ORIGINAL ARTICLE

Experience of Percutaneous Nephrostomy (PCN) in Advanced CA Prostate

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ABSTRACT

Objective: To see the outcome of bilateral PCN versus unilateral PCN in cases of advanced CA prostate in terms of serum urea/creatinine & serum potassium and mean survival age.
Patients and method: In this study total 28 patients of advanced ca prostate of different age groups were included. These patients were divided into two groups, 17 patients were included in "Group A" in which bilateral PCN was done, in "Group B" 11 patients were included in which unilateral PCN was done under local anesthesia.
Results: In this study of 28 patients of prostate cancer were divided in 2 groups, group A was treated with bilateral PCN in group B patients were treated with unilateral PCN. The average age of patients was 68.76 ± 8.40 years in Group A and in Group B the mean age was 68.54 ± 10 years. The mean serum creatinine was significantly decreased but there was no difference in both study groups. Moreover, the mean serum urea was significantly decreased but bilateral PCN had more significant effect on serum urea. The results of mean serum PSA, serum potassium and mean survival age was same in both study groups, i.e. p-value >0.05.
Key words: Prostate cancer, Ultrasonography, Obstructive uropathy and PCN

INTRODUCTION

Palliative treatment of the obstructive uropathy due to advanced ca prostate is to decompress the system through a bilateral or unilateral nephrostomy stent. Prostate Cancer progression invade the trigone of the urinary bladder, involving the ureteric orifice (80% of cases) or the lower 3rd of the ureter (30%) and causing obstruction of unilateral or bilateral ureters.[1,2] If the obstruction due to advanced ca prostate is not managed, a clinical condition of the patient deteriorates at a fast pace due to uremia, electrolyte imbalance, urinary tract obstruction and can eventually be fatal[3,4]. Goodwin et al, reported the first PCN in 1995[5].

Percutaneous nephrostomy has been indicated for those patients with bilateral or unilateral ureteric involvment due to ca prostate where the retrograde catheterization is impossible in the presence of anatomic deformities, bleeding or ureteric compression due to malignancy[6]. PCN is relatively simple, fast and safe and presents low morbidity and mortality rates. Before the invention of recent advancement in endourological techniques patients with obstructive uropathy due to ca prostate underwent open nephrostomy and presented high morbidity and mortality rates however after the advancement of PCN quality of the life of patients' improved[7, 8].

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PATIENTS AND METHODS

This study was conducted in the department of urology and renal transplantation KEMU and MAYO Hospital, Lahore from January 2001 up to 2009. In this study total 28 patients of advanced CA prostate of different age groups were included. These patients were divided into two groups, 17 patients were included in "Group A" in which bilateral PCN was done, in "Group B" 11 patients were included in which unilateral PCN was done under local anesthesia in the better renal cortex hydronephrotic kidney. All the patients examined in urology OPD and Admitted in Department of Urology and Renal Transplantation. At bedside detailed history, Physical examination, especially digital rectal examination in addition to routine and advanced lab& radiological investigations was done.

In this study those patients in whom retrograde ureteric catheterization had failed were included. For nephrostomy purpose patient were taken in the operation theatre and procedure was done under local anesthesia under USG guidance by Seldinger's Technique. Patient position was semi- prone on the operation table. After cleansing and draping the operating area 2% injection xylocaine was locally infiltrated at the site of the puncture. The puncture point was below the tip of 12th rib in post-axillaries

line. Surgical blade no. 11 was used for stab incision. Puncture needle was inserted with the help of guided USG probe. When kidney's inferior calyx was punctured stilette was removed. A Floppy J Guide wire was passed through the needle and the needle was removed. The tract was dilated with different size facial dilators. After tract dilatation a pig-tailed nephrostomy stent was passed and secured. For prophylactic purposes injections of amino glycoside group were used.

