Role of Prostatectomy in Management of Renal Failure due to Prostatic Outflow Obstruction.

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ABSTRACT

INTRODUCTION: The prevalence of renal failure due to prostatic disease is unknown. Men with large residual urine might present with renal failure if their outflow obstruction is left untreated. The early results of prostatectomy in these men are good where upper tract dilatation resolves, bladder emptying improves and bladder pressure decreases.

METHODS: We reviewed the cases of 25 men who presented in the last 2 years with renal impairment associated with symptoms of prostatic outflow obstruction for whom prostatectomy was carried out either with transurethral resection or holmium laser enucleation; and histology revealed benign prostatic hypertrophy. Patients with carcinoma of prostate were excluded from study.

RESULTS: The mean age at presentation was 67.8 yrs. Duration of symptoms prior to presentation was in between 1 to 120 months (mean 22.6 months). Mean IPSS score was 24. The mean serum creatinine at presentation was 4.9 mg/dl. Eighteen patients had other comorbidities. Six of the patients had undergone dialysis. Four of the patients presented with acute retention of urine. Following foley’s catheterization and optimization for surgery, 10 patients underwent TURP and 15 underwent HOLEP. Twenty one patients had improvement in symptoms, voided spontaneously and had better renal function within two weeks of the operation. At six months follow up, one patient performs clean self-intermittent catheterization (CSIC) and one has an indwelling catheter in situ. Two patients remained dialysis dependent following prostatectomy.

CONCLUSION: In patients presenting with renal failure due to prostatic outflow obstruction, timely prostatectomy restores normal voiding pattern and renal function.

KEY WORDS: renal failure, prostatectomy

INTRODUCTION

Though by the age of 60 years, more than half of men have histological evidence of benign prostatic hyperplasia\(^1\) and prostatic symptoms are known to occur in up to 40% of men over 65\(^2\), the prevalence of renal failure due to prostatic disease is essentially unknown\(^3\). Dilatation of the upper urinary tract has been reported in about 5% of men being investigated in hospital for prostatism and up to 10% in men undergoing prostatectomy\(^4,6\). About 15% men undergoing prostatectomy have residual urine of 100 – 300 ml and these men are at increased risk of upper tract damage and might present later with renal failure if their outflow obstruction is left untreated\(^5,9\). Although pressure flow relations within the bladder associated with upper tract dilatation have been greatly clarified\(^10-13\), there have been surprisingly little emphasis on the progressive effects on the kidney leading to irreversible renal failure\(^3\). Renal failure remains the cause of first referral for some men, rather than the earlier symptoms of obstruction – often neglected and attributed to ageing\(^4\).
Late or end stage renal failure secondary to prostatic outflow obstruction is amenable to prevention if cases are recognized early and the obstruction relieved. New cases of late or irreversible disease arise each year and 3-5% of end stage renal disease in patients over the age of 65 is due to acquired obstruction indicating that prostatic enlargement is an important cause of end stage renal disease.

Men with renal impairment require a period of catheter drainage before prostatectomy to allow renal function to improve. Prostatectomy in men with impaired renal function carries increased risk. These men are more likely to have urinary sepsis and their capacity to respond to cardiovascular changes which may result from hypovolemia, hypoxia and sepsis is markedly reduced. Catheterisation is continued until renal function is stable. The early results of prostatectomy in these men are good. In most men, upper tract dilatation resolves, bladder emptying improves and bladder pressure decreases. However, in some the upper tract dilatation persists and these men may be at risk of permanent renal impairment in the future.

METHODS

During the last 2 years, 25 patients with impairment of renal function on biochemistry due to prostatic outflow obstruction underwent prostatectomy with either transurethral resection or holmium laser enucleation. The patients either presented to the outdoor services or in acute retention to the emergency department. On arrival into the hospital, a detailed history, examination and investigations including age, duration of prostatic or uremic symptoms, treatable conditions at admission (urinary tract infection, hypovolemia, nephrotoxic drugs, medical comorbidities contributing to renal failure) was carried out. Diagnosis of prostatic outflow obstruction was confirmed with ultrasonography paying special attention to size of intravesical protrusion of prostate and postvoid residual volume of urine. Serum prostate specific antigen and urine for culture and sensitivity pattern was done in all patients. All patients were optimized for surgery and foleys catheterization was done in all. All patients underwent prostatectomy either with transurethral resection or holmium laser enucleation. The prostatic chips were sent for histopathological examination. Patients with carcinoma of the prostate were excluded from the study. Postoperatively the patients were followed up with meticulous attention to the biochemical markers of nephropathy. At the time of reporting all patients have been followed up for atleast 6 months postoperatively.

