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Acute Dyspnea in a Young Woman Following Percutaneous Nephrostomy Tube Placement

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Case Description

A previously healthy 16-year-old woman was admitted to hospital for fever and dysuria for 1 day, and worsening of intermittent pain in the left costovertebral area and left lower quadrant of abdomen for the last 3 days.

The patient denied urinary frequency, urgency, nausea, or vomiting. There was no history or family history of kidney stones.

On physical examination, the patient was noted to be an overweight adolescent with Tmax 102.9 F and mild left costovertebral angle tenderness noted on abdomen examination.

Laboratory results showed a white blood cell count of 12,700 cells/μl, erythrocyte sedimentation rate of 67 mm/hr, C-reactive protein level >18 mg/dl, and serum creatinine of 1 mg/dl.

Urinalysis demonstrated moderate ketones and leukocyte esterase, negative nitrites, numerous white blood cells, and 1+ bacteria. Blood and urine cultures were negative throughout hospital stay. Computed tomography scan of abdomen and pelvis (Figure 1A) revealed a wedge-shaped reduction in contrast enhancement consistent with pyelonephritis, and a 6 mm stone obstructing the upper pole, left-collecting system. Intravenous ceftriaxone was administered for pyelonephritis, and the placement of percutaneous left nephrostomy tube drainage was done.

The patient was diagnosed with a urinothorax, which is defined as an accumulation of urine in the pleural space, and can be diagnosed by pleural fluid assessment and imaging. The pleural effusion in a urinothorax is straw colored, transudative, and has a urine odor. The pleural fluid to serum creatinine ratio is >1.0, with elevated pleural fluid lactate dehydrogenase. The fluid pH can be either acid or alkaline (1,2).

A urinothorax is usually secondary to obstructive uropathy and post renal and ureteral intervention procedures (3). It can also be seen after blunt kidney trauma, kidney biopsy, kidney transplantation, extracorporeal shortwave lithotripsy, or bladder laceration (3,4). It is a reversible condition once the underlying disease process is resolved. However, at times, interventions may be required, including thoracotomy and pleural decortication (5).

Management consists of treating the underlying uropathy and draining the pleural fluid *via* thoracocentesis. The urinothorax resolved completely in our patient after chest tube drainage and the misplaced nephrostomy tube was replaced with a new one, appropriately positioned in the collecting system.

Teaching Points

- A urinothorax should be suspected when patients develop dyspnea, chest pain, and unilateral pleural effusion after having kidney or ureteral surgical procedures or with obstructive uropathy.
- The diagnosis can be made with a pleural fluid to serum creatinine ratio >1.0 and an elevated pleural fluid lactate dehydrogenase.
- Early diagnosis and management will improve the patient's outcome.

Disclosures

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Informed consent was obtained from the patient.

Author Contributions

E. Khin conceptualized the study; E. Khin and I. Moreno wrote the original draft; I. Moreno was responsible for the resources; and all authors reviewed and edited the manuscript.

