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RIGHT FLANK PAIN: A CASE REPORT OF AN INTERESTING SONOGRAPHIC FINDING

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□ **Abstract—Background: Focused bedside ultrasound is a screening tool frequently used by emergency physicians to evaluate hepatobiliary and renal pathology in patients presenting with abdominal complaints in the emergency department (ED). Objective: This case report describes a sonographic finding that was interpreted as free fluid in the right upper quadrant. Computed tomography (CT) was used to confirm the diagnosis. Case Report: A 44-year-old man presented to the ED with the sudden onset of right-sided abdominal pain and exhibited right costovertebral angle tenderness on physical examination. Focused bedside ultrasound of the right upper quadrant revealed severe hydronephrosis of the right kidney and free fluid of either subcapsular, perinephric, or peritoneal location represented by an anechoic stripe in Morison's pouch. On CT evaluation, this patient was found to have perinephric fluid accumulation from a presumed ruptured renal calyx in the setting of chronic ureteropelvic junction obstruction with severe hydronephrosis. Conclusion: The exact location of anechoic fluid in the abdomen is not always apparent on bedside ultrasound. To minimize misinterpreting focused bedside ultrasound examination findings, we recommend a number of sonographic techniques to identify possible mimics of free fluid. Suspected free fluid findings on bedside ultrasound should always be evaluated within the clinical context of the patient's presentation.** © **2012 Elsevier Inc.**

□ **Keywords—renal calyceal rupture; perinephric; Morison's pouch; ultrasound; free fluid; false-positive; focused assessment of sonography in trauma; ureteropelvic junction obstruction; hydronephrosis; emergency department; right upper quadrant**

INTRODUCTION

Focused bedside ultrasound of the right upper quadrant (RUQ) is a screening tool frequently used by emergency physicians to evaluate hepatobiliary and renal pathology in patients presenting with abdominal complaints in the emergency department (ED). Within the RUQ, the potential hepatorenal space known as Morison's pouch is often evaluated first during a focused assessment of sonography in trauma (FAST) examination. Morison's pouch is the most dependent area for fluid collection in the supramesocolic region. However, due to the large number of potential mimics of free fluid in Morison's pouch, including fluid-containing structures, vessels, and physiologic or inflammatory fluid, the exact location of anechoic fluid visualized on bedside ultrasound is not always apparent. This case report describes a false-positive presentation of free fluid in Morison's pouch due to an underlying genitourinary etiology rarely seen in the ED.

CASE REPORT

A 44-year-old man with a past medical history of "spastic colon" presented to the ED with the sudden onset of severe right-sided abdominal pain. The episode was maximal at

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onset, 45 min in duration, and resolved in the ED. The patient described the pain as sharp, non-radiating, and accompanied by nausea and one episode of vomiting. He had similar episodes in the past but they were never as severe, and led to his prior diagnosis of "spastic colon." On review of systems, the patient denied fevers, chills, testicular pain, penile discharge, hematuria, dysuria, or change in bowel habits. Physical examination revealed a blood pressure of 112/68 mm Hg, heart rate of 58 beats/min, respiratory rate of 16 breaths/min, and temperature of 36.5°C (98.0°F). The patient was well appearing and in no acute distress. The abdomen was soft and tender to deep palpation on the right side. There was no rebound or guarding. There was right-sided costovertebral angle tenderness. The genitourinary examination was otherwise unremarkable.

Laboratory analysis was significant for a creatinine of 1.4 mg/dL (normal 0.66–1.25) and a white blood cell count of 12.9 K/μL (normal 4.5–10.8). The patient was unable to provide a urine specimen initially. A focused bedside ultrasound was performed of the RUQ.

Ultrasound of the right kidney was interpreted as severe hydronephrosis with free fluid. It was unclear whether the fluid was subcapsular, perinephric, or peritoneal in location (Figures 1, 2, 3).

