International Journal of Medical Science and Education
pISSN- 2348 4438 | eISSN-2349- 3208
Published by Association for Scientific and Medical Education (ASME)
Int.J.Med.Sci.Educ. Jan.-March 2021; 8(1) : 87-90
Available Online at www.ijmse.com
Original Research Article

AN OBSERVATIONAL STUDY ON CLINICAL PROFILE OF PATIENTS WITH RENAL TRAUMA

Dr. Kshitiz Ranka[1], Dr. Hanuwant Singh[2]

1. and 2. *Assistant professor, Department of General Surgery, Pacific Medical College and Hospital, Udaipur, Rajasthan, India*

*Corresponding author – **Dr. Hanuwant Singh**

Email id – drhanuwant@gmail.com

Received: 10/01/2021 ***Revised:06/03/2021*** ***Accepted: 22/03/2021***

ABSTRACT

Background: the kidney is among the most common organ involved during abdominal trauma. Both conservative and surgical management are employed depending upon the grading of the injury clinical profile of the patient. **Methodology:** All the cases of renal trauma coming to the emergency room, aged more than 18 years during the period of January 2019 to December 2020 are included in the study. Detailed history & examination was done & the patient underwent CT for grading the injury. **Result:** The mean age of the patients was 40.36±15.85 years. 31(62%) had an injury on the left side. The most common associated injury was Rib fracture seen in 5 (10%) cases. On grading the renal injury according to the American Association for the surgery of trauma (AAST), it was found that 20 (40%) patients belonged to Grade II followed by 12 (24%) in Grade I, 8 (16%) in Grade III, 6 (12) patients in Grade IV & 4 (8%) patients belonged to Grade V. 41 (82%) patients were managed conservatively & in 9 (18%) patients surgical inventions were done. Double J stenting was done in 4 (44.44%) patients, Percutaneous drainage of the perinephric collection was done in 3 (33.33%) patients & in 2 (22.22%) patients Nephrectomy was done. The mean duration of stay in the hospital was 11±5.65 days. **Conclusion:** Conservative management is the treatment of choice for renal trauma & it is associated with less complication & decreased duration of stay.

Keywords: kidney, renal injury, Double J stenting, perinephric collection.

INTRODUCTION

The Abdominal trauma accounts for 3% of all trauma cases. The frequency of genitourinary tract trauma is 10% **(1)**. According to literature, renal trauma accounts for 1-5% of all trauma cases **(2)**. Renal trauma can be either blunt or penetrating. Motor vehicle accidents fall from a height, and sports injuries lead to blunt trauma which results in sudden deceleration or crush injuries that may affect the renal parenchyma or the vascular pedicle. Penetrating renal injuries are caused by firearms, gunshot, and stab wounds. These cause direct damage to the parenchyma, excretory system, or vascular structures and even violation of the peritoneum **(3)**.

According to the American Association for the Surgery of Trauma (AAST) Organ Injury Scale, the renal injury was graded from Grade I to Grade V **(4)**. This classification helps in standardizing different patient groups choosing appropriate therapy and in predicting the treatment outcome. As the severity of renal trauma varies significantly, the management of the injuries also varies. Both conservative & surgical treatment options are available for renal trauma. With the recent advancement in imaging techniques & interventional radiology, non-operative treatment has become the first choice of the surgeons **(5)**. Various studies in the literature also recommend conservative treatment for both blunt & penetrating renal injuries **(6,7)**. However, in case of hemodynamic instability immediate surgical intervention is recommended **(8)**.

The present study is conducted to evaluate the clinical profile & treatment followed for the management of patients with renal trauma.

METHODOLOGY

This cross-sectional study is conducted at the Department of Surgery, tertiary care centre, Udaipur. All the cases of renal trauma coming to the emergency room, aged more than two years during the period of January 2019 to December 2020 are included in the study. Written informed consent was taken from each study participant.

A detailed clinical history followed by a thorough examination of each case was done. Grading of renal injury, side of involvement, other associated injuries, treatment is given and length of hospital stay was recorded for each study participant. Computed tomography (CT) of all study participants, if hemodynamically stable was done for grading of renal injuries. Renal injury grading was done based on the American Association for the surgery of trauma (AAST) organ injury scale. Those study participants who were not responded to the conservative management were treated with operative procedures like double-J stenting, percutaneous nephrostomy, retrograde pyelogram, open drainage, percutaneous drainage of perinephric collection, renorrhaphy, and nephrectomy.

Data then collected was entered in Microsoft excel 2010 and analyzed using Primer version 6.

