

Pattern and Outcome of Surgical Management of Postrenal Acute Renal Failure Over Three Years Period at Tikur Anbessa Specialized Hospital.

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Background: *Post renal acute renal failure occurs when there is an obstruction to renal flow anywhere distal to the pelvis.*

Methods: *This study was a three years retrospective analysis of patients who underwent treatment for post renal acute renal failure patients at TASH, urology unit, from January 2010 to December 2012.*

Results: *The post intervention creatinine of the patients with post renal acute renal failure was <1mg/dl in 7 (33%), 1-2 mg/dl in 5 (24%), 2-5mg/dl in 6 (29%) and >10mg/dl in 3 (14%) (Table 5). When we see the general out come 12 (57%) patients have improved, 4 (19%) patients are fair (slightly improved) and 5 (24%) patients failed to improve*

Discussion: *In 33% of patients the post intervention creatinine returned to normal (<1mg/dl) and in 24% of patients it returned to high normal (1-2mg/dl). Moreover the serum creatinine significantly decreased in all patients except one. This indicates early intervention cures acute renal failure or at least decreases the rate of progression of acute-on-chronic renal failure.*

Conclusion: *This study clearly demonstrates early intervention of post renal acute renal failure brings a significant improvement of patients despite a high serum creatinine level. While there is life there is hope*

Introduction

Acute kidney injury (AKI) occurs in 1% to 5% of all hospital admissions, and in the perioperative period has serious implications, being consistently associated with (unacceptably) high mortality, morbidity and a more complicated hospital course with associated cost implications¹. Post renal acute renal failure occurs when there is an obstruction to renal flow anywhere distal to the pelvis. Obstruction is always the most likely diagnosis when there is anuria. For this to occur, both ureter and the urethra should be obstructed. It is commonly seen in patients with retroperitoneal or pelvic pathology and abdominal ultrasound is a good diagnostic tool^{2,3}.

Ureteric obstruction may be suspected in the presence of an old or recent history of renal stone, gynecological, urological or pelvic surgery or radiation, or by clinical features of abdominal neoplasia, especially carcinoma of the cervix⁴.

Emergency treatment of obstructive uropathy is needed in the presence of bilateral obstruction, urosepsis, uremia and hyperkalemia, persistent renal colic, worsening of Hydronephrosis and renal impairment (creatinine increased, or GFR decreased which is a more accurate). Regarding the dilemma to insert a ureteral stent (JJ stent) or a percutaneous nephrostomy, literature indicates that both procedures do not show any statistically significant difference in terms of efficacy^{5,6}.

Early relief of obstruction may cure acute renal failure due to post renal etiology or convert the situation of chronic renal failure from advancing progressive disease to stable renal insufficiency compatible with comfortable life. If restoration or improvement of renal function appears probable; relief of obstruction may be indicated, even though there has been considerable initial loss of function in patients whose kidney function is irreversibly damaged by the underlying obstructive process^{7,8}.

Therefore this study tries to show the importance of early intervention using various modalities of treatments despite a significant rise in serum creatinine. There is still a controversy on the significance of creatinine in indicating the outcome of patients. In addition these treatments need the collaboration of the surgeon, the anesthesia team and nephrologists.

Patients and Methods

This study was a three years retrospective analysis of patients who underwent treatment for post renal acute renal failure at TASH, urology unit from January 2010 to December 2012. In this study children under the age of 11 years were not included because they were treated in a separate pediatric unit. We reviewed the medical records of twenty five patients with post renal acute renal failure who underwent various interventions during the three years period. Four of them had poor recording and were excluded from the study. In this study we looked at the demographic distribution, the preoperative diagnosis, preoperative renal function tests, the procedure they underwent, their post operative renal function tests and their outcomes.

Results

We had 21 patients 16 (76%) males and 5 (24%) females with post renal acute renal failure of which 14 (67%) is due to urolithiasis followed by tumors 4 (19%), Pelviureteric junction (PUJ) obstruction 3 (9%) and bilateral ureteric ligation 1 (5%), respectively (Table 1).

