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FREQUENCY OF MACROSCOPIC HAEMATURIA AFTER RENAL BIOPSY

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ABSTRACT

Background; Macroscopic hematuria is a commonly seen condition in the emergency department (ED), which has a variety of causes. This study was performed to ascertain frequency of macroscopic hematuria among patients undergoing native renal biopsy using free hands ultrasound assisted renal biopsy technique within first 24 hours, as there is no such study done in Pakistan on this topic. **Objective**: To determine frequency of macroscopic hematuria after native renal biopsy using free hands ultrasound assisted renal biopsy technique within first 24 hours. **Material and Methods:** A total of 138 patients from Department of Nephrology, Jinnah hospital, Lahore, Pakistan were taken for macroscopic hematuria. Data was analyzed by SPSS. **Results:** Of these 138 study cases, 91 (65.9 %) were male patients while 47 (34.1%) were female patients. Mean age of our study cases was 47.57 ± 7.26 years (with minimum age of our study cases was 35 years while maximum age was 60 years). Of these 138 study cases, 56 (40.6%) belonged to rural areas and 82 (59.4%) belonged to urban areas. Monthly family income up to Rs. 350000 was noted in 67 (48.6%) while more than 35000 rupees 71 (51.4%) of our study cases. Obesity was present in 41 (29.7 %) of our study cases. Chronic kidney disease (un-explained renal failure) was noted in 77 (55.8%), proteinuria in 46(33.3%) and unresolved AKI in 15 (10.9%) of our study cases. Mean needle size was noted 17.15 ± 0.59 and 86 (62.3%) had needle size with gauge 18. Macroscopic hematuria was noted in 30 (21.7%) of our study case. **Conclusion;** High frequency of macroscopic hematuria after native renal biopsy using free hands ultrasound assisted renal biopsy technique was noted in our study. Macroscopic hematuria was significantly associated with male gender, increasing age, residential status, monthly family income and indications for renal biopsy. The early diagnosis followed by corrective/preventive measures can help decrease disease morbidity among targeted population. This will help decrease disease burden and improve quality of life of these patients.

KEYWORDS: Macroscopic Hematuria, Native Renal Biopsy, Chronic Kidney Disease.

INTRODUCTION

Percutaneous needle biopsy of the kidney is one of the most important investigations in assessing renal pathology.[1] More recent studies have suggested that the renal biopsy identifies a diagnosis different from that predicted on clinical grounds in 50% to 60% of patients and leads to a treatment change in 20% to 50%.[2] Percutaneous renal biopsies were first performed by Iversen and Brun who used an aspiration biopsy needle.[3] Technical advances in biopsy procedures have changed from a blind approach to real time ultrasound guided techniques.[4] Several techniques have been used to perform renal biopsies. The most common are real time ultrasound-guided renal biopsy and free-hands ultrasound-assisted renal biopsy techniques. Nowadays, a real time ultrasound guided method has become the standard technique.[5,6] which has a diagnostic yield of 95% and significant complication rate of <5%.[7] As any invasive procedure, renal biopsy carry the risk of several complications, like pain, infection, renal damage or renal loss and bleeding. Bleeding complications can present with gross hematuria , peri-renal hematoma or formation of arterio-venous fistulas.[8] Bleeding may occur in 3 distinct locations within the kidney: into the collecting system where it can present hematuria or obstruction , under the renal capsule and into the perinephric space causing hematoma formation presenting as severe loin pain and hypertension. Both visible hematuria and painful hematoma are seen in 3% to 4% of patients after biopsy.[9] Some studies advocate the risk of macroscopic hematuria 1 in 10 patient undergoing percutaneous renal biopsy.[10] The mean decrease in haemoglobin after a biopsy is approximately 1 g/ dl.[11] Most of the bleeding complications stated above occur within a period of 24 hours after renal biopsy.[12] Despite the high frequency of performing renal biopsies, the exact rate of bleeding complications is still obscure.[13] Many data are collected before performing a renal biopsy, trying to predict post

biopsy bleeding like blood pressure, haemoglobin, bleeding time, prothrombin time and coagulation profile. Few studies have examined the bleeding complications rate of percutaneous ultrasound guided biopsies using spring loaded devices and most of these studies have focused on this procedure using different needles.[14] Available data on macroscopic hematuria after percutaneous renal biopsy has been obtained from studies conducted in developed countries with more expertise in skill and equipment which obviously does not reflect population of developing world.

