ORIGINAL ARTICLE

Determine the Prevalence of Complications in Patients Undergoing Renal Biopsy

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ABSTRACT

Aim: To determine the frequency of complications in renal biopsy.
Study Design: Descriptive case series
Place and duration of study: Department of Nephrology, Chandka Medical College Hospital Larkana from 1st January 2018 to 30th June 2019.
Methods: Three hundred and forty patients of renal biopsies were included. The procedure was undertaken on the bedside using a portable ultrasonographic machine and spring loaded tru-cut biopsy needle. Biopsy cores were carried to pathology laboratory immediately in formalin solution and processed for histopathology and immunoflurescene. Post biopsy the patient was kept admitted for 24 hours for strict bed rest, all urine was collected in separate containers to monitor for presence of gross hematuria, post biopsy surveillance ultrasound scan was done 06 hours after biopsy by radiologist for hematoma and at same time blood hemoglobin was repeated to see any drop in hemoglobin level. Pain was assessed at 2 hours.
Results: One hundred and 49(43.82%) were between 18-50 years of age while 191(56.18%) were between 51-65 years of age with mean age was 50.55±9.29 years, 166(48.82%) were males and 174(51.18%) were females. Complications in renal biopsy was recorded as 39(11.47%) had pain, 11 (3.23%) had hematuria while 27(7.94%) had hematoma.
Conclusion: Pain and hematoma are the most frequent complications of renal biopsy.
Key words: Renal biopsy, complications, hematoma, hematuria

INTRODUCTION

Renal biopsy is a procedure by which tissue specimen of the kidney is obtained. Renal biopsy although an invasive procedure still remains the gold standard to establish a histopathological diagnosis in kidney disease. In most of the cases it establishes the diagnosis, stage the disease and provides information about the potential therapeutic modalities that can be employed. Renal biopsy is done using biopsy needle under ultrasound guidance.[1-3] Renal biopsy is considered to be a safe and diagnostically useful procedure however, complications are uncommonly seen. Common complications are pain 4-18.2%,[1,4] hematuria 1.2-5.8%[5,6] and hematoma formation 3.9-13.9%[5,7] According to international data the sot commonest complications include pneumothorax, hemothorax, calyceal-peritoneal fistula, page kidney and even death.[8] In another study done by Ahmed et al[9] at Lahore General Hospital it was observed that complications rate after renal biopsy is very low.

This study is designed to find out different complications of renal biopsies done in our population. The procedure is high yield and has impact upon subsequent management, and in the absence of local data the complication rate cannot be commented upon. The data of our study may be helpful in informing the patient regarding how frequently which complication occurs and also the safety of the procedure.

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MATERIALS AND METHODS

This descriptive case series was conducted in Nephrology Department, Chandka Medical College Hospital Larkana from 1st January 2018 to 30th June 2019. Three hundred and forty patients of renal biopsies were included. Patient's age 18 years to 65 years, either gender, undergoing renal biopsies were included. Those patients who have Solitary Kidney on ultrasonography, platelet count less than 150000/µml, international normalized ratio more than 1.5; activated partial thromboplastin time more than 32 seconds (normal 26 seconds), presence of more than 05 pus cells/HPF and systolic BP more than 140mmHg, Diastolic BP more than 90mmHg were excluded. A total of 340 patients of renal biopsy were included. The procedure was undertaken on the bedside using a portable ultrasonographic machine and spring loaded tru-cut biopsy needle. The patient lied prone and after administration of local anesthesia upto two cores of biopsy was obtained using real time ultrasonographic guidance. Biopsy cores were carried to pathology laboratory immediately in formalin solution and processed for histopathology and immunoflurescene. Post biopsy, the patient was kept admitted for 24 hours for strict bed rest, all urine was collected in separate containers to monitor for presence of gross hematuria, post biopsy surveillance ultrasound scan was done 06 hours after biopsy by consultant radiologist for hematoma and at same time blood hemoglobin was

repeated to see any drop in hemoglobin level. Pain was assessed at 2 hours. The data was entered and analyzed in SPSS version 20. Chi-square test was used to see any significant difference between the stratified groups taking p value ≤0.05 as significant.

