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KEY WORDS: Renal failure, TURP, BPH.

OUTCOME OF TRANSURETHRAL RESECTION OF THE PROSTATE IN PATIENTS WITH CHRONIC KIDNEY DISEASE.

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ABSTRACT

Introduction: Renal failure (RF) and symptomatic benign prostatic hyperplasia (BPH) are two common health problems which co-exist in 5.9–13.6% of the male population over 50 years of age. It is usually unclear in this group of patients whether BPH is the reason for renal insufficiency or not. As it is known that RF increases the risk in prostatic surgery, a tendency towards avoiding the surgery until the detection of an absolute indication may occur.

Objectives: To compare the prevalence of preoperative co-morbid factors and complications of transurethral resection of prostate (TURP) in patients with normal and non-dialysis requiring elevated serum creatinine levels.

Methods: The medical records of 254 consecutive patients who underwent TURP at our institution from January 2015 to December 2016 were analysed.The preoperative Na, K, creatinine levels and the early changes observed in these parameters after TURP of the patients with normal (Group1, n = 223) and elevated (Group2, n = 31) serum creatinine levels, as well as the preoperative baseline data and postoperative complications were compared.

Results: In group 2 patients preoperative serum creatinine, urea and K levels were significantly higher. Though co-morbid diseases were significantly more common in group2 no significant difference was observed in postoperative complications between the two groups.. No progression in renal failure or de novo need for hemodialysis was observed in group2.

Conclusions: TURP can be safely performed in BPH patients with mild serum creatinine elevations (1.5-3 mg/dl) and moderately increased prostate volumes without additional morbidity and mortality.

Introduction:

Renal failure (RF) and symptomatic benign prostatic hyperplasia (BPH) are two common health problems which co-exist in 5.9–13.6% of the male population over 50 years of age.[1,2] It has been reported in studies that the incidence of diabetes mellitus and hypertension is higher in patients with renal failure (RF) and lower urinary tract symptoms (LUTS) due to BPH[3]. The main constant indication for BPH surgery has been failed medical treatment for moderate or severe LUTS, however main definite surgical indication include upper urinary tract deterioration[4]. Historically renal failure was associated with increased risk in prostatic surgery, so there is a tendency towards avoiding the surgery until the detection of an absolute indication[5,6] .However, most of these studies are based on data from two or three decades ago and do not represent contemporary urology and nephrology practice . Historically renal failure was associated with increased risk in prostatic surgery, so there is a tendency towards avoiding the surgery until the detection of an absolute indication[7,8] However, most of these studies are based on data from two or three decades ago and do not represent contemporary urology and nephrology practice . Patients with BPH whether symptomatic or asymptomatic, if left untreated may present with renal failure which could be either acute or chronic. The underlying mechanism for developing renal failure associated with benign prostatic hyperplasia is likely multifactorial and co-morbid factors in elderly men may contribute to renal impairment. Moreover, even if there is no external factor, it is known that, in some patients, renal insufficiency does not exhibit a progressive pattern.

OBJECTIVE

To compare the prevalence of preoperative co-morbid factors and Complications of transurethral resection of prostate (TURP) in patients with normal renal function and renal Insufficiency not requiring dialysis (eGFR of < 60 mL/min/1.73 m^2 or serum creatinine ≥ 1.5 mg/dl).

Patients and Methods:

We reviewed the data from January 2015 to December 2015 treated in Institute of Nephrourology, Bangalore. Patients who met the following Inclusion criteria were included in the study, patients over 50 years of age, failed medical treatment for benign prostatic enlargement (BPE), patients with acute retention of urine secondary to BPE. The patients with Upper urinary tract dilatation on ultrasound, Renal failure requiring haemodialysis and biopsy proven carcinoma prostate excluded from analysis.

As per inclusion criteria total 254 patients were included for the final analysis. Out of 254 patients, 223 were placed in Group 1 who underwent TURP with normal eGFR. 31 patients were included in Group2 Who underwent TURP with CKD (non dialysis).