Their age ranges from 14 to 70 years with the average age being 38 years. We found different patterns of urolithiasis which presented as bilateral ureterolithiasis 6, unilateral ureterolithiasis (UUL) with contra-lateral nephrolithiasis 1, bilateral nephrolithiasis (BNL) 3, unilateral non-functioning kidney with contra-lateral nephrolithiasis or ureterolithiasis (UNFK+N/UL) 3 and ureterolithiasis in solitary kidney (UUL(SK)) 1, respectively (Table 2).

The post intervention creatinine of the patients with post renal acute renal failure was <1mg/dl in 7 (33%), 1-2 mg/dl in 5 (24%), 2-5mg/dl in 6 (29%) and >10mg/dl in 3 (14%) (Table 5). When we see the general out come 12 (57%) patients have improved, 4 (19%) patients are fair (slightly improved) and 5 (24%) patients failed to improve (Table 6). Four patients died of uremia and urinary tract infection.

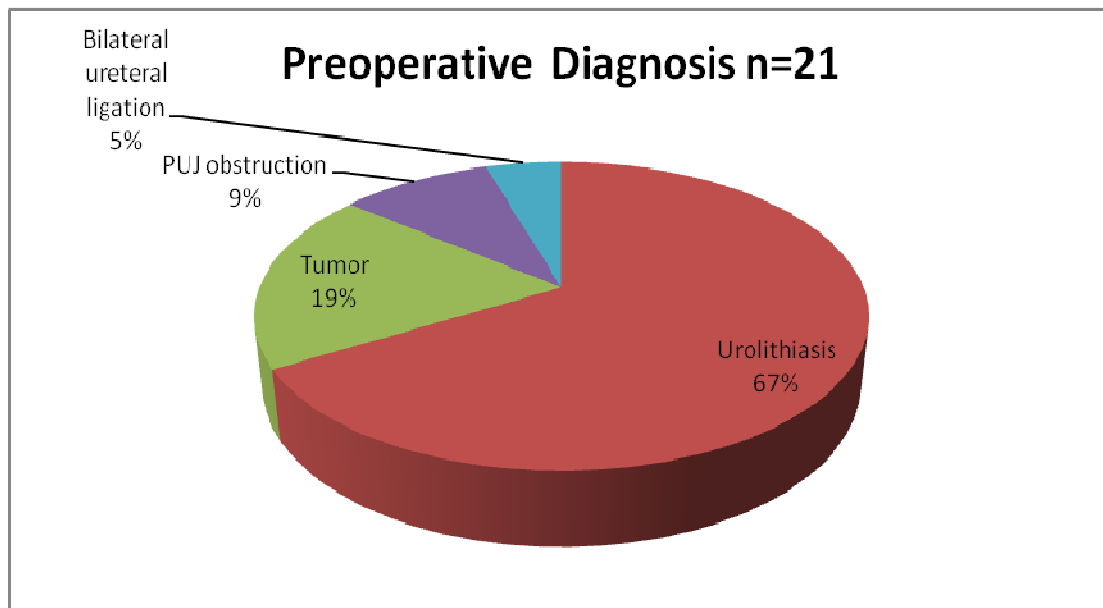


Figure 1.Preoperative Diagnosis of Post Renal Acute Renal Failure Patients

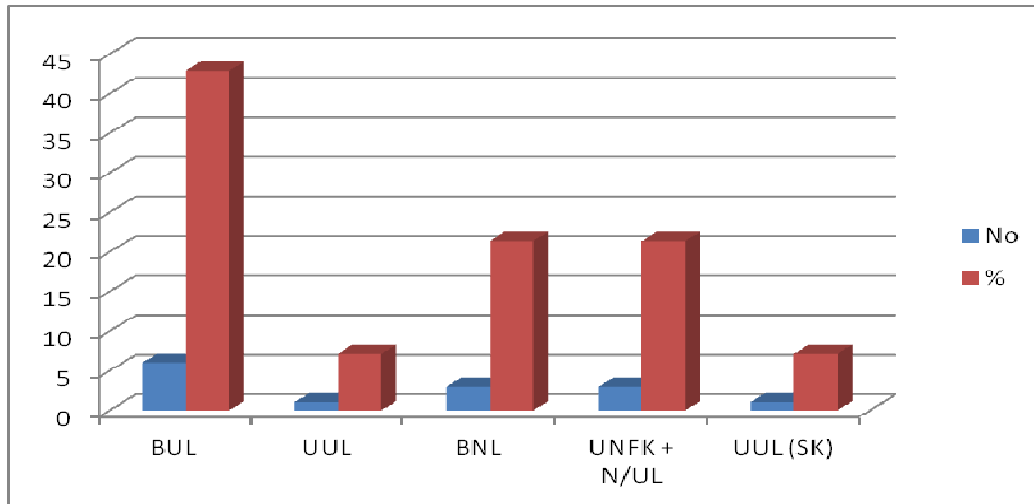


Figure 2. Patterns of Urolithiasis Causing Post-renal Acute Renal Failure

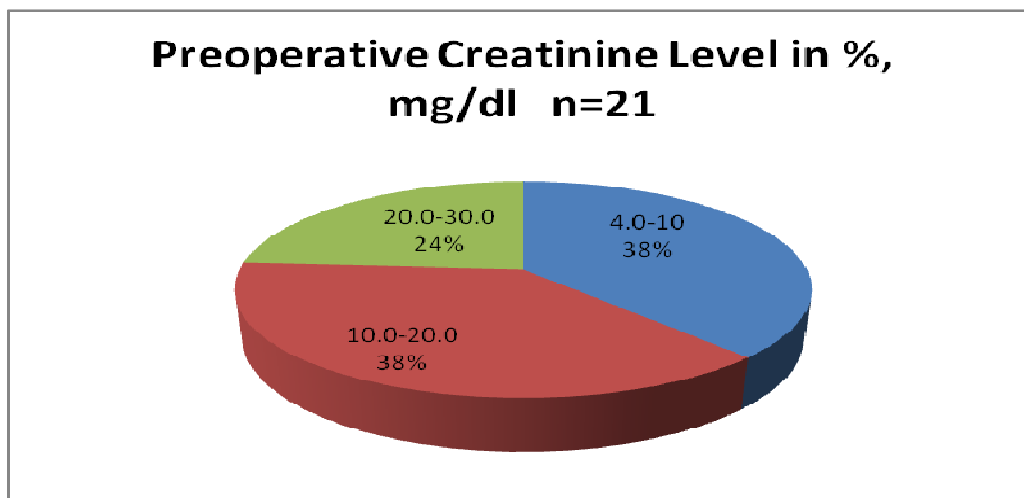


Figure 3. Preoperative creatinine level of post renal acute renal failure patients

Table 4. types of procedures done for the patients with post renal acute renal failure

Procedure	Bilateral	Unilateral
Double J Stent insertion	8	4
Percutaneous Nephrostomy	3	3
Ureterorenoscopy	5	4
Open Nephrostomy	-	1
Open Ureterolithotomy	1	1
Ureteric reimplantation	1	-
Total	18*	13*

