopsy, ureteral procedures, ureteral surgery, blunt trauma to the kidneys, kidney transplantation, and ureteral surgery.¹⁰ Most of the time, a blocked kidney corresponds to a unilateral effusion. Bilateral or contralateral occurrences are extremely rare.¹¹

In our instance, the patient had a history of kidney stones in her family, had had a DJ stent placed for a ureteric stone 15 years prior, and had made an unsuccessful attempt to remove the stone 4 years prior.



Figure 3. Ectopic kidney with stone, right-sided hydronephrosis

Conclusion

Despite its rarity, urinothorax should be considered in patients who exhibit pleural effusions. This is particularly true if the patient has obstructive uropathy or has recently undergone abdominal surgery, as treating the underlying problem early on will help the patient's prognosis. Working together, urologists and pulmonologists can provide patients with comprehensive care for urothorax patients.

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