RESULTS

The mean age of the patients was 67.8 years. 21 patients presented to the outdoor services and 4 patients presented with acute retention of urine to the emergency department. After admission into the hospital, a detailed history was taken. All the patients had prostatic symptoms. The duration of the symptoms was in between 1 to 120 months (mean 22.6 months) and the symptoms were categorized according to the American Urological Association (AUA) grading (Figure 1). The mean score was 24. Five patients had undergone prostatectomy in the past with mean of 4.7 years. Eighteen patients had other comorbidities. Six of the patients had undergone dialysis.

In addition to routine investigations for operation, ultrasonography was carried out taking special note on intravesical protrusion of the prostate and postvoid residual volume of urine. The mean intravesical protrusion was 9.34mm (Figure 2) and mean postvoid residual volume was 122.7ml (Figure 3). Serum prostate specific antigen was performed in all cases. Mean PSA was 2.32 ng/ml. Uroflowmetry was done in all of the cases and all were consistent with bladder outflow obstruction. Urine was sent for culture and sensitivity in all cases. The mean serum creatinine at the time of presentation was 4.9 mg/dl in these 25 patients.
Following foley’s catheterization and optimization for surgery, 10 patients underwent TURP and 15 underwent HoLEP. Twenty one patients voided spontaneously and had improvement in symptoms with mean AUA score of 12 at 6 months. These patients had better renal function within two weeks of the operation (mean serum creatinine of 1.2 mg/dl). One patient performs clean self-intermittent catheterization (CSIC) and one has an indwelling catheter in situ. Two patients remained dialysis dependent following prostatectomy.

DISCUSSION

By the age of 60 years, more than half of men have histological evidence of benign prostatic hyperplasia although not all have the symptoms1. About tenth to a fifth of men in their forties will subsequently undergo prostatectomy18-19. However many with symptoms do not consult doctors and studies have showed that fifth of elderly men had symptoms of a similar severity to men undergoing prostatectomy. Many men are not asymptomatic but merely uncomplaining20. In our series too, although all the patients had prostatic symptoms, with mean AUA of 24, only 7 had visited a urologist in the past and 5 had undergone prostatectomy. It would be suggestive that ultrasonography to assess the prostate size, effects on the bladder and upper renal tract is performed in all cases presenting with prostatic symptoms. Measurement of blood urea and creatinine concentrations allows detection of cases of renal impairment.

About a half of men with palpable painless bladder (chronic retention) have upper tract dilatation or an increased serum creatinine7. Identification of men with renal impairment is important, for they may require a period of catheter drainage before prostatectomy to allow renal function to improve. Prostatectomy in men with impaired renal function carries an increased risk17. These men are more likely to have urinary sepsis and their capacity to respond to the cardiovascular changes which may result from hypovolemia, hypoxia and sepsis is markedly reduced16. In all of our cases, we had preoperative Foleys catheterization and a period of optimization for surgery. Catheter drainage may be followed by a diuresis, which in early days may reflect appropriate excretion of retained fluid and sodium. However, profound losses may continue as a consequence of damaged tubular function16.

The early results of prostatectomy in men with early renal failure are good. In most men, upper tract dilatation resolves, bladder emptying improves, and bladder pressure decreases. However, some have found that upper dilatation persists16. As the severity of renal impairment and the degree of recovery of function after relief of obstruction are influenced by the duration and completeness of obstruction, although serum creatinine improved by two weeks post prostatectomy, it remained marginally high and two patients were dialysis dependent. Renal failure after prostatectomy may be the result of incomplete removal of obstruction, stone formation or infection in persistently dilated upper tracts, or progressive loss of nephrons due to hyperfiltration of remnant nephrons21. The incidence of renal failure post prostatectomy is very low, being less than 0.5 %16.

CONCLUSION

Outflow obstruction is a potentially treatable cause of renal impairment in elderly male if they are identified and treated at an early stage. Although prostatectomy is feared by most patients as a morbidity itself, introduction of TURP and HoLEP has made it one of the safest of major operations,
REFERENCES