MATERIALS AND METHODS

Patient (n = 138) having age more than or equal to 12 years and less than or equal to 60 years presenting with significant proteinuria, isolated microscopic hematuria, unexplained renal failure with normal sized kidneys and unresolved AKI. Patients already having bleeding diathesis i.e. prothrombin time > 1.2 times normal, or activated thromboplastin time >1.2 times normal or bleeding time > 10 minutes or platelets count less than 100,000 or patient taking aspirin, clopidogrel or warfarin within 7 days or NSAIDS or subcutaneous heparin within last 24 hrs before renal biopsy. Patients having uncontrolled hypertension i.e. diastolic blood pressure of more than 95mm Hg, patient with solitary kidney on ultrasound. Urinary tract infection more than 10 pus cells on urinalysis, small kidneys(size less than 9cm), anatomical abnormalities on ultrasound like horse shoe kidneys which may increase the risk to the patient, post-renal transplant patients, Multiple bilateral renal cysts or renal carcinoma and hydronephrotic kidneys on ultrasound were excluded from our study.

Patient was put in prone position and lower pole of left kidney was marked using ultrasound machine. Renal biopsy puncture site was sterilized using pyodine solution and area was infiltrated with local anesthetic lignocaine. After that renal biopsy was performed using automatic renal biopsy gun with caliber of 16 to18 gauge. Maximum of four passes was performed to get maximum of two cores for adequacy. Post-renal biopsy monitoring was done for initial 24 hours at least or according to patient's situation. Patient was advised to collect urine for first 24 hours in a clean transplant container which was looked for evidence of macroscopic hematuria in day light. Cases was selected from Nephrology Department Jinnah Hospital Lahore, Pakistan. Data was analyzed by using SPSS version 18 by researcher.

RESULTS

Our study comprised of a total of 138 patients meeting inclusion criteria of our study. Of these 138 study cases, 91 (65.9 %) were male patients while 47 (34.1%) were female patients. Mean age of our study cases was 47.57 ± 7.26 years (with minimum age of our study cases was 35 years while maximum age was 60 years). Mean age of the male patients was noted to be 48.24 ± 6.73 years while that female patients was 46.26 ± 8.12 years (p=0.129). Our study results have indicated that majority of our study cases i.e. 107(77.5 %) were aged more than 40 years. Of these 138 study cases, 56 (40.6%) belonged to rural areas and 82 (59.4%) belonged to urban areas. Monthly family income up to Rs. 350000 was noted in 67 (48.6%) while more than 35000 rupees 71 (51.4%) of our study cases. Mean body mass index of our study cases was 25.67 ± 2.23 kg/m^2 and obesity was present in 41 (29.7 %) of our study cases. Chronic kidney disease (un-explained renal failure) was noted in 77 (55.8%), proteinuria in 46(33.3%) and unresolved AKI in 15 (10.9%) of our study cases. Mean needle size was noted 17.15 ± 0.59 and 86 (62.3%) had needle size with gauge 18. Macroscopic hematuria was noted in 30 (21.7%) of our study case.

Table 1: Stratification of macroscopic hematuria with regards to gender. (n = 138).

Gender	Macroscopic hematuria		P – value
	Yes (n=30)	No (n=108)	
Male			
(n=91)	25	66	
Female (n=47)	05	42	**0.029**
Total	**138**		

Table 2: Stratification of Macroscopic hematuria with regards to age. (n = 138).

Age	Macroscopic hematuria		P – value
	Yes (n=30)	No (n=108)	
Up to 40 Years			
(n=31)	00	31	
More than 40 Years (n=107)	30	77	**0.000**
Total	**138**		

Table 3: Stratification of Macroscopic hematuria with regards to indications for biopsy. (n = 138).