RESULTS

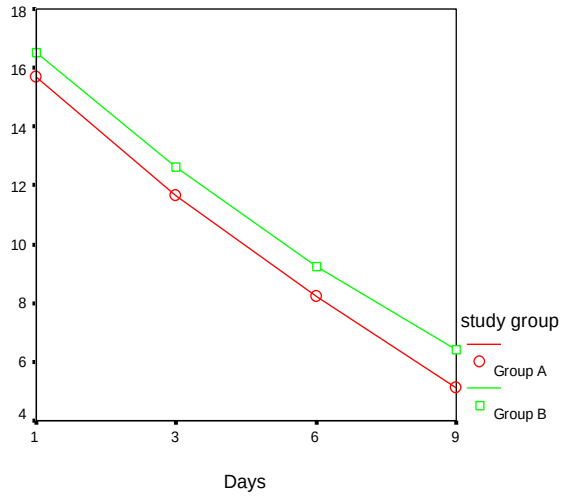
In this study of 28 patients of prostate cancer presented at our department the patients were divided in two groups, 17 patients were treated in group A (bilateral PCN) and 11 patients were treated in group B (unilateral PCN). The average age of patients was 68.76 ± 8.40 years in group A with minimum and maximum ages 55 and 85 years respectively and in group B the mean age was 68.54 ± 10 years with minimum and maximum 53 and 82 years respectively. At day 1, the mean degree of hydronephrosis in group A and group B was 1729.70 ± 455.98 and 1841.36 ± 373.84 respectively. At day 9, the mean degree of hydronephrosis in group A and group B was 869.73 ± 240.31 and 1008.63 ± 542.26 respectively. There was a significant decrease in the degree of hydronephrosis in both groups but group A had a significant effect, i.e. p-value = 0.00. ***(Table1)***

At day 1, the mean serum creatinine was 15.67 ± 3.69 mg% in group A and in group B it was 16.52 ± 3.24 mg%. At day 3, the mean serum creatinine was 11.67 ± 3.7 mg% in group A and in group B it was 12.62 ± 3.59 mg%. The mean serum creatinine in group A was 8.2 ± 3.42 mg% and in group B it was 9.25 ± 4.05 mg% at day 6. At day 9, in group A, the mean serum creatinine was decreased to 5.12 ± 2.17 mg% and in group B it was decreased to 6.40 ± 4.26 mg%. The mean serum creatinine was significantly decreased but there was no difference in both study groups, p-value = 0.931. ***(Graph 1, table 2)***

Similarly the serum urea was observed at 1st, 3rd, 6th and 9th day. So, at day 1, the mean serum urea was 192 ± 39.8 mg% in group A and in group B it was 161.97 ± 56.61 mg%. At day 3, the mean serum urea was 149 ± 37.02 mg% in group A and in group B it was 121.93 ± 47.91 mg%. The mean serum urea in group A was 108.58 ± 26.56 mg% and in group B it was 88.63±49.09 mg% at day 6. At day 9, in group A, the mean serum urea was decreased to 76.52 ± 20.86 mg% and in group B it was decreased to 76.90 ± 36.53 mg%. The mean serum urea was significantly decreased but bilateral PCN had more significant effect on serum urea. ***(Graph 2, table 3)***

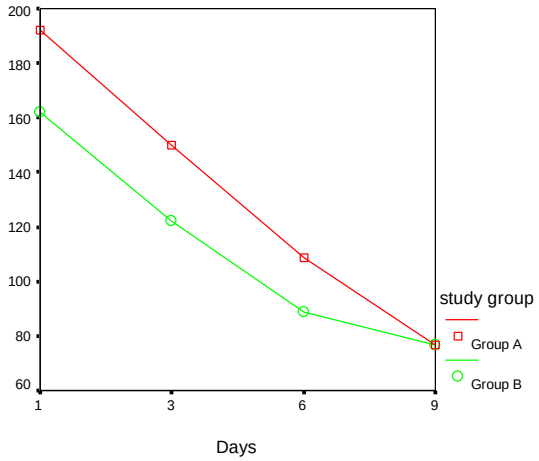
Moreover in group A, mean serum PSA was 135.73 ± 97.52 ng/ml and in group B it was 174.32 ± 105.12 ng/ml, the mean PSA was same in both study groups i.e. p-value = 0.30. In group A the mean serum potassium was 5.97 ± 0.49 meq and in group B it was 5.89 ± 0.44 meq, the average serum potassium was statistically same in both groups, i.e. p-value 0.08. Lastly the mean survival in group A was 15.22 ± 12.66 months and in group B, the mean survival was 14.92 ± 7.76 months, the mean survival was statistically same in both groups, i.e. p-value = 0.30.(***Table 4-6***). More over in group A, 3 patients had negative bone scan and in group B, 5 patients had negative bone scan, the bone scan results were statistically significant among study groups, p-value = 0.903. **(Graph 4)**