On repeat examination of the abdomen, the patient continued to demonstrate no peritoneal signs and he remained hemodynamically stable. A computed tomography (CT) scan of the abdomen and pelvis without contrast was performed. CT confirmed severe hydronephrosis of the right kidney, with dilatation of all renal calyces and pelvis, thinning of the right renal cortex, and abrupt change in the caliber of the renal collecting system at the ureteropelvic junction (UPJ). No intrarenal or ureteral stone was visualized. This degree of thinning of the renal parenchyma around the calyces was consistent with chronic UPJ obstruction. A moderate amount of perinephric fluid was seen around the right kidney, likely from a ruptured calyceal fornix. There was no free intraperitoneal fluid seen (Figure 4).

After imaging was completed, the patient provided a urine sample. A urinalysis demonstrated no hematuria or suggestion of infection. The patient was evaluated by the genitourinary consultant, who agreed with the diagnosis of UPJ obstruction with renal calyceal rupture and perinephric fluid accumulation. It was determined that because the patient was comfortable with oral pain medication, tolerating oral intake, and had no signs of urinary tract infection, emergent surgical intervention was not required at that time. The patient was discharged with recommended outpatient urological follow-up in his home state. At the follow-up outpatient office visit, the patient's urologist determined that surgery was not indicated and

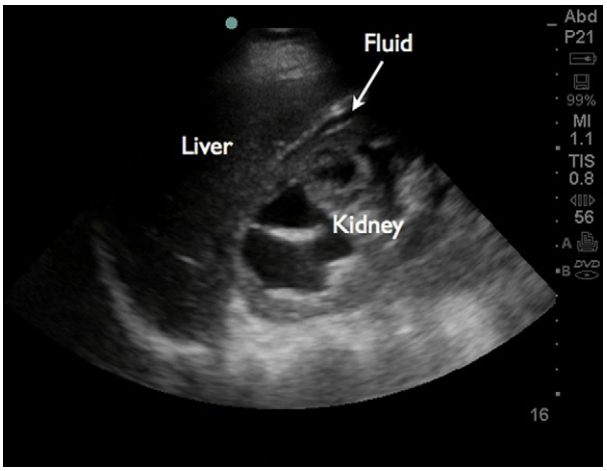

Figure 2. Longitudinal ultrasound image demonstrating free fluid between the liver and kidney.

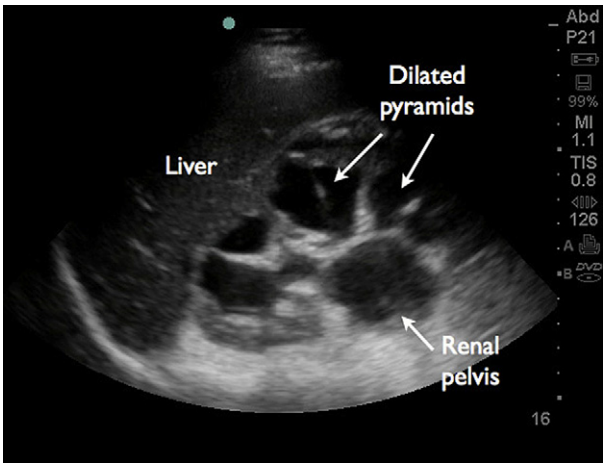

Figure 1. Longitudinal ultrasound image of patient's right kidney with dilated medullary pyramids.

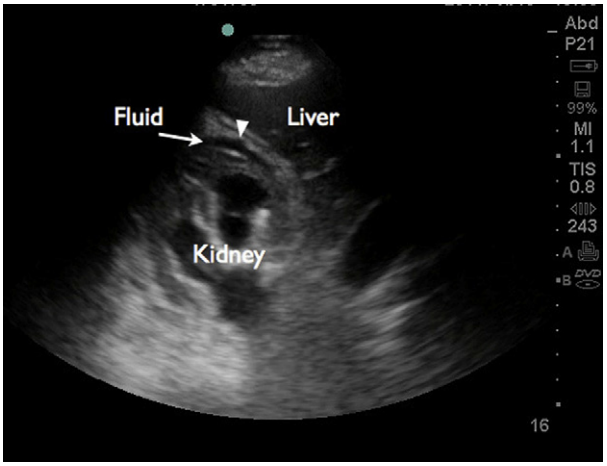

Figure 3. Transverse ultrasound image demonstrating free fluid between the liver and kidney; arrowhead demonstrating the hyperechoic line on the hepatic side of the fluid.