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On the Cover

What's the diagnosis? The patient presented with multiple small and large renal calculi which occupied the majority of the renal collecting system (cover image). Based on stone size and the potential for renal damage, treatment was recommended. The density of the stones on computed tomography (CT) scan was < 400 Hounsfield units, consistent with uric acid composition. A 4 mm stone which the patient previously passed per urethra was analyzed by infrared spectroscopy and confirmed the diagnosis of 100% uric acid composition. First-line therapy for an asymptomatic uric acid stone that requires treatment is alkalinization of the urine to dissolve the stone as the solubility of uric acid in urine increases with increasing urine pH – if this fails, endourologic management is often considered if the stone burden is large. Common medications used for dissolution of uric acid calculi include sodium bicarbonate and potassium citrate. For this particular patient, potassium citrate 30 mEq three times per day was prescribed (total of 90 mEq daily). A follow-up CT scan 6 months later demonstrated complete dissolution of the stone burden but there was a question as to whether the patient has a left ureteropelvic junction obstruction versus extra-renal pelvis (image below). Diuretic renography was performed to evaluate for obstruction and the results showed no evidence of ureteropelvic junction obstruction, thus this was an extra-renal pelvis, which can be found in ~5% of the population. The patient is now on a maintenance prophylactic dose of potassium citrate 10 mEq po three times per day and has been stone free for 1 year on this regimen. (*Images and text provided by Brian Eisner, Massachusetts General Hospital, Harvard Medical School*)