RESULT

A total of 50 patients with renal trauma were enrolled in the study. Out of these 50, 35 (70%) were males & rest 15 (30%) were females. The mean age of the patients was 40.36±15.85 years. Considering the side of injury, 31(62%) had an injury on the left side, 17 (34%) patients had an injury on the right side & 2 (4%) patients had the bilateral renal injury. (Table 1)

In 16 (32%) patients, renal trauma was associated with other injuries. The most common associated injury was Rib fracture seen in 5 (10%) cases followed by Urinoma, Liver injury & Femoral fracture seen in 3 (6%) patients each. In 1 patient each, Rib fracture + urinoma & Pelvic fracture + pelvic hematoma were seen. (Table 1)

On grading the renal injury according to the American Association for the surgery of trauma (AAST), it was found that 20 (40%) patients belonged to Grade II followed by 12 (24%) in Grade I, 8 (16%) in Grade III, 6 (12) patients in Grade IV & 4 (8%) patients belonged to Grade V (Table 2). 41 (82%) patients out of 50 were treated successfully with conservative management & in the remaining 9 (18%) patients surgical inventions were done. (Table 1)

Out of these 9 patients, Double J stenting was done in 4 (44.44%) patients, Percutaneous drainage of the perinephric collection was done in 3 (33.33%) patients & in 2 (22.22%) patients Nephrectomy was done. The mean duration of stay in the hospital was 11±5.65 days.

Table 1- Distribution of study subjects according to the study parameters

Parameters		**Number (%)**
Sex	Male	35 (70%)
	Female	15 (30%)
Side of involvement	Left	31(62%)
	Right	17 (34%)
	Bilateral	2 (4%)
Associated injuries	Rib fracture	5 (10%)
	Urinoma	3(6%)
	Liver injury	3(6%)
	Femoral fracture	3(6%)
	Rib fracture + urinoma	1(2%)
	Pelvic fracture + pelvic hematoma	1(2%)
	None	34 (68%)
Type of treatment	Conservative	41 (82%)
	Surgical	9 (18%)
Mean duration of hospital stay (in days)		11.56 days

Table 2- Grading-wise distribution of study subjects.

Grading of injury	Number (%)
Grade I	12 (24)
Grade II	20 (40)
Grade III	8 (16)
Grade IV	6 (12)
Grade V	4 (8)
Total	**50 (100)**

DISCUSSION

Renal trauma is one of the most common injuries encountered by the urologist. With time a lot is changed with the management of renal trauma, there is the shift from surgical management to non-surgical management of renal injuries. The present study including 50 patients with renal trauma was done to study the clinical profile of such patients in Rajasthan.

In the present study, the mean age of the patients was 40.36±15.85 years & maximum were male. Similar findings were seen in the study done by J B Narendra et al who reported that the mean age in their study was 42.36 ± 17.95 years with male preponderance **(9)**.

The current study showed that 31(62%) patients had an injury on the left kidney, 17 (34%) patients had injury on the right side & 2 (4%) patients had the bilateral renal injury. These results were similar to the study conducted by Sengupta et al who reported that the most common site involved was the left kidney (53.33%) & 46.67 % had right renal involvement. No bilateral injuries were seen **(10)**.

The present study showed that the most common associated injury was Rib fracture seen in 5 (10%) cases followed by Urinoma, Liver injury & Femoral fracture seen in 3 (6%) patients each. In 1 patient each, Rib fracture + urinoma & Pelvic fracture + pelvic hematoma were seen. Similar observations were made by other authors **(9,11)**. J B Narendra Et al showed in their study found that rib fracture was the most common injury (12.39%) followed by Urinoma & Liver injury in 6 patients each. Similar results were obtained in a study conducted by Steve P et al among patients with renal injuries **(11).**

According to the American Association for the surgery of trauma (AAST) grading, in our study, it was found that 12 (24%) patients belonged to Grade I, 20 (40%) in Grade II, 8 (16%) in Grade III, 6 (12) patients in Grade IV & 4 (8%) patients belonged to Grade V. A systematic review of 605 articles reported that, of the 10,935 renal trauma patients, the distribution of renal injuries was Grade I (26%), Grade II (28%), Grade III (20%), Grade IV (19%), and Grade V (7%)[13]. These observations are in agreement with the present study.

In the present study, 41 (82%) patients out of 50 were managed conservatively & in the remaining 9 (18%) patients surgical inventions were done. Double J stenting was done in 4 (44.44%) patients, Percutaneous drainage of the perinephric collection was done in 3 (33.33%) patients & in 2 (22.22%) patients Nephrectomy was done. The mean duration of stay in the hospital was 11±5.65 days. Bjurlin et al in their study reported having managed 16.6% of patients surgically and 83.4% of patients conservatively **(12)**. Similar results were obtained in a study conducted by JB Narendra et al among 121 patients with renal injuries and found that the majority of the patients (83.47%) with renal injuries were treated conservatively, whereas only 20 patients (16%) were managed operatively. The patients who had unsuccessful management with a nonoperative approach were treated with surgical procedures (retrograde pyelogram, double-J (DJ) stenting, percutaneous nephrolithotomy, open drainage, ultrasound-guided aspiration, and nephrectomy) **(9)**.