Indications	Macroscopic hematuria		P – value
	Yes (n=30)	No (n=108)	
CKD			
(n=77)	25	52	
Proteinuria (n=46)	00	46	**0.000**
Unresolved AKI			
(n=15)	05	10	
Total	**138**		

DISCUSSION

The majority of patients presenting with macroscopic hematuria can be managed on an outpatient basis, with follow-up arranged under the 2-week cancer target. However, there are some situations in which patients would be more appropriately managed as an inpatient under a urological team. Our study comprised of a total of 138 patients meeting inclusion criteria of our study. Of these 138 study cases, 91 (65.9 %) were male patients while 47 (34.1%) were female patients. Siddiqui et al.[15] reported 67 % male gender predominance which is in consistent with that of our study results. A study conducted by Iftikhar et al,[16] from Lahore has reported 58 % male gender predominance, which is in compliance with that of our study findings. A study from Saudi Arabia.[17] has also reported male gender predominance in 61 % male patients, which is similar to that of our study results. Machingura et al.[18] from Zimbabwe has reported male gender predominance in 70 % patients with ESRD on hemodialysis, these findings are close to that of our study results. Menon et al.[19] also reported 58 % male gender predominance which is close to our study results.

Mean age of our study cases was 47.57 ± 7.26 years (with minimum age of our study cases was 35 years while maximum age was 60 years). Mean age of the male patients was noted to be 48.24 ± 6.73 years while that female patients was 46.26 ± 8.12 years (p=0.129). Our study results have indicated that majority of our study cases i.e. 107(77.5 %) were aged more than 40 years. Siddiqui et al from Rawalpindi.[11] has reported 44.5 ± 14.3 years mean age of ESRD patients on hemodialysis. A study conducted in Lahore by Anees et al.[20] has reported 46.10 ± 16.29 years mean age of patients on hemodilaysis, these findings are close to that of our study results. Machingura et al.[18] reported 46.7 ± 13.5 years mean age of these patients of ESRD on hemodialysis, these findings are close to that of our study results.

Of these 138 study cases, 56 (40.6%) belonged to rural areas and 82 (59.4%) belonged to urban areas. Monthly family income up to Rs. 350000 was noted in 67 (48.6%) while more than 35000 rupees 71 (51.4%) of our study cases. Mean body mass index of our study cases was 25.67 ± 2.23 kg/m^2 and obesity was present in 41 (29.7 %) of our study cases. Chronic kidney disease (un-explained renal failure) was noted in 77 (55.8%), proteinuria in 46(33.3%) and unresolved AKI in 15 (10.9%) of our study cases. Brustein et al[11] has also documented 48 % proteinuria which is close to our study results. Mean needle size was noted 17.15 ± 0.59 and 86 (62.3%) had needle size with gauge 18. Macroscopic hematuria was noted in 30 (21.7%) of our study case. Some studies have reported macroscopic hematuria to be present.[10] However our study results have reported around 10 among patient undergoing percutaneous renal biopsy slightly higher levels of macroscopic hematuria.

CONCLUSION

High frequency of macroscopic hematuria after native renal biopsy using free hands ultrasound assisted renal biopsy technique was noted in our study. Macroscopic hematuria was significantly associated with male gender, increasing age, residential status, monthly family income and indications for renal biopsy. The early diagnosis followed by corrective/preventive measures can help decrease disease morbidity among targeted population. This will help decrease disease burden and improve quality of life of these patients.

