Acute Interstitial Nephritis in the setting of Volume Overload. A Rash Diagnosis?

Witt, Lucy MD MPH; Liles Jr., E. Allen MD; Stephens, John R MD
Internal Medicine Residency Program
University of North Carolina School of Medicine. Chapel Hill, North Carolina

Objectives:
1. Identify common medications that can cause acute interstitial nephritis.
2. Recognize sulfa-containing drugs that are not antibiotics.

Case: A 49 year-old man presented with shortness of breath and worsening rash. He had been discharged from the hospital four days earlier after a nine day admission for cellulitis and heart failure. During that admission he had been diagnosed with acute interstitial nephritis thought to be secondary to vancomycin and had developed a pruritic rash. He was discharged on oral prednisone and furosemide. His dyspnea progressed to occur with any activity. His diffuse rash became more pruritic and red.

Objective Findings:
Pulse was 153. Bibasilar crackles were present. Heart was irregularly irregular. He had diffuse, maculo-papular rash with desquamation, worst on lower extremities, along with 3+ pitting edema to the knee.

Labs: Creatinine 3.48 (2.47 four days prior)
WBC 14, 42% eosinophils
Urinalysis: WBC and hematuria

Clinical Course:
The patient was treated for atrial fibrillation with metoprolol and amiodarone. He was diuresed using IV furosemide. His rash continued to be intensely pruritic and spread to his scalp. The patient’s creatinine increased, and he developed worsened peripheral eosinophilia of 42%. On the second day of admission, furosemide was discontinue and ethacrynic acid was initiated for ongoing diuresis. Subsequently, the patient’s creatinine fell to 2.7 on discharge from a high of 3.48, and his eosinophil percentage was zero four days after admission. His rash improved significantly. He was discharged on oral steroids with a diagnosis of interstitial nephritis due to furosemide.

Discussion:
• All loop diuretics, with the exception of ethacrynic acid, are sulfonamides. (Fig 1) Allergic skin eruptions are common in those allergic to these drugs, but acute interstitial nephritis is rare.¹
• Exfoliative erythroderma is associated with sulfonamide allergy reaction, and is distinguishable from chronic dermatitis by the predominance of eosinophils.²
• Vancomycin and sulfonamide antibiotics are known to cause acute interstitial nephritis, therefore it is not surprising that this was the first drug thought to be causing his rash. A closer examination of his history indicated that the rash had started before the patient was started on vancomycin.
• It is important for the general internist to remember that all loop diuretics, except ethacrynic acid, are sulfa-containing and therefore carry allergic risks.

Common Drugs Causing Interstitial Nephritis
- Proton Pump Inhibitors
- NSAIDs
- Penicillins and Cephalosporins
- Sulfa antibiotics
- Loop and Thiazide diuretics

References