Renal Trauma in a South African Hospital: a Two Year Study

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SUMMARY: A study was made of renal trauma in a South African hospital during the period 1977-1979.

The diagnosis and treatment of the 119 patients admitted to the Surgical Unit with moderate to severe renal injury are described.

The 21 patients with penetrating wounds were treated by surgical intervention. The remainder were successfully managed conservatively. In all cases every effort was made to salvage viable renal tissue.

Introduction

South Africa relies heavily on black labour for the mining of gold and other minerals in the Transvaal. This labour force is recruited from all over southern Africa and is confined to townships reserved for blacks around the cities of Johannesburg and Pretoria. Inter-tribal rivalry, excessive use of alcohol and other drugs, particularly cannabis, and lack of recreational facilities, contribute to the high level of violence within the community. The 119 renal injuries admitted to the Surgical Unit of Natalspruit Hospital, an 800 bed general hospital for blacks on the outskirts of Johannesburg, were the result of motor-vehicle accidents, falls, gunshot wounds and stabbings.

Almost 60% of the patients were under 30 years of age (68 patients), the youngest being nine years old and the oldest 50. Of the 119 patients 87% (104 patients) were male.

Diagnosis

Injuries to the kidney generally occur as the result of severe trauma¹ and in 80%-90% of patients are accompanied by haematuria.² In this series all patients presented with blood in the urine.

The diagnosis of renal injury was made on a history of trauma, the presence of macroscopic or microscopic haematuria and flank pain. Three patients had obvious gunshot wounds and 18 had knife or spear wounds.

The injuries were grouped into penetrating and non-penetrating (Table I).

Radiological examination was undertaken on 116 patients; 102 had an IVU and 14 renal angiography. Three patients discharged themselves before investigation. From the combined results of IVU and angiography, injuries were classified into four groups:-

1. Contusions
2. Lacerations
3. Severe fractures
4. Pedicle injuries

Treatment

All 21 patients with penetrating wounds were treated by surgical intervention. There was no mortality or

further surgical procedure in this group. The initial surgical procedures undertaken are shown in Table II. Of the five patients requiring nephrectomy, three had sustained gunshot wounds and two deep knife wounds. The remaining 16 were all the result of knife or spear wounds.

The 98 patients with non-penetrating injuries were managed conservatively by bed rest for the duration of the haematuria and the correction of blood loss and

Table I
Renal Injuries 1977-1979

Non-penetrating	No. of Patients
Motor Vehicle Accident	52
Falls	2
Fights involving blunt trauma	44
Total	98

Penetrating	No. of Patients
Gunshot wounds	3
Knife wounds	16
Spear wounds	2
Total	21

Table II
Surgical Procedures for Penetrating Injuries to the Kidney 1977-1979

Operation	No. of Patients
Nephrectomy	5
Partial Nephrectomy	4
Suturing Lacerated Kidney with drainage	6
Drainage only to Perirenal Haematoma	6

required. Of this latter group 9% (9 patients) required non-renal surgical procedures; two splenectomies, one repair of stomach perforation, five repairs of liver lacerations and one open reduction of a femoral fracture.

Discussion

The diagnosis of renal injuries is relatively easy but their management, however, remains controversial.¹ Haematuria is a reliable sign, but the absence of blood in the urine in no way precludes renal injury. Indeed Hai and his colleagues have noted that 65% with major renal vascular injury have clear urine³.

Radiography is mandatory in these cases and when combined with nephrotomography, IVU has a claimed diagnostic accuracy of 95%.⁴ Straight x-ray of the abdomen alone is unhelpful in 85% of cases. However fracture of a rib, vertebra or transverse process; elevation of the diaphragm, obliteration of the psoas shadow or scoliosis in the region of the kidney are suggestive of renal injury³. In this series, renal angiography was reserved for those in whom IVU failed to show the kidney clearly. Those individuals who had extravasation of contrast, persistent haematuria or where pedicle injury was suspected, were also subjected to angiography.

Renal scan is helpful in a diagnosis, but was not available to the patients in this series. Scanning is a safe and simple procedure and is useful in determining the presence of renal blood flow and significant parenchymal injury. Freeman et al⁵ have noted a high degree of correlation between findings observed by scan and those observed by angiography.

Ninety percent (98 patients) with contusion of the kidney were treated conservatively and it is generally agreed that this is the best management. The treatment of laceration remains a controversial subject. McCague,⁶ Sargent and Marquardt⁷ advocate a conservative approach with careful observations. Wein et al⁸ have observed that 4–16% of patients treated conservatively require nephrectomy in the post injury period. Eighteen percent (21 patients) in this series were treated by immediate exploration since they all presented with penetrating wounds of the flank. It

should be noted however that control of the renal pedicle is critical before Gerota's fascia is opened, otherwise 50% of all cases end in nephrectomy⁹. Scott and his colleagues have further shown that even when vascular control is achieved, 30% still come to nephrectomy⁹. Of the 21 patients presented, five had nephrectomy and four partial nephrectomy. Four nephrectomies were carried out for severe pedicle injuries. Griffin et al¹⁰ have reported success with operative revascularisation up to 16 hours post injury, but no patients in our group were suitable for vascular reconstruction.

Conclusion

Of 119 patients who presented with moderate to severe renal injury during the period 1977–1979, eighteen percent (21 patients) namely those with penetrating injuries, required surgery. The remainder were treated conservatively but of this latter group, nine patients required non-renal surgery.

Conservation of renal parenchyma is of prime importance in patients of all ages and every effort should be made to salvage all viable tissue.

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