Methods:

TURP was performed using standard resectoscope with monopolar current and 1.5% glycine as irrigant solution. Patient age, co-morbid diseases, PSA level, IPSS, residual urine volume, prostate volume, urea, creatinine, Na and K levels were recorded. Early postoperative values of haemoglobin, Na, K, urea and creatinine levels which were measured 3 hours after the operation were recorded. The catheters of the patients were removed in 48–72 hours after the urine became clear. The need for blood transfusion, failure to void after catheter removal and presence of TUR syndrome were also evaluated. Statistical calculations were made using the software SPSS 20. Continuous variables were compared using Student's t-test and Mann–Whitney U-tests. Categorical data were analysed with chi-squared test. P-values lower than 0.05 were accepted to be significant

Table-1 GROUP 1(n=223) AGE DISTRIBUTION

AGE	NUMBER
51-60	103
61-70	88
71-80	32

Table 2 GROUP 2 (n=31) AGE DISTRIBUTION

AGE	NUMBER
51-60	8
61-70	18
71-80	5

Table 3 COMORBIDITIES

	GROUP 1	GROUP2
HYPERTENSION	41	12
DIABETES MELLITUS	25	9
BOTH(HTN+DM)	15	5
CORONARY ARTERY DISEASE	22	5
COPD	7	2

Results:

The preoperative serum creatinine, urea , potassium levels were significantly higher and comorbid diseases were more in group2. No significant difference was observed in postoperative complications between the two groups. Our analysis showed no progression in renal failure or de novo need for hemodialysis was observed in group2.

Table 4 : PREOPERATIVE PATIENT CHARACTERISTICS:

VARIABLES	GROUP1(n=223)	GROUP2(n=31)	P VALUE
AGE	59.7 ± 8.2	64.3 ± 7.7	0.10
TPSA	5.1	5.6	0.52
CREATININE	0.96 ± 0.2	1.76 ± 0.37	0.001
eGFR	93.4 ± 9.2	43.9 ± 5.1	0.001
UREA	30 ± 11.3	82 ± 35.6	0.001
SODIUM	140 ± 3.7	140 ± 2.1	0.68
POTASSIUM	4.4 ± 0.5	4.7 ± 0.6	0.003
POST VOID	52 ± 14.2	49 ± 12.6	0.86
IPSS	20.6 ± 4.6	18.8 ± 4.7	0.36
RV	65 (15 – 160)	77 (30 – 180)	0.32
RESECTION TIME	58.5 ± 9.7	54.8 ± 8.9	0.30
Hb	13.8 ± 1.5	12.9 ± 1.3	0.05

Table 5 :Pre Vs Post Operative Patients Characteristics

	GROUP1(n=223)		GROUP2(n=31)	
VARIABLES	PRE-OP	POST-OP	PRE-OP	POST-OP
CREATININE	0.96 ± 0.2	1.01 ± 0.36	1.76 ± 0.37	1.62 ± 0.82
eGFR	93.4 ± 9.2	84.5 ± 10.2	43.9 ± 5.1	47.3 ± 8.6
UREA	30 ± 11.3	26.0 ± 10.9	82 ± 35.6	71 ± 28.4
SODIUM	140 ± 3.7	136.9 ± 2.9	140 ± 2.1	136.5 ± 2.6
POTASSIUM	4.4 ± 0.5	3.9 ± 0.48	4.7 ± 0.6	4.2 ± 0.56

Table 6 ,Complications :

	Group 1	Group 2
Bleeding	15(6.8%)	3(9.6%)
Clot retention	6(2.7%)	1(3.2%)
Failure to void	8(3.6%)	1(3.2%)
UTI	13(5.8%)	2(6.5%)
TUR syndrome	3(1.3%)	1(3.2%)

Results:

Patients who experienced TUR syndrome with Na levels lower than 120 meq/l. were managed with supportive treatment (3%NaCl solution and diuretics). None of the patients needed dialysis after the operation. There was no mortality in either group. Failure to void, urinary tract infection and blood transfusion rates of the two groups were similar (p = 0.68).

