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Urinothorax: An Uncommon Cause of Pleural Effusion: A Case Report

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Abstract **Case Report**

A rare cause of pleural effusion is the presence of urine in the pleural space (urinothorax). We report here the case of a urinothorax subsequent to a double J catheter placement. Biochemical analysis of the pleural fluid was highly suggestive. Treatment based on therapeutic thoracentesis and treatment of the underlying uropathy resulted in resolution. Being a rare diagnosis it should always be considered when a pleural effusion appears after a urological procedure. More research is still needed to establish specific diagnosis criterias.

Keywords: Pleural effusion; Urinothorax; Thoracentesis; Creatinine ratio; Rare cause of pleural effusion.

INTRODUCTION

Urinothorax is an infrequent but notable cause of pleural effusion. It involves the accumulation of urine in the pleural cavity, and its biochemical features often indicate a sterile transudate. The underlying mechanism for this condition is typically either obstructive or traumatic damage to the urinary tract [1]. We would like to present a case of sterile transudative pleurisy that occurred in the context of double J catheter placement and acute obstructive renal failure. This case highlights the importance of closely monitoring patients who have undergone such procedures, as they may be at risk for developing this rare complication. It is important to note that timely diagnosis and treatment are crucial in managing urinothorax, and medical professionals should remain vigilant for any signs or symptoms that may indicate its presence. With appropriate care, patients can typically recover fully.

CASE REPORT

A 75-year-old male with a history of obstructive acute kidney failure and double J stent placement complained of shortness of breath. He was afebrile and normotensive at 133/98 mmHg but tachycardic at 105 bpm, with a breathing cycle of 23 breaths per minute and oxygen saturation of 95% on room air. Physical exam revealed dullnes, decreased breath sounds and fremitus on the right chest area. Dullness on abdomen was also find.

A chest X-ray following the urological procedure revealed a large right pleural effusion and a double J stent placement projected over the kidney area. A urological CT showed perirenal effusion, a large pleural effusion with atelectasis, and a suspicion of diaphragmatic breach. Thoracentesis with pleural fluid analysis found urine-smelling liquid, with pleural proteins at 5.9 g/L, LDH at 65 UI/L, pleural creatinine at 115 mg/dl, and serum creatinine at 41.4 mg/dl, with a ratio approximating 2.77. Cytology found 920,000 predominantly lymphocyte leukocytes, and microbiology was sterile.

The diagnosis of urinothorax was retained in front of the urine-smelling liquid, the elevated creatinine ratio and the transudative sterile parameters. Large therapeutic thoracentesis was performed, and dyspnea subsided, with significant improvement shown on a follow-up chest X-ray.

Figure 1: Chest X ray after double J stent placement

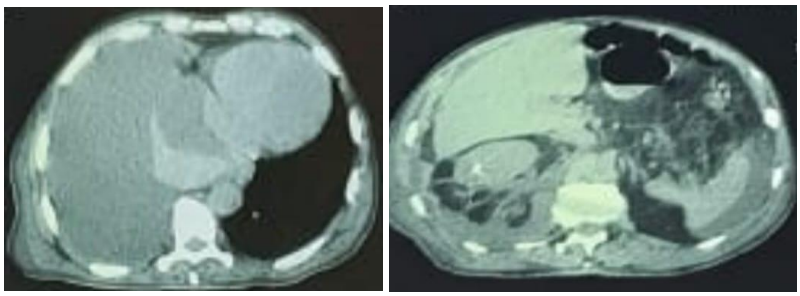

Figure 2: CT showing large pleural effusion and perirenal effusion

DISCUSSION

Urinothorax remains a rare cause of pleural effusions, its incidence is likely underreported. Dyspnea, chest pain, abdominal pain, and decreased urine output are common symptoms [2]. On a chest X-ray, a pleural effusion is observed typically ipsilateral to the side of uropathy. Diagnosis of urinothorax is made by thoracentesis, which would first reveal as in our case fluid with a urine-like odor, and pleural fluid analysis, which would show a transudative liquid with if pH is measured lower than 7.30. Pleural fluid to serum creatine ratio of more than 1 is considered diagnostic for this condition [3,4].

The related pleural effusion should be drained, and the underlying uropathy may also need to be treated, in order to treat urinothorax. Results for patients who receive both chest drainage and uropathy treatment seem to be better than those for people who just receive thoracic drainage [5]. In our patient, both drainage of the pleural fluid and treatment of the underlying urinary obstruction were performed with full resolution.

CONCLUSION

Urinothorax is uncommon and likely an underdiagnosed condition. It is important to consider the possibility of urinothorax in the context of recent urological pathology or procedures. The pleural fluid to serum ratio of creatinine is highly suggestive. The simultaneous near-complete regression of the pleural effusion and normalization of urinary parameters following intervention on the subdiaphragmatic abnormality (urinoma or hydronephrosis) and the pleural effusion, usually confirms the diagnosis.

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