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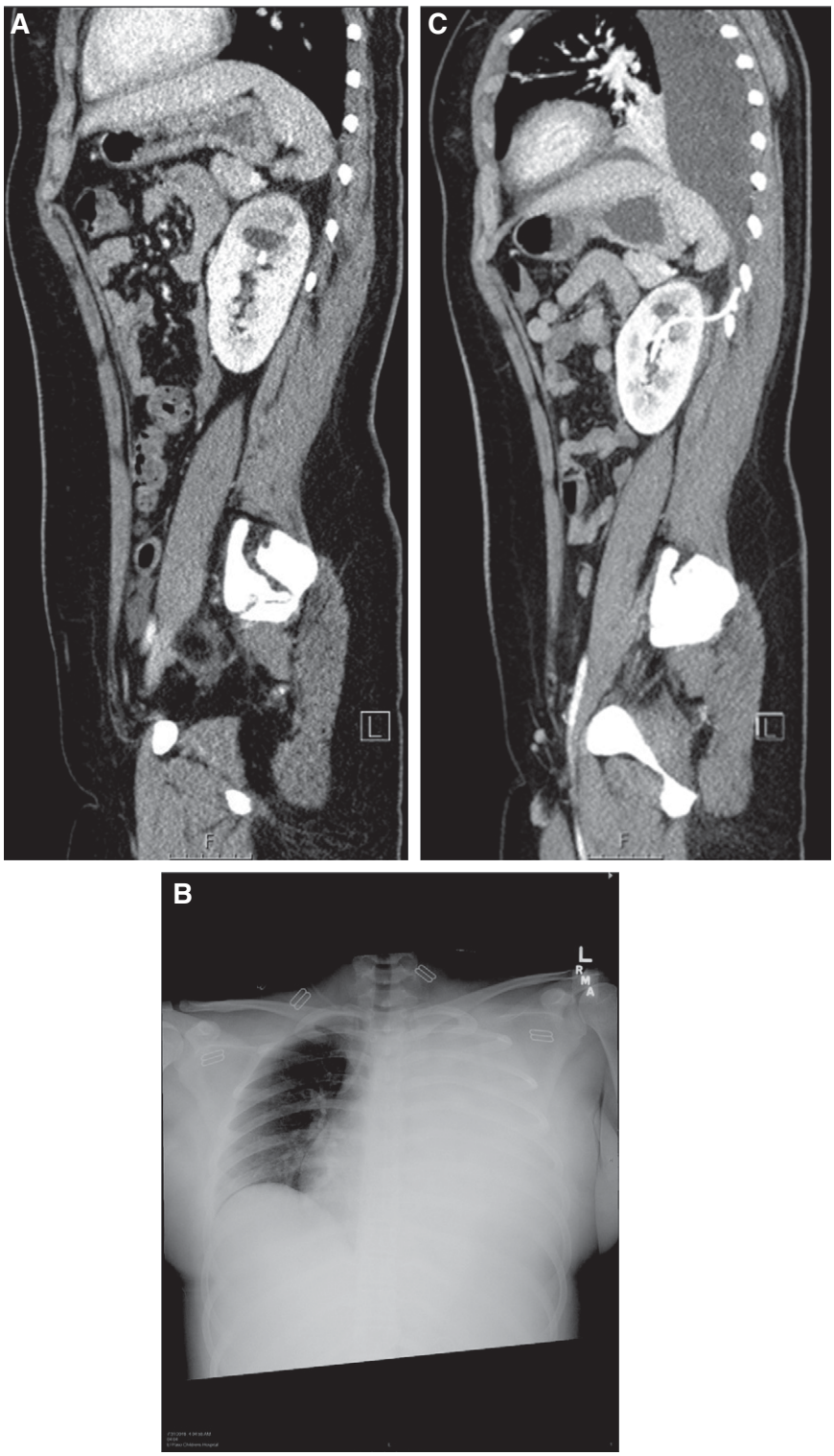

Figure 1. | **Computed tomography (CT) scan of abdomen and pelvis.** A CT scan of the abdomen and pelvis demonstrates a stone in the left upper pole of the kidney with associated pyelonephritis (A). On postoperation day 4, after left nephrostomy tube placement, the patient developed shortness of breath and her left chest pain increased in intensity to 10 out of 10, with dullness on percussion. (B) Chest roentgenogram (x-ray) demonstrates a large left pleural effusion on postoperation day 4. Ultrasound guided diagnostic pleurocentesis and left chest tube placement were done. The pleural fluid creatinine was 6.8 mg/dl and pleural fluid to serum creatinine ratio was 6.8, with pleural fluid lactate dehydrogenase of 316 IU/L. (C) CT scan of the abdomen and pelvis shows a percutaneous nephrostomy tube in the upper pole of the left kidney that is communicating with the pleural space with an associated pleural effusion.

References

1. Jain S, Jain D, Singh AK, Jain VK: An unusual presentation in urinothorax. *Indian J Chest Dis Allied Sci* 58: 195–197, 2016
2. Austin A, Jogani SN, Brasher PB, Argula RG, Huggins JT, Chopra A: The urinothorax: A comprehensive review with case series. *Am J Med Sci* 354: 44–53, 2017 https://doi.org/10.1016/j.amjms.2017.03.034
3. Garcia-Pachon E, Padilla-Navas I: Urinothorax: Case report and review of the literature with emphasis on biochemical diagnosis. *Respiration* 71: 533–536, 2004 https://doi.org/10.1159/000080642
4. Salcedo JR: Urinothorax: Report of 4 cases and review of the literature. *J Urol* 135: 805–808, 1986 https://doi.org/10.1016/S0022-5347(17)45862-9
5. Bahjat AS, Sadeeq KJ, Tahir AMS, Mohammed AA: Urinothorax causing massive left side pleural effusion in a young lady; case report and literature review. *Urol Case Rep* 26: 100957, 2019

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