Discussion:

In patients over 50 years of age, BPH and RF are two health problems that can co-exist in a particular number of patients (5.9–13.6%)[9] this co-existence was observed in 12.1% of our series. The most common indication for BPH surgery was failed medical treatment with BPH , and the main aim of TURP was to improve quality of life[10]. Bladder outlet obstruction due to BPH can contribute to the development of renal failure , and these patients frequently experience dilatation and deterioration of the upper urinary tract.[11,12] Catheterization of such patients for an appropriate time may reverse the changes in the upper urinary tract. However some patients with BPH do not develop upper urinary tract dilatation although they have high urea and creatinine levels. In previous studies, it was shown that patients with BPH and renal insufficiency have much higher postoperative complications (25% vs 17%) than those with normal renal function[13,14,15] . However, most of these studies were based on data of from two or three decades ago, since then significant advances in anaesthesiology and intensive care medicine as well as urotechnology has been achieved. The use of continuous-flow resectoscopes, non-hemolytic irrigation fluids and decrease in operative time due to improving and refining of TURP technique in time with the increased number of operations performed probably has had significant positive effects on TURP outcomes[16]. The operative complication did not differ significantly between two groups in this study. The percentage changes between the preoperative and postoperative Na, K, urea and creatinine values of the two groups were similar. It was reported that diseases such as diabetes mellitus and hypertension are more common in patients with RF among BPH cohort[17,18] The incidence of these diseases were found to be significantly higher in the RF group in our study_.Age is a independent risk factor for renal insufficiency irrespective of medical co-morbidities, due to age related nephron loss and age is also risk factor for the development of BPH leading some to suggest that it is a natural concomitant of aging.[19] There was a cross-sectional association between signs and symptoms of bladder outlet obstruction and chronic kidney disease in community-dwelling men[20]. The mean age of RF group was numerically higher than group 1, although the difference lacked any significance in this study.

In our study estimated GFR (eGFR) and serum creatinine (SC) was taken as criteria for defining renal insufficiency. The routine measurement of serum creatinine levels is not indicated in the initial evaluation according to the AUA Guideline Management of BPH (AUA 2010 Guidelines). This recommendation is based on the conclusion that baseline renal insufficiency appears to be no more common in men with BPH than in men of the same age group in the general population. In our study routine screening of serum creatinine helped in identification of patients with renal failure.

Table 7 Comparision of study:

variables	Ozgur et al	Needhi et al	Thomas et al	Hong et al	Present study
Incidence of RF	99	12.5	11	5.9	12.1
Comorbidities(%)	64	45	NA	55.3	70
Mean s. Creat(mg/dl)	1.8	2.1	2.5	1.91	1.76
s.creatinine	NS	S	NA	NA	NS
s.electrolytes	NS	NS	NS	NS	NS
Operative complications	NS	S	S	NA	NS
Mean age in years	70.8	65	68	64.2	64.3
Mortality	Absent	Present	NA	NA	Absent

NS= Not significant, S= Significant, NA = Not applicable

The present analysis was comparable to results in different studies ozgur et al, needhi et al, Thomas et al and Hong et al .

CONCLUSIONS:

Our analysis concludes that renal failure (eGFR < 60 mL/min/1.73 m^2) do not increase the operative risk of TURP in BPH patients . TURP which is most commonly done prostate surgery can be safely performed in BPH patients with renal insufficiency (eGFR < 60 mL/min/1.73 $m^{2)}$ and moderately increased prostate volumes without additional morbidity.

REFERENCES:

1. McConnell, J.D., Barry, M.J. and Bruskewitz, R.C. (1994) Benign prostatic hyperplasia: diagnosis and treatment. Agency for Health Care Policy & Research. Clin Pract Guide Quick Ref Guide Clin 8: 1–17.
2. Hong, S.K., Lee, S.T., Jeong, S.J., Byun, S.S., Hong, Y.K., Park, D.S., et al. (2010) Chronic kidney disease among men with lower urinary tract symptoms due to benign prostatic hyperplasia. BJU Int 105: 1424–1428.
3. Rule, A.D., Jacobson, D.J., Roberts, R.O., Girman, C.J., McGree, M.E., Lieber, M.M., et al. (2005) The association between benign prostatic hyperplasia and chronic kidney disease in community-dwelling men. Kidney Int 67: 2376–2382.