Graph 1: Mean serum Creatnine at different follow ups, group A and B



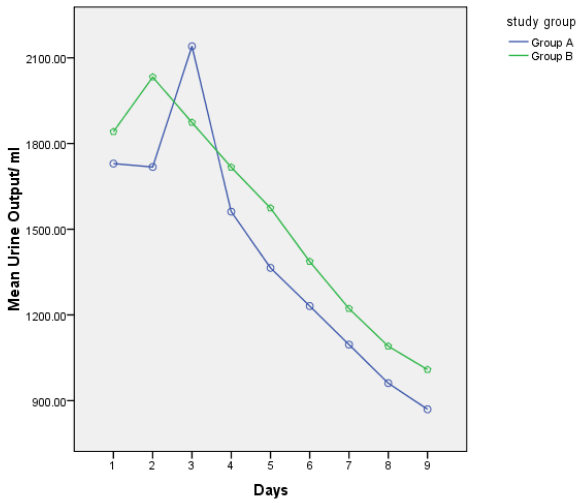
P-value = 0.931 (insignificant)

Graph 2: Mean serum Urea at different follow ups, in both study groups



P-value = 0.021 (significant)

Graph 3: Mean Urine output at different days in bilateral and unilateral PCN



P-value 0.000

Table1: Descriptive statistics of urine output (ml): a comparison in group a and group B

Study group	Mean (mg)	S.D (mg)	N
Degree of hydronephrosis day 1			
Group A	1729.70	455.98270	17
Group B	1841.36	373.84550	11
Degree of hydronephrosis day 2			
Group A	1717.94	420.81045	17
Group B	2032.72	400.45202	11
Degree of hydronephrosis day 3			
Group A	2140.29	1704.63657	17
Group B	1873.63	287.09834	11
Degree of hydronephrosis day 4			
Group A	1561.47	413.37696	17
Group B	1716.81	430.00159	11
Degree of hydronephrosis day 5			
Group A	1364.70	322.01257	17
Group B	1574.09	433.53672	11
Degree of hydronephrosis day 6			
Group A	1231.02	285.58200	17
Group B	1386.81	382.70271	11
Degree of hydronephrosis day 7			
Group A	1096.17	265.75676	17
Group B	1222.27	509.82038	11
Degree of hydronephrosis day 8			
Group A	961.17	258.07750	17
Group B	1090.45	531.94198	11
Degree of hydronephrosis day 9			
Group A	869.73	240.31478	17
Group B	1008.63	542.26419	11

p-value = 0.000 (significant decrease in degree of hydronephrosis at the day 9, in group A as compare to group B)

Table 2: Descriptive statistics: a comparison of serum creatnine at different follow up-days, among bilateral and unilateral PCN

Study group	Mean (mg)	S.D (mg)	N
Serum Creatinine Day 1			
Group A	15.6706	3.69540	17
Group B	16.5273	3.24687	11
Total	16.0071	3.48977	28
Serum Creatinine Day 3			
Group A	11.6706	3.70924	17
Group B	12.6273	3.59864	11
Total	12.0464	3.62986	28
Serum Creatinine Day 6			
Group A	8.2000	3.42107	17
Group B	9.2545	4.05496	11
Total	8.6143	3.64699	28
Serum Creatinine Day 9			
Group A	5.1294	2.79928	17
Group B	6.4000	4.26075	11
Total	5.6286	3.43024	28

p-value = 0.931 (insignificant)

Table 3: Descriptive statistics: a comparison of serum urea/mg at different follow up-days, among bilateral and unilateral PCN

