

CJASN

Clinical Journal of the American Society of Nephrology

December 2016 • Vol. 11 • No. 12

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On the Cover

A 68 year old man presented with relapsed chronic lymphocytic leukemia and presumed pneumocystis pneumonia. He was treated with high dose IV trimethoprim-sulfamethoxazole. Serum creatinine had been 1.0 mg/dl for the first 5 days and then suddenly increased to 2.2 mg/dl on day 6 with associated oliguria. Renal ultrasound showed no abnormality. Urinalysis revealed a pH of 6.0, and the urine sediment showed pleomorphic sulfamethoxazole crystals with no red or white blood cells (top half of image). Sulfamethoxazole in high doses and in concentrated urine usually forms crystals that are needle or dumbbell shaped. However, in this case, urine microscopy showed birefringent crystalluria on polarized microscopy (lower half of image) with rhomboid and rectangular crystals and some which formed rosettes. The crystals are those of N-acetyl sulfamethoxazole, the primary urinary metabolite of sulfamethoxazole. Treatment includes drug discontinuation and IV fluids – urine alkalinization is recommend to improve drug solubility. After drug discontinuation and infusion of normal saline, his oliguria resolved and creatinine returned to baseline in 3 days. (Cover image and text provided by Kavita Wei, MD and Derek Michael Fine, MD, Johns Hopkins University, Baltimore, MD)