4. Cam, K., Muezzinoglu, T., Kayikci, A. and Aydemir, O. (2010) Validity and reliability of Turkish version of quality of life scale specific for partners of patients with benign prostatic hyperplasia. Turkiye Klinikleri J Nephrol 5: 1–5
5. Holtgrewe, H.L. and Valk, W.L. (1962) Factors influencing the mortality and morbidity of transurethral prostatectomy: a study of 2,015 cases. J Urol 87: 450–459
6. Melchior, J., Valk, W.L., Foret, J.D. and Mebust, W.K. (1974) Transurethral prostatectomy in the azotemic patient. J Urol 112: 643–646.
7. Arrighi HM, Metter EJ, Guess HA, Fozzard JL. Natural history of benign prostatic hyperplasia and risk of rostatectomy. The Baltimore Longitudinal Study of Aging. Urology. 1991; 38(1 Suppl): p. 4-8.
8. Nahas, A.M. and Coles, G.A. (1986) Dietary treatment of chronic renal failure: ten unanswered questions. Lancet 15: 597–600.
9. Hong, S.K., Lee, S.T., Jeong, S.J., Byun, S.S., Hong, Y.K., Park, D.S., et al. (2010) Chronic kidney disease among men with lower urinary tract symptoms due to benign prostatic hyperplasia. BJU Int 105: 1424–1428.
10. Mebust, W.K. (1998) Transurethral surgery. In: Walsh, P.C., Retik, A.B., Vaughan, E.D. and Wein, A.J. (eds), Campbell's Urology. 7th ed. Philadelphia, PA: Saunders, pp. 1511–1528.
11. Koch, W.F., Ezz el Din, K., de Wildt, M.J., Debruyne, F.M. and de la Rosette, J.J. (1996) The outcome of renal ultrasound in the assessment of 556 consecutive patients with benign prostatic hyperplasia. J Urol 155: 186–189.
12. Sacks, S.H., Aparicio, S.A., Bevan, A., Oliver, D.O., Will, E.J. and Davison, A.M. (1989) Late renal failure due to prostatic outflow obstruction; a preventable disease. BMJ 298: 156–159.
13. Holtgrewe, H.L. and Valk, W.L. (1962) Factors influencing the mortality and morbidity of transurethral prostatectomy: a study of 2,015 cases. J Urol 87: 450–459.
14. Tseng TY, Stoller ML. Obstructive uropathy. Clin Geriatr Med. 2009 Aug; 25(3): p. 437-443.
15. Cockett AT, Barry MJ, Holtgrewe HL, Sihelnick S, Williams R, McConnell J. Indications for treatment of benign prostatic hyperplasia. The American Urological Association Study. Cancer. 1992 Jul; 70(1 Suppl): p. 280-283.
16. Melchior, J., Valk, W.L., Foret, J.D. and Mebust, W.K. (1974) Transurethral prostatectomy in the azotemic patient. J Urol 112: 643–646
17. Gerber, G.S., Goldfischer, E.R., Karrison, T.G. and Bales, G.T. (1997) Serum creatinine measurements in men with lower urinary tract symptoms secondary to benign prostatic hyperplasia. Urology 49: 697–702.
18. Hong, S.K., Lee, S.T., Jeong, S.J., Byun, S.S., Hong, Y.K., Park, D.S., et al. (2010) Chronic kidney disease among men with lower urinary tract symptoms due to benign prostatic hyperplasia. BJU Int 105: 1424–1428
19. Rosen R, Altwein J, Boyle P, Kirby RS, Lukacs B, Meuleman E, et al. Lower urinary tract symptoms and male sexual dysfunction: the multinational survey of the aging male (MSAM-7). Eur Urol. 2003 Dec; 44(6): p. 637-649.
20. Wu Sl, Li Nc, Xiao Yx, Jin J, Qiu Sp, Ye Zq, et al. Natural history of benign prostate hyperplasia. Chin Med J (Engl). 2006 Dec; 119(24): p. 2085-2089.