RESULTS

There were 149(43.82%) patients between 18-50 years of age while 191(56.18%) were between 51-65 years of age with age was 50.55±9.29 years. One hundred and sixty six (48.82%) were males and 174(51.18%) were females (Table 1). The complications of renal biopsy was recorded as 39(11.47%) had pain, 11(3.23%) had hematuria while 27(7.94%) had hematoma (Table 2). Comparison of complications according to age and gender and reasons for renal biopsy, statistically it showed no significant difference (P>0.05) [Tables 3-5].

Table 1: Age and gender wise distribution

Variable	No.	%
Gender		
Male	166	48.82
Female	174	51.18
Age (years)		
18-50	149	43.82
51-65	191	56.18

Table 2: Frequency of complications in renal biopsy (n=340)

Complication	No.	%
Pain	39	11.47
Hematuria	11	3.23
Hematoma	27	7.94

Table 3: Comparison of complications in renal biopsy according to age

Complications in renal biopsy	Age (years)		P value
	18-50	51-65	
Pain			
Yes	17	22	1.09
No	132	169	
Hematuria			
Yes	4	7	0.61
No	145	184	
Hematoma			
Yes	9	18	0.25
No	140	173	

Table 5: Comparison of complications in renal biopsy according to gender

Complications in renal biopsy	Gender		P value
	Male	Female	
Pain			
Yes	19	20	0.96
No	147	154	
Hematuria			
Yes	5	6	0.82
No	161	168	
Hematoma			
Yes	11	16	0.38
No	155	158	

Table 6: Comparison of complications in renal biopsy according to reason for biopsy

Complications in renal biopsy	Reason for biopsy		P value
	Nephrotic syndrome	AKI	
Pain			
Yes	18	21	0.14
No	103	198	
Hematuria			
Yes	6	5	0.18
No	115	214	
Hematoma			
Yes	16	11	0.07
No	105	208	

DISCUSSION

Renal biopsy is one of the most performing procedure to diagnose different renal diseases and it has been considered as a method for choice for accurate diagnosing. Accurate and proper diagnosis is very important for the management of malignant diseases. Although renal biopsies are being performed for more than a century, it also includes potential complications such pain, hematuria and hematoma etc. This study was designed to find out different complications of renal biopsies done in our population. The procedure is high yield and has impact upon subsequent management, and in the absence of local data the complication rate cannot be commented upon. The data of our study will be helpful in informing the patient regarding how frequently which complication occurs and also the safety of the procedure.

In our study, out of 340 cases,149(43.82%) were between 18-50 years of age while 191(56.18%) were between 51-65 years of age with mean age was 50.55±9.29 years,166(48.82%) were male and 174(51.18%) were females, frequency of complications in renal biopsy was recorded as 39(11.47%) had pain, 11(3.23%) had hematuria while 27(7.94%) had hematoma.

We compared our data with previous literature where common complications are pain 4% to 18.2%[1,4], hematuria 1.2% to 5.8%[5,6] and hematoma formation 3.9% to 13.9%.[5,7] These findings are comparable with our results. In another study done by Ahmed et al[9] at Lahore General hospital it was observed that complications rate after renal biopsy is very low.

It must be recognized that although serious complications are infrequent, the potential for a serious complication after renal biopsy is significant. Although clinically significant perinephric hematomas occur in fewer of biopsies, perinephric hematomas have been demonstrated at 24 to 72 h after biopsy in >90% of cases evaluated prospectively[10-11]. The majority of hematomas are asymptomatic and small in size, but in up to 50% of biopsies, they are moderate to large in size.[12-13] As a result, the present practice of 24-h bed rest and observation after biopsy may be therapeutically important and contribute to the low incidence of clinically significant hematomas. Unfortunately, there are no reliable measures that can predict which patients will go on to have a clinically significant hematoma as radiographic evaluation immediately after biopsy detects <15% of hematomas[14].

In present study, haematuria was found in 3.23% after renal biopsy. A study conducted by Golay et al[15] reported that renal biopsy is cost effective due to short length of hospital stay and they reported that the frequency of haematuria after renal biopsy was 13.04%. Our study results regarding occurance of haematuria showed similarity to the study conducted by Franke et al[16] in paediatric and adolescent patients reported that the incidence rate of haematuria was 4.1%. Another study by Tse et al[17] reported complications rate of pain and haematuria was 4% that was also similar to our study.