REFERENCES

1. Hanas E, Larsson E, Fellstrom B, Lindgren PG, Andersson T, Busch C, Frodin L, Wahlberg J, Tufveson G Safety aspects and diagnostic fndings of serial renal allograft biopsies, obtained by an automatic technique with a midsize needle. Scand J Urol Nephro, 1992; 26: 413–420.
2. Kitterer D, Gurzing K,Sergey S, Alscher MD, Amann K,Braun N, et al. Diagnostic impact of percutaneous renal biopsy .Clin Nephrol, 2015 Dec; 84(12): 311-22.
3. Iversen P, Brun C. Aspiration biopsy of the kidney. Am J Med, 1951; 11: 324–330.
4. Donovan KL, Thomas DM, Wheeler DC, Macdougall IC, Williams JD.Experience with a new method for percutaneous renal biopsy. Nephrol Dial Transplant, 1991; 6: 731–733.
5. Nass K, O'Neill C .Bedside renal biopsy: ultrasound guidance by the nephrologist. Am J Kidney Dis., 1999; 34: 955– 959.
6. Kriegshauser JS ,Patella MD,Young SW, Chang YH,et al.Factors Contributing to the Success of Ultrasound Guided Native Renal Biopsy.J Ultrasound Med, 2016 Feb; 35(2): 381-7.

7. Hussain F, Mallik M, Marks SD, Watson AR. Nephrology on behalf of the BA of P. Renal biopsies in children: current practice and audit of outcomes. Nephrol Dial Transplant, 2010; 25(2): 485–9.
8. Meldelssohn DC, Cole EH.Outcomes of percutaneous kidney biopsy, including those of solitary native kidney. Am J Kidney Dis., 1995; 26: 580–585.
9. Corapi KM, Chen JL, Balk EM, et al. Bleeding complications of native kidney biopsy: A systematic review and meta-analysis. Am J Kidney Dis., 2012; 60: 62-73.
10. Alan D.Salama,H.Terence Cook.The Kidney Biopsy In:KarlSkorecki,Glenn M.Chertone,Philip A. Marsden, Martin W.Taal, Alan S.L.Yu, Walter G.Wesser, editors Brenner and Rector's The Kidney,10th Ed. Philadelphia Elsevier, 2016; 915-925.
11. Burstein DM, Sorbet SM, Schwartz MM. The use of the automatic core biopsy system in percutaneous renal biopsies: A comparative study. Am J Kidney Dis., 1993; 22: 545-552?.
12. Mariah DS, Sorbet SM.Timing of complications in percutaneous renal biopsy: What is the optimal period of observation? Am J Kidney Dis., 1996; 28: 47–52.
13. Kim D, Kim H, Shin G et al. A randomized, prospective, comparative study of manual and automated renal biopsies. Am J Kidney Dis., 1998; 32: 426–431.
14. Siddiqui UA, Halim A, Hussain T. Nutritional profile and inflammatory status of stable chronic hemodialysis patients at nephrology department, Military hospital Rawalpindi. J Aye Med Cull Abbottabad, 2007; 19(4): 29-31.
15. Iftikhar U, Anees M, Nadeem M, Amman S, Kami AH. Frequency of cutaneous manifestations in patients of end stage renal disease on hemodialysis. Ann King Edward Med Unit, 2015; 21(2): 61-6.
16. Gaza ZJ, Deafer KO, Tashkent MA, Farooq MU. Clinical profile of hemodialysis patients with diabetic nephropathy leading to end stage renal disease. Pak J Med Sci., 2010; 26(1): 82-7.
17. Machingura PI[1], Yahiya NM[1], Chickasha V[2]. Hypoalbuminaemia in hemodialysis patients at Parirenyatwa group of hospitals and Chitungwiza central hospital. Pan Afr Med J., 2015 Jun 1; 21: 79. doi: 10.11604/pamj.2015.21. 79.4171. eCollection, 2015.
18. Menon V[1], Greene T, Wang X, Pereira AA, Marcovina SM, Beck GJ, et al. C-reactive protein and albumin as predictors of all-cause and cardiovascular mortality in chronic kidney disease. Kidney Int., 2005 Aug; 68(2): 766-72.
19. Anees M, Asim Mumtaz, Sumaira Frooqi, Ibrahim M, Farooq Hameed. Serum trace elements (aluminium, copper, zinc) in hemodialysis patients. Biomedica, 2011; 27(2): 106-10.