



## Case Report

## Urinothorax Secondary to Bilateral Rupture of the Ureters: An Unusual Case of Pleural Exudate


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88-Year-old man, with a history of prostatic hyperplasia who had abandoned treatment, consulted for dyspnea, dry cough and right pleuritic chest pain in the last 3 days, as well as decreased diuresis. At the initial evaluation he was stable, with blood pressure 133/83, 95 bpm, 37 °C and SaO<sub>2</sub> 93%, without breath sounds in the right lung and a suprapubic mass painful on palpation.

Chest X-ray revealed a right unilateral moderate pleural effusion. Blood test showed impaired kidney function and increased acute phase reactants (creatinine: 3.16 mg/dL; C-reactive protein: 152 mg/L).

A thoracentesis was performed obtaining a yellowish pleural fluid. Its analysis showed a mononuclear exudate: glucose 149 mg/dL; total protein 3.6 g/dL; albumin 2.5 g/dL; LDH 286 IU/L, pH 7.35; pleural fluid/serum protein ratio 0.6; pleural fluid/serum LDH ratio 1.56. A 1500 ml chest drain was also performed improving the symptoms, although only partially. CT revealed a still large right pleural effusion with no evidence of underlying pulmonary or diaphragmatic pathology. Likewise, a bladder balloon and a rupture of both ureters with contrast extravasation and formation of urinomas bilaterally, greater on the right, were evidenced, with discreet hyper-uptake of both ureters in relation to urethritis, as well as a notable increase in prostate size (Fig. 1).

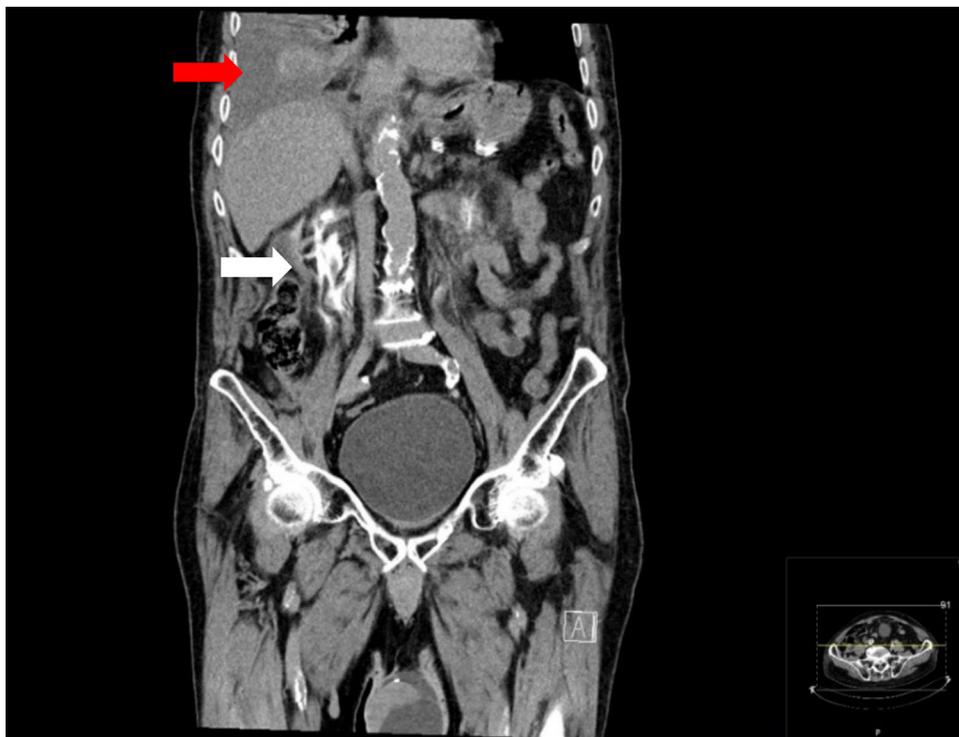
Bladder catheterization demonstrated significant urinary retention. A second thoracentesis was performed to extend the analysis after the radiological findings. The pleural fluid obtained showed creatinine 3.17 mg/dL, urea 155 mg/dL, pleural fluid/serum creatinine ratio >1, confirming urinothorax. Culture and cytology of the pleural fluid were negative. A percutaneous nephrostomy

was initially proposed but was not possible since no significant hydronephrosis was identified by ultrasound after bladder catheterization. Conservative management was adopted with favorable evolution. A control CT was performed without evidence of ureteral damage or urinomas, with persistence of minimal pleural effusion. Treatment for prostatic hyperplasia with an alpha-blocker was reinstated and prostatic surgery was proposed to the patient at discharge.

Urinothorax is a rare presentation of pleural effusion, until a 2017 review only 88 cases had been registered.<sup>1</sup> Respiratory symptoms are non-specific and depending on the cause, which is usually traumatic or obstructive on the urinary tract, abdominal pain or urinary symptoms may appear.<sup>1–3</sup> Among the obstructive causes, prostate pathology is the most frequent, although lithiasis or malignancy have been described.<sup>1,2</sup> Other etiologies are surgery and gynecological pathology.<sup>2</sup> It is usually ipsilateral to urinary injury<sup>1–3</sup> and urine migration toward the pleura is often through lymphatic drainage or diaphragmatic permeability.<sup>1–3</sup> The diagnosis is established by a pleural fluid similar to urine with pleural/plasma creatinine ratio >1.<sup>1–3</sup> pH use to be <7.40 but in the presence of hematuria or infections may become alkaline.<sup>1,2</sup> It is typically a transudate,<sup>1–3</sup> but there are cases of exudate<sup>4,5</sup> due to high LDH concentrations after cell disruption.<sup>1–3</sup> Over time it becomes similar to serum, so early suspicion is necessary to increase diagnostic sensitivity.<sup>3</sup> Treatment consists of relieving respiratory symptoms, where chest drainage can be helpful but is often insufficient, and management of the underlying cause.<sup>1,2</sup>

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**Fig. 1.** Right pleural effusion (red arrow), contrast extravasation related to rupture of both ureters and formation of the two urinomas, the right one being more evident (white arrow); bladder balloon.

### Conflict of Interests

The authors state that they have no conflict of interests.

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