CASE REPORT

Spino-renal fistula due to gunshot injury

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ABSTRACT. A 22-year-old female patient was treated for spino-renal fistula as a result of a high-velocity gunshot injury to her abdomen. The patient presented with meningeal signs, a headache and right monoparesis. A CT scan of her abdomen revealed a leak of contrast from the right kidney into the perirenal space and tracking further into the thecal sac. An MRI scan showed a stable fracture of L3 with slight compression of the thecal sac and features of cord contusion caused by the shockwave of the bullet. To the best of our knowledge a spino-renal fistula of traumatic origin has not previously been reported in the English language literature.

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Trauma is the leading cause of death in young South Africans. The genitourinary tract will be involved in about 3% to 10% of patients who experience traumatic injuries [1]. Of these, the most commonly involved organ is the kidney, followed by the bladder, urethra and ureter [1]. 85% to 95% of injuries to the kidney are due to blunt trauma, and the remainder are due to penetration injuries [2]. Complications after renal trauma occur in 3% to 33% of these patients [3]. A wide range of reported complications exists in those with renal trauma. In 2001, Blankenship et al [3] reported that one-third of conservatively treated renal trauma patients develop one or more urological complications, whereas other series have had much lower complication rates (closer to 5%) [4]. While the vast majority of traumatic urological injuries are not life threatening, failure to diagnose and a delay in treatment can lead to significant patient morbidity.

Case report

A 22-year-old female patient suffered an abdominal gunshot injury with the entry wound on the right upper flank and exit wound above the left iliac crest. During a laparotomy, a hepatic flexure colonic injury and a right lower pole renal injury were debrided and repaired and a tube drain placed in the right paracolic gutter. Post-operatively, the patient complained of a headache and left lower-limb weakness. In addition, a persistent urinary leak was noted via the abdominal drain. A left lower-limb monoparesis, with sensory level at L3, was

confirmed. An abdominal CT scan [Figure 1] revealed a leak of contrast from the right kidney into the perirenal space and further tracking into the thecal sac. An MRI scan (Figures 2 and 3) showed a stable fracture of L3, with slight compression of the thecal sac and features of cord contusion caused by the shockwave of the bullet. The diagnosis of a spino-renal fistula was therefore confirmed. During re-exploration, a perinephric urinoma with lower pole injury and an active urinary leak was identified. Subsequently, a right subcapsular nephrectomy was performed. The patient recovered well and is undergoing rehabilitation for a neurological deficit.

Discussion

The presence of coincidental organ injury is not a complication in itself but it is a complicating factor of renal trauma. Associated organ injury is reported in 61% to 100% of reported cases of renal trauma involving penetration [5, 6], and 35% to 65% of reported cases involving blunt renal trauma [5, 7]. Hepatic injury is seen in up to 73% of right-penetrating renal traumas, and 30% of blunt renal traumas [8]. Associated hepatic injury occurs in 26% to 33% of penetrating renal traumas [6, 7], while splenic injury is reported in 22% to 39% of cases [5, 9]. Associated pancreatic injury is much rarer, occurring in only 1.6% of patients with blunt trauma to the kidney. Penetrating trauma may be associated with a higher rate of pancreatic injury (from 15% to 26%) [5, 9]. Colonic and small-bowel injuries are reported after penetrating renal trauma in 38% to 48% of patients [5, 9]; however, only colonic injury increases the risk of complications (e.g. perinephric abscess) [5]. To best of our knowledge spinal injury associated with renal trauma has not been previously reported.

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(a)

(b)

Figure 1. (a,b) Axial and sagittal delayed contrasted CT selected images (pyelogram phase) showed extravasation of contrast from the right renal pelvis and eventually the contrast is seen in the spinal canal/thecal sac.

Figure 2. T_2 gadolinium enhanced (GE) shows the tract of the bullet through the vertebral body (black arrows) with disruption of the spinal canal outline (white arrow).

Figure 3. T_2 weighed MRI. Shows disruption of the spinal canal cortical ring as well as the thecal sac (arrow) at the level of the bullet tract.

References

1. Krieger JN, Algood CB, Mason JT, Copass MK, Ansell JS. Urological trauma in the Pacific Northwest: aetiology, distribution, management and outcome. *J Urol* 1984;132:70–3.
2. Mee SL, McAninch JW, Robinson AL, Auerbach PS, Carroll PR. Radiographic assessment of renal trauma: a 10-year prospective study of patient selection. *J Urol* 1989;141:1095–8.
3. Blankenship JC, Gavant ML, Cox CE, Chauhan RD, Gingrich JR. Importance of delayed imaging for blunt renal trauma. *World J Surg* 2001;25:1561–4.
4. Hammer CC, Santucci RA. Effect of an institutional policy of nonoperative treatment of grades I to IV renal injuries. *J Urol* 2003;169:1751–3.
5. Kansas BT, Eddy MJ, Mydlo JH, Uzzo RG. Incidence and management of penetrating renal trauma in patients with multiorgan injury: extended experience at an inner-city trauma centre. *J Urol* 2004;172:1355–60.
6. Armenakas NA, Duckett CP, McAninch JW. Indications for nonoperative management of renal stab wounds. *J Urol* 1999;161:768–71.
7. Kristjansson A, Pedersen J. Management of blunt renal trauma. *Br J Urol* 1993;72:692–6.
8. Safir M, McAninch JW. Management of complex violent trauma to the upper urinary tract. *Trauma* 1999;1:323–39.
9. Ersay A, Akgun Y. Experience with renal gunshot injuries in a rural setting. *Urology* 1999;54:972–5.