How Urinalysis Improves Timely Diagnosis and Treatment of New Onset DVT in the Emergency Room

Hypercoagulability in nephrotic syndromes is a well-reported sequelae, and delays in treatment increase risk for mortality and morbidity. Urinalysis (UA) should be considered as part of the evaluation of deep vein thrombosis (DVT) in patients with unclear etiology in the emergency room to consider renal causes of hypercoagulable states.

A 40-year old female went to the emergency department for shortness of breath and a left lower extremity pain that radiated up her left thigh. Her symptoms began 1-day prior and was associated with arthralgia, joint swelling, and was exacerbated by walking. Physical exam was unremarkable except for swelling and tenderness in the left lower extremity. Labs showed an acute kidney injury (AKI), creatinine (Cr) of 2.68 mg/dL, preventing her from undergoing pulmonary computerized tomography angiography. She was diagnosed with a DVT and discharged on Apixaban. Follow-up with outpatient nephrology revealed a history of cutaneous Lupus that was antinuclear antibody negative, 10-lb weight gain, edema, anasarca, and cloudy urine. The patient denied nonsteroidal anti-inflammatory medications, alcohol, smoking, or drug use. Patient underwent workup including a renal panel that showed elevated Cr 2.72 mg/dL, albumin 2.2 g/dL; UA that showed 4+ protein and 1+ blood, spot urine protein:creatinine ratio of 6.99, and a 24-hr urine of 39 grams protein/day. Serology was unremarkable. Renal biopsy was pursued but delayed due to required hospitalization from the recent DVT and anticoagulation. Biopsy revealed diffuse foot process effacement and acute tubular necrosis, and the patient was diagnosed with minimal change disease. Patient was given 3 doses of IV Methylprednisolone 500 mg then Prednisone 60 mg daily and Torsemide over 3 months. The patient's AKI, edema, anasarca, and nephrotic syndrome improved with the treatment course: Cr 1.24 mg/dL, urine protein:creatinine ratio improved to 1.9, and albumin 3.8 g/dL.

This case exemplifies the significance of timely evaluation to prevent diagnostic and therapeutic delay and the importance of broad differential diagnoses. Early recognition of nephrotic syndromes improves prompt diagnosis and treatment to prevent potentially life-threatening complications, such as hypercoagulable states.

Particularly in the setting of DVT with unclear etiology, a urinalysis in the initial assessment would have potentially altered the treatment course timeline to work up the patient for nephrotic syndrome. If the UA was performed, the patient could have been immediately admitted and initiated on IV heparin to obtain a renal biopsy. DVTs are a critical and serious complication of nephrotic syndrome such that Acetylsalicylic acid is begun empirically even in the absence of DVTs. Placing the patient on Apixaban led to delayed diagnostic evaluation of the renal biopsy and therapy with corticosteroids. Urinalysis is a low-cost, effective diagnostic tool for timely diagnostic and therapeutic of DVTs with unknown etiology.

Cover sheet

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