Persistent abdominal or lumbar pain, gross haematuria, new onset of oliguria, tachycardia and hypotension are the clinical indicators of major haemorrhage after a renal biopsy. At the slightest suspicion a kidney ultrasound can exclude the presence of a perirenal or subcapsular haematoma.

CONCLUSION

We concluded that pain and hematoma are the most frequent complications of renal biopsy.

REFERENCES

1. Chung S, Koh ES, Kim SJ, Yoon HE, Park CW, et al. Safety and tissue yield for percutaneous native kidney biopsy according to practitioner and ultrasound technique. BMC Nephrol 2014;15:96.
2. Moorani KN, Asim S, Chisty SH, Sherali AR. Outcome of pediatric renal biopsy with monopty gun technique. J Surg Pak 2010;15:9-14.
3. Mukhtar KN, Umair SF, Mahmood SN. CT guided percutaneous renal biopsy versus ultrasound guided for obtaining adequate tissue. J Pak Med Assoc 2012;62:880-2.
4. Aatif O, Maoujoud DI, Montasser M, Benyahia M, oualim Z. Glomerular disease in the Military Hospital of Morocco: Review of a single centre renal biopsy database on adults. Indian J Nephrol 2012;22:257-63.
5. Abel Torres Mounoz, Rafael Valdez-Ortiz, Carlos Gonzalez-Parra. Elvy Espinozo-Davila, Luis E. Percutaneous renal biopsy of native kidneys: efficiency, safety and risk factors associated with major complications. Arch Med Sci 2011;7:823-31.
6. Victoria M, Hernandez ME, O Haad CR, Esquivias EM, Carrasco JG. Prospective study of the complications associated with percutaneous renal biopsy of native kidneys: experience in a centre. Nephrology 2014;34:383-7.
7. Tondel C, Vikse BE, Bostad L, Svarsad E. Safety and complications of percutaneous kidney biopsy in 715 children and 8573 adults in Norway 1988-2010. Clin J Am Soc Nephrol 2012;7:1591-7.
8. Floege J, Johnson RJ, Feehally J. Comprehensive clinical nephrology. Fourth edition. United States of America: Elsevier saunders; 2010;988-9.
9. Ahmed AM, Anees M, Riaz A, Mueed S. Percutaneous renal biopsy by automated biopsy gun. J Coll Physicans Surg Pak 2003;13:263-6.
10. Korbet SM. Percutaneous renal biopsy. Semin Nephrol 2002;22:254–67.
11. Ralls PW, Barakos JA, Kaptein EM, Friedman PE, Fouladian G, Boswell WD, Halls J, Massry SG: Renal biopsy related hemorrhage: Frequency and comparison of CT and sonography. J Comput Assist Tomogr 1987;11:1031–4
12. Ginsburg JC, Fransman SL, Singer MA, Cohanim M, Morrin PA: Use of computerized tomography to evaluate bleeding after renal biopsy. Nephron 1980;26:240–3.
13. Rosenbaum R, Hoffsten PE, Stanley RJ, Klahr S. Use of computerized tomography to diagnose complications of percutaneous renal biopsy. Kidney Int 1978;14:87–92.
14. Doyle AJ, Gregory MC, Terreros DA. Percutaneous native renal biopsy: Comparison of a 1.2mm spring-loaded system with a traditional 2mm hand-driven system. Am J Kidney Dis 1994;23:498–503.
15. Golay V, Sarkar D, Thomas P, Trivedi M, Singh A, Roychowdhary A, et al. Safety and feasibility of outpatient percutaneous native kidney biopsy in the developing world: Experience in a large tertiary care centre in Eastern India. Nephrology 2013;18:36–40.
16. Franke M, Kramarczyk A, Taylan C, Maintz1 D, Hoppe B, Koerber F. Ultrasound-Guided Percutaneous Renal Biopsy in 295 Children and Adolescents: Role of Ultrasound and Analysis of Complications. PLoS ONE 2014;9(12): e114737.
17. Tse Y, Yadav P, Herrema I, Ognjanovic M, Moghal N, Coulthard MG. Performing renal biopsies in children under general anaesthesia in the lateral position. Pediatr Nephrol 2013;28(4):671–3.