URINOMA FOLLOWING BLUNT RENAL TRAUMA

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Introduction

Renal injuries occur in 8% of patients with abdominal trauma [1]. Blunt renal injuries are most common (80-90%), mostly due to motor vehicle accidents. Complications of renal injuries are estimated to be around 20% [2]. Post-traumatic urinary extravasation is common (2-18%), but formation of urinoma is rare (1%) [3]. We report two cases of post-traumatic urinoma.

Case Report

A 18-year old son of serving soldier sustained multiple injuries in a vehicle accident on 14 Oct 98. He was taken to local service hospital. He was found to have tachycardia, blood pressure of 100/70 mm of Hg, frank haematuria, guarding right side of abdomen and signs of haemoperitoneum. X-ray chest and abdomen were unremarkable. In view of progressive haemodynamic instability, he was taken up for exploratory laparotomy on the same day. He was found to have a laceration of right lobe of liver and large right retroperitoneal haematoma. Peritoneal toilet and drainage was done. Right retroperitoneal haematoma was left undisturbed.

Patient had a stormy post-operative period. He continued to have fever. He developed signs of massive right hydrothorax and a large tense right upper abdominal swelling. X-ray chest showed a massive hydrothorax (Fig1). Pluerocentesis was done and 1100 ml

Fig. 1 : X-ray chest showing massive right hydrothorax

of serous fluid was removed. Ultrasound studies of abdomen showed a right pleural effusion and a large hypoechoic collection in right side of abdomen with right kidney pushed up. Intravenous urography (IVU) showed a large mass pushing up the right kidney and pooling of contrast in the centre of the swelling (Fig 2). He was referred to this centre on 12 Nov 98.

At this hospital patient was found to have a 13cm tense cystic swelling occupying the right side of abdomen. He underwent aspiration of swelling and percutaneous pigtail catheter (8F) drainage. Patient had persistent drainage of more than a litre per day for the next week. He was taken up for right retrograde pyelogram, which showed a bifid system with leak from the lower moiety (Fig 3). There was no evidence of ureteral obstruction. Ureteric catheter was put in right ureter and the pigtail drain was removed. The ureteric catheter was removed after 48 h as the nephrostomy wound healed. Patient remained asymptomatic. Ultrasound scan of abdomen after a month shows normal right kidney without any fluid collection.

Case Report-2

12 year old son of a serving soldier fell down while taking bath and injured his left flank against the brick. Patient had frank haematuria. He was taken to a service hospital. On admission he was haemodynamically stable and was found to have right renal angle and right flank tenderness. A contrast enhanced computerised tomography (CECT) scan was done. It showed right renal cortical laceration over lower pole with separation of fragments and ex-

Fig. 2 : IVU showing large mass pushing up the right kidney with pooling of contrast

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Fig. 3: Retrograde pyelogram right showing bifid pelvis with leak from lower moiety.

travasation (Fig 4). He was managed conservatively. However over next week he developed a tense mildly tender swelling in the left flank. Ultrasound examination showed a hypoechoic collection with cranial shifted right kidney. IVU showed right kidney pushed up by a space occupying lesion, which had extravasated contrast in the centre. The patient was transferred to this urology centre for further management. He had a tense tender swelling in the right upper abdomen. A diagnosis of post-traumatic urinoma right kidney was made. The urinoma was drained under ultrasound guidance by a 8F pigtail catheter. The patient had persistent drainage for about a week. Contrast study through the drain showed the pigtail to be in the lower calyx. The drainage tube was removed and the tract healed up quickly. Patient remains asymptomatic. Follow up ultrasound studies show normal right kidney without recurrence of urinoma.

Discussion

Extravasation of urine as evidenced in contrast radiological studies is indicative of major renal injury. It is fairly common and incidence is reported to be 2-18% after blunt renal trauma when staging is done by IVU [4]. However CECT is more sensitive investigation for urinary extravasation. An urinoma is a chronic collection of urine in the retroperitoneum covered by a pseudocapsule. It has been known by several terms, including hydrocele renalis, uriniferous pseudocyst, pararenal pseudocyst, pseudohydronephrosis, perinephric and perirenal cyst. Its incidence after renal trauma is low and is reported to be around

Fig. 4: CECT scan showing left renal cortical laceration with separation of fragment and extravasation.

1% [3].

Three essential factors required for formation of an urinoma are : a functioning renal unit, urinary breach in the pelvicalyceal system and ureteral obstruction. The last factor often cannot be demonstrated and some authors believe that ureteral obstruction is transient in most cases. The extravasated urine over two to five days causes lipolysis of the perirenal fat. Later there is fibroblastic reaction leading to walling off of the collection by a fibrous capsule without any lining epithelium. The urinoma can reach enormous proportions.

Conventionally urinomas were managed by open surgical drainage, excision of pseudocapsule or plication, repair of any pelvicalyceal tear and lysis of ureteral adhesions if any. However, percutaneous aspiration and catheter drainage has been described [5]. This approach has been proved both effective and safe. Percutaneous aspiration can be done by ultrasound guidance or by CT guidance in cases of multilocular urinoma or deep seated collection without a proper window. An 18 G needle is advanced into the cavity under guidance and urine is aspirated. The track is dilated over a guide wire to 10-12 French size and pigtail catheter of 8-10F size is kept for continuous drainage. Whenever there is doubt of any ureteral obstruction, retrograde pyelography should be done and ureter stented if necessary.

It is advisable to drain the urinoma early with percutaneous route in cases of renal lacerations with separation of fragments with large extravasation and without any other indication for surgical exploration [6]. This may avoid formation of urinoma. Very rarely urinoma has been described following renal trauma

[1]. Usually no communication can be demonstrated between pleural cavity and abdomen. It is postulated that the urine may traverse across diaphragm via lymphatics.

In the first case the patient had urinoma following lower polar renal laceration. He also probably had urinothorax which could have been confirmed by measurement of creatinine in the aspirated fluid which would have been many times the serum value. In the second case early percutaneous drainage after initial staging of the trauma with CECT may have avoided urinoma formation. In both cases percutaneous drainage resulted in complete collapse of the cavity with healing of breach in the pelvicalyceal system.

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