*Some patients needed more than one procedure

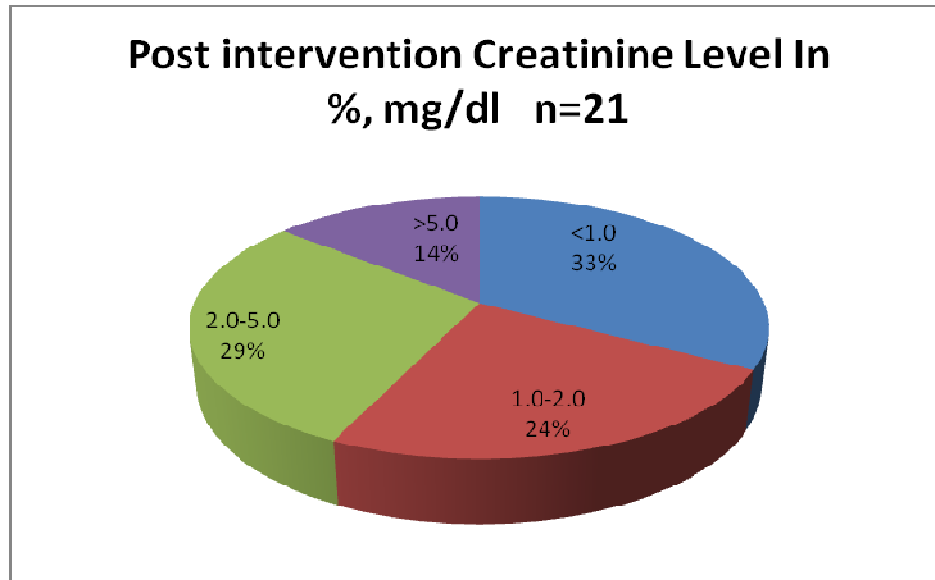


Figure 5. Postoperative Creatinine level of Post renal Acute Renal Failure Patients

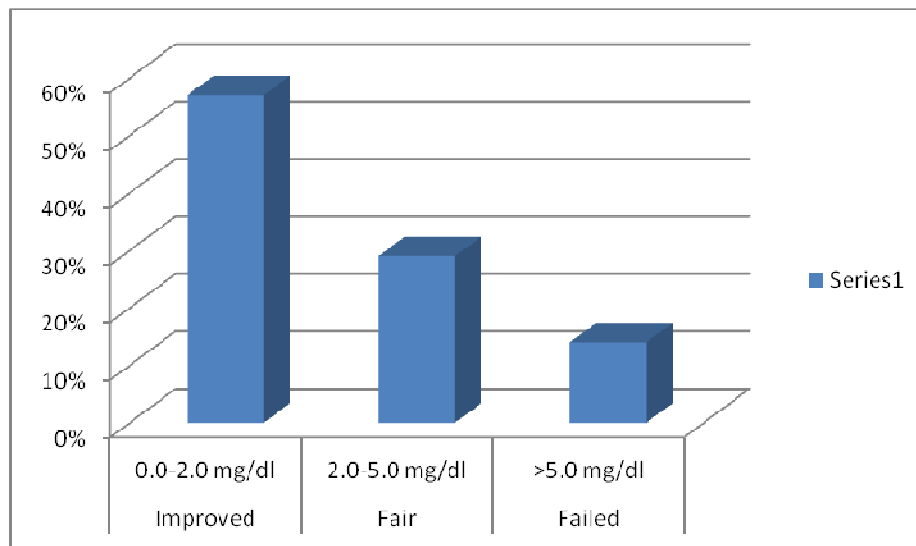


Table 6. Outcome of Post renal Acute Renal Failure Patients After Intervention in%, n=21

Discussion

This study shows post renal acute renal failure is not a rare phenomena as we have seen 21 patients in three years in one unit at TASH. Like elsewhere, the majority of our patients are due to urolithiasis. Other causes are tumors and PUJ obstruction^{4,5 7}. The disease affects patients at any age but majority are young adults with a mean age of 38 years.

Urolithiasis occurs in different patterns causing obstructive uropathy as a cause of acute renal failure. It can be unilateral, bilateral or may affect one ureter and the kidney itself. In some patients the kidney is non-excreting or already damaged. In our patients the preintervention serum creatinine is above 4mg/dl which shows there was a significant derangement of the renal function.

Many patients were treated with double J stenting and percutaneous nephrostomy which can be done under local anesthesia. But in a significant portion of patients we did ureteroscopy which requires general anesthesia despite the high level of serum creatinine. In 33% of patients the post intervention creatinine returned to normal ($<1\text{mg/dl}$) and in 24% of patients it returned to high normal ($1-2\text{mg/dl}$). Moreover the serum creatinine significantly decreased in all patients except one. This indicates early intervention cures acute renal failure or at least decreases the rate of progression of acute-on-chronic renal failure. This is very important in resource poor setting where renal replacement therapy is not readily available.

Conclusion

This study has shown early intervention of post renal acute renal failure brings a significant improvement of patients despite a high serum creatinine level. While there is life there is hope⁹.

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