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The Elusive Renal Cell Carcinoma: Reversal Imaging of Arterial Phase to Improve Acuity

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On routine physical examination the patient's physician noted microscopic hematuria The finding was reconfirmed by 2 Dipsticks over an interval of 4 months. The patient was a known diabetic, controlled by diet. Otherwise the patient was asymptomatic, without significant past medical history at the time of this work-up, the 47 year old Caucasian male appeared to be in good general health. Laboratory data showed Hb of 15.1gm/dL, HCT 45%, RBC 4.8 million/uL, WBC 6200,Neu 62%, BUN 18 mg/dL, Creatinine 1.1 mg/dl, GRF 94 mL/min, A/G ratio 1.4, Glu 128 mg/dl, K 4.2 mmoL/L, Na 145 MMOL/L Cl 108 mmoL/L Urine analysis, spec grav 1018, 3-5 RBC/hpf, no WBC or bacteria on hpf, no casts, urine culture negative x 2. A KUB (Flat plate of abdomen) showed no opaque calculi nor other abnormalities. Cystoscopy and blue light cystoscopy revealed no abnormalities.

An enhanced 4 phase MDCT was performed The pre-enhancement phase was entirely unremarkable; no parenchymal lesions were detected. Following administration of 100 ml non-ionic contrast medium at a flow rate of 5 mL/sec, the 12 second delayed arterial phase Ct demonstrated a relatively poorly enhancing 1.6 cm mass at the cortico-medullary junction (Figure-1), the lesion is much better shown on reversal image. Both the parenchymal phase CT(50 second delay) and the excretory phase CT (4 minutes delay Figure-2) demonstrate a non-enhancing 16 mm mass at the cortico-medullary junction (Figure-3).

In the light of a clinical history of diabetes and microscopic hematuria, the non-enhancing hypovascular mass seen on parenchymal and excretory phase CTs in the medulla might have been written off as Medullary Necrosis (With characteristic CT findings of a negative pre-enhancement phase CT, but a non-enhancing lesion shown on parenchymal and excretory phase; an early avascular necrosis) (1). However, the reversal image of the arterial phase CT clearly shows an enhancing lesion, though somewhat hypovascular for a RCC. The hypo-density on parenchymal and excretory phase CT reflects the characteristic "wash-out" phenomenon of RCCs in these phases. The tumor having no tubules is less dense then adjacent normal parenchyma The correct diagnosis was made, and a laparoscopic resection carried out.

Figure 1 *- Massive gas in the bladder, dissecting in the submucosal layer and extending into the space of Retzius.*

Figure 2 *- lateral extension of the gas-dissection in the pre-vesical space.*

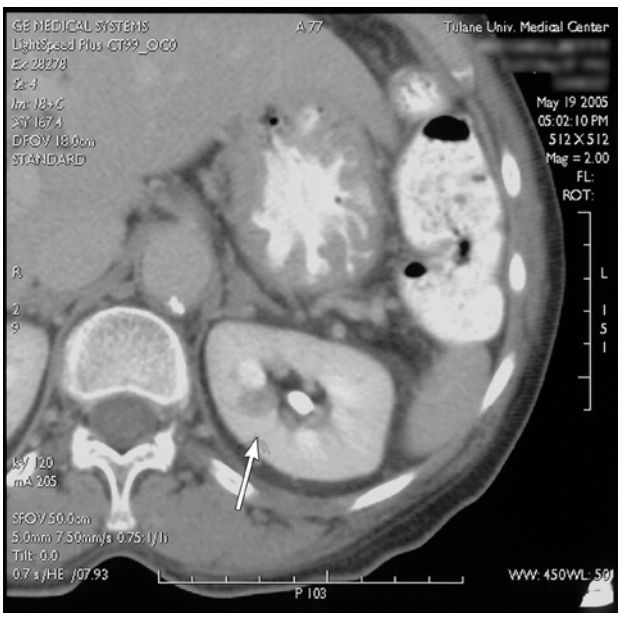

Figure 3 *- gas dissecting into the ureter.*

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