Study group	*Mean (mg)*	*S.D (mg)*	*N*
Serum Urea Day 1			
Group A	192.0000	39.82932	17
Group B	161.9727	56.61615	11
Total	180.2036	48.47967	28
Serum Urea Day 3			
Group A	149.9412	37.02444	17
Group B	121.9364	47.91894	11
Total	138.9393	43.09034	28
Serum Urea Day 6			
Group A	108.5882	26.56609	17
Group B	88.6364	49.09027	11
Total	100.7500	37.53973	28
Serum Urea Day 9			
Group A	76.5294	20.86000	17
Group B	76.9091	36.53068	11
Total	76.6786	27.42539	28

p-value = 0.021 (significant)

Table 4: Descriptive statistics of serum PSA (ng/ml), with respect to bilateral and unilateral PCN

Study Group	Mean (ng/ml)
Group A	135.73 ± 97.52
Group B	174.32± 105.12

P value: 0.30 (in-significant)

Table 5: Descriptive statistics of serum potassium (meq) with respect to bilateral and unilateral PCN

Study Group	Mean (meg)
Group A	5.97±0.49
Group B	5.89 ± 0.44

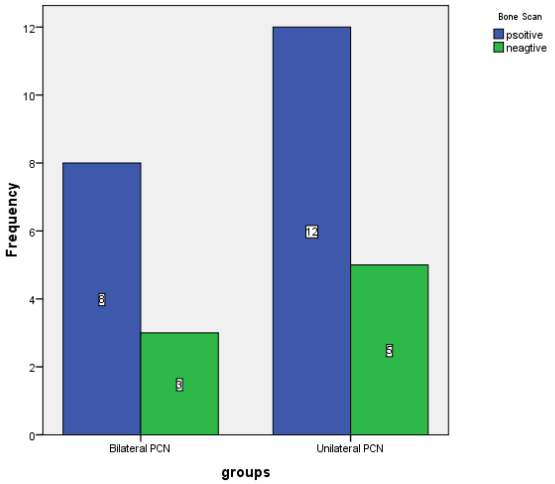
P value: 0.08 (in-significant)

Table 6: Descriptive statistics of mean survival (months) with respect to bilateral and unilateral PCN

Study Group	Mean (months)
Group A	15.22 ± 12.66
Group B	14.92 ± 7.76

P value: 0.30(in-significant)

Graph 4: Bone Scan in different study groups



P-value = 0.903

DISCUSSION

Ureter obstruction due to CA prostate usually have better prognosis than other type of pelvic malignancies which involve the ureteral orifices. In our study the survival was more than one year approximately more than 60% of patients which were treated with percutaneous nephrostomy. [9, 10] Many research scholars have a strong urge to perform percutaneous nephrostomy in patients with cancer derived obstruction before properly assessing each patient individual condition[11,12].

Our data match with the international studies in case of survival of the patients. The survival was better in a group of patients whose age were 55 years, results compare with the study of Lee SK, et al. [13] However the main factor that should guide the urologist management is patient desire. Some patients may refuse the nephrostomy this might be good candidate, other may wish to prolong life even for a short time due to emotional, legal and financial reasons, and this wish must be respected. However, patient and their families must be completely informed about the palliative role of surgery for removing the obstruction, the diseases prognosis and potential complications of the procedure[14].

In literature it was proved that when comparing patients with per coetaneous nephrostomy tube, the double j patients show more discomfort and irrigative bladder symptoms without significant differences and tons of global quality of life[15]. All those patients with pain, compromised cardiac status, secondary's in the bone with no possibility of a major surgical procedure, the percutaneous nephrostomy is a life saving procedure[16,17].

The complication which observed during the study due to PCN insertion occurs in 4-26% of procedures, the same complications observed by different research scholars in performing the bi-lateral or unilateral kidney decompression[18,19].

CONCLUSION

Our study suggests that the serum creatinine was significantly decreased but there was no difference in both study groups. The mean serum urea was significantly decreased with significant bilateral PCN effect. However as the creatinine level at the time of death did not differ between these 2 sub-groups, survival post-PCN insertion depends on the aggressiveness of the CA prostate rather than the number of nephrostomies inserted.

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