Case Report

Urinothorax: A Rare Cause of Pleural Effusion

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Abstract

Urinothorax is a rare cause of pleural effusion, and is typically the result of either obstructive uropathy or injury to the kidney or urinary tract either traumatic or iatrogenic. A case of moderate pleural effusion in a post-operative patient of percutaneous nephrolithotomy and cystolithotripsy is being reported here. The patient was referred back for surgical repair which resulted in resolution of the pleural effusion. **[Indian J Chest Dis Allied Sci 2018;60:37-38]**

Key words: Urinothorax, Pleural effusion, Cystolithotripsy, Percutaneous nephrolithotomy.

Introduction

Urinothorax is defined as the presence of urine in the pleural space.[1] It is a rare cause for pleural effusion that is typically classified as having either an obstructive or traumatic/iatrogenic aetiology.[2,3] Since its first description by Corrire *et al*[4] in 1968 in their studies on urethral obstruction in dogs, few cases were reported so far in Indian literature. It is believed that the urine moves retroperitoneally through the diaphragmatic lymphatics or defects in the diaphragm into the pleural space. Therefore, a concomitant ipsilateral or bilateral pleural effusion raises the suspicion of the urinothorax. Thoracocentesis followed by measurement of creatinine in the pleural fluid is a procedure to confirm the diagnosis.

Case Report

A 70-year-old male presented to a urologist with complaints of pain in abdomen, dysuria and fever. Ultrasonography of the abdomen revealed right-sided renal calculus with hydronephrosis and bladder calculi for which right percutaneous nephrolithotomy (PCNL) and cystolithotripsy was done. Chest radiograph (postero-anterior view) before the operation was normal. After five days, patient developed right-sided chest pain and breathlessness. Chest radiograph showed right-sided moderate pleural effusion (Figure 1). The patient was referred to us for further evaluation. In view of the right-sided pleural effusion following right PCNL and cystolithotrypsy, a diagnosis of urinothorax was suspected. Right-sided thoracentesis was performed that yielded a straw-coloured fluid with distinctive smell of urine. Pleural fluid analysis revealed: total protein 0.7 g/dL, high lactate dehydrogenase (LDH) 1563 U/L, glucose 0.14 mg/dL, adenosine deaminase (ADA) 22 U/L, and high creatinine of 7.5 mg/dL. No pathogenic organism was isolated on Gram's stain, acid-fast bacilli (AFB) smear was negative and cytology was negative for malignancy. Routine haematological and biochemical investigations were normal with a serum creatinine equal to 1.2 mg/dL.

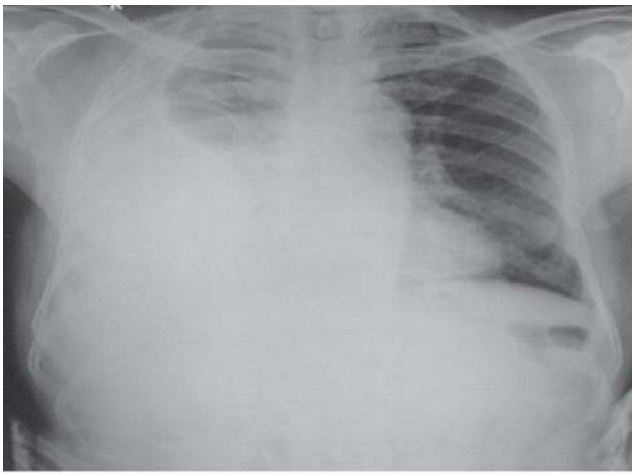

Figure 1. Chest radiograph (postero-anterior view) after right percutaneous nephrolithotomy and cystolithotripsy showing right-sided pleural effusion.

As the pleural fluid creatinine was higher (7.54 mg/dL) than the serum creatinine (1.2 mg/dL), a diagnosis of urinothorax was confirmed. The patient was referred back for surgical repair which resulted in resolution of the pleural effusion (Figure 2).

Discussion

Urinothorax is clearly an uncommon cause of pleural effusion. Usually the pleural effusion is ipsilateral to

[Received: October 3, 2017; accepted: December 6, 2017]

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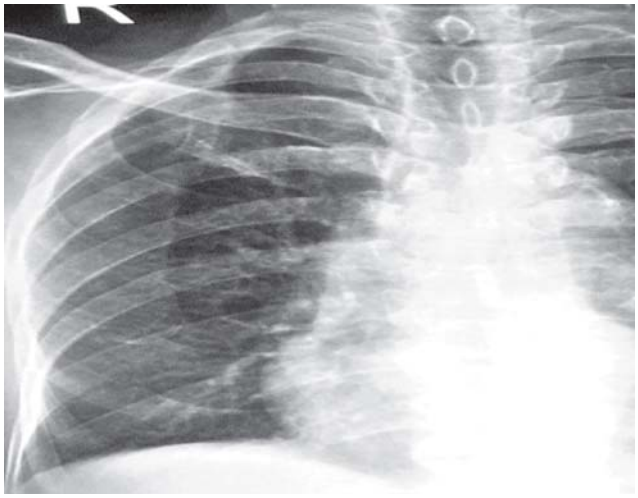

Figure 2. Chest radiograph (post surgical repair) showing resolution of the right-sided pleural effusion.

the side where urinary obstruction is present or towards the side of the injury to the urinary tract. Bilateral cases are rare. A history of obstructive renal or bladder disease or trauma or injury to the kidney or urinary tract should increase the suspicion of urinothorax. Confirmation of the diagnosis can be done with simultaneous measurements of the pleural fluid and serum creatinine levels in a suspected case of urinothorax. A fluid : serum creatinine ratio of >1 is an indicator of urinothorax.[5,6] In our case, history of right side PCNL and cystolithotripsy gave a suspicion of urinothorax. High pleural fluid : serum creatinine ratio (6.28) along with low ADA, high LDH and low protein confirmed the diagnosis of urinothorax in our case. Treatment of the primary cause to relieve obstructive uropathy or surgical repair of the urinary tract usually results in the resolution of pleural effusion, aggressive chest tube drainage of voluminous effusion is rarely required.

The physician should include urinothorax in the differential diagnosis of pleural effusion, especially in the patient who underwent a kidney or ureteral surgical procedures, such as PCNL or cystolithotripsy.

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