CONCLUSION

The primary goal of the urologist in case of renal trauma is to preserve the kidney. With the advancement in science, the mode of management of renal trauma has shifted from surgical to non-surgical treatment. Conservative management is the standard of treatment for all grades and modes of renal trauma as there are few complications & reduced duration of hospital stay. Although in the case of hemodynamically unstable patients, surgical interventions still remain the treatment of choice.

REFERENCES

1.Salimi J, Nikoobakht MR, Zareei MR. Epidemiologic study of 284 patients with urogenital trauma in three trauma center in Tehran. Urol J. 2004 Spring;1(2):117-20. PMID 17874399.

2.Aragona F, Pepe P, Patanè D, Malfa P, D'Arrigo L, Pennisi M. Management of severe blunt renal trauma in adult patients: a 10-year retrospective review from an emergency hospital. BJU Int. 2012;110(5):744-8. doi: 10.1111/j.1464-410X.2011.10901.x, PMID 22313622.

3.Santucci RA, McAninch JM. Grade IV renal injuries: evaluation, treatment, and outcome. World J Surg. 2001;25(12):1565-72. doi: 10.1007/s00268-001-0151-z, PMID 11775193.

4.Moore EE, Shackford SR, Pachter HL, McAninch JW, Browner BD, Champion HR, Flint LM, Gennarelli TA, Malangoni MA, Ramenofsky ML, et al. Organ injury scaling: spleen, liver, and kidney. J Trauma. 1989;29(12):1664-6. doi: 10.1097/00005373-198912000-00013, PMID 2593197.

5.Zbikowski T, Skiba R, Saracyn M, Zielinski H. Analysis of renal trauma in adult patients: A 6-year own experiences of trauma center. Urol J. 2015 Sep 4;12(4):2276-9.

6.Santucci RA, Fisher MB. The literature increasingly supports expectant (conservative) management of renal trauma – a systematic review. J Trauma. 2005;59(2):493-503. doi: 10.1097/01.ta.0000179956.55078.c0, PMID 16294101.

7.Alsikafi NF, McAninch JW, Elliott SP, Garcia M. Nonoperative management outcomes of isolated urinary extravasation following lacerations due to external trauma. J Urol. 2006;176(6 Pt 1):2494-7. doi: 10.1016/j.juro.2006.08.015, PMID 17085140.

8.Morey AF, McAninch JW, Tiller BK, Duckett CP, Carroll PR. Single-shot intraoperative excretory urography for the immediate evaluation of renal trauma. J Urol. 1999;161(4):1088-92. doi: 10.1016/S0022-5347(01)61597-0, PMID 10081844.

9.Narendra JB, Ratkal CS, Keshavamurthy R, Karthikeyan VS. Clinical profile of patients with renal trauma: A cross-sectional observational study. Urol Sci. 2020;31(3):131-5. doi: 10.4103/UROS.UROS_50_19.

10.Sengupta S, Basu S, Ghosh K, Sengupta S. A prospective observational study on the optimal management approach based on the clinical profile of renal trauma patients. Int J Adv Med. 2020;7(11):1677-81. doi: 10.18203/2349-3933.ijam20204519.

11.McCombie SP, Thyer I, Corcoran NM, Rowling C, Dyer J, Le Roux A, Kuan M, Wallace DM, Hayne D. The conservative management of renal trauma: A literature review and practical clinical guideline from Australia and New Zealand [internet]. BJU Int. 2014;114;Suppl 1:13-21. doi: 10.1111/bju.12902, PMID 25124459.

12. Bjurlin MA, Fantus RJ, Fantus RJ, Villines D. Comparison of nonoperative and surgical management of renal trauma: can we predict when nonoperative management fails? J Trauma Acute Care Surg. 2017 Feb;82(2):356-61. doi: 10.1097/TA.0000000000001316, PMID 27893642.

13.Voelzke BB, Leddy L. The epidemiology of renal trauma. Transl Androl Urol. 2014;3(2):143-9. doi: 10.3978/j.issn.2223-4683.2014.04.11, PMID 26816762.

How to cite this article: Ranka K. An observational study on clinical profile of patients with renal trauma. Int.J.Med.Sci. Educ 2021;8 (1):87-90