

BILATERAL STONES AND RENAL FAILURE

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SUMMARY

The clinical presentation of patients with bilateral stones is discussed. The majority of patients presenting to the Nephrology Unit were in renal failure. Aggressive medical treatment allowed diagnostic procedures and definitive surgery to be performed in uraemic patients. Most patients presenting in uraemia benefitted from treatment.

INTRODUCTION

Forty patients with bilateral stones were treated by the Nephrology unit over 2 years (1977, 1978). This retrospective study was undertaken to review the clinical presentation, and results of acute medical treatment followed by definitive surgery in patients with bilateral stones, particularly among those presenting with impaired renal function.

CLINICAL MATERIAL

All patients with calculi in both outflow tracts treated by the Nephrology Unit over the 2 year period were included in this review. Patients admitted to the Urology Unit and not initially treated by the Nephrology Unit were excluded.

Resuscitative measures including intravenous therapy, control of infection and hypertension, correction of anaemia, and peritoneal dialysis were

performed where necessary. Radiological examinations including intravenous urograms were done on 38 patients and retrograde pyelograms in 4. Biochemical tests including the serum creatinine, blood urea and electrolytes, uric acid, calcium and phosphates were performed periodically. The presence of calculi was diagnosed from radiological studies, operative findings and from a clear history of passing out of stones.

CLINICAL PRESENTATION

There were 29 males and 11 females with ages ranging from 22 to 69. There were 20 Malays, 15 Chinese and 5 Indians.

The main clinical features were uraemia in 15 (37.5 percent) loin pain in 16 (40 percent) and complete anuria (for at least 24 hours) in 7 (17.5 percent). Hypertension was present in 8 patients and 5 were known to have gout. 3 patients were known to have had renal stones before admission.

20 patients were admitted with serum creatinine greater than 8 mg% per 100 ml. 10 of these 20 patients underwent definitive surgery, 6 were operated upon both sides and 4 on one side. Surgery was refused by 2 patients and not performed on 1 with extensive calculous disease in both kidneys. 4 patients presented in complete anuria, 2 of whom improved rapidly after passing out calculi and the other 2 diuresed after rehydration and peritoneal dialysis. 3 patients died after admission

6 patients were admitted with serum creatinine between 4 mg and 8 mg. Surgery was performed on 4 patients but not on 2 with bilateral extensive calculus disease. Of 14 patients with serum creatinine below 4 mg, surgery was performed on 8 (3 both sides, 5 one side) but not on the other 6 (4

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refused surgery, 2 had bilateral calculous disease). Peritoneal dialysis was performed on 7 patients. All patients were followed up for at least 4 months.

RESULTS

Of 22 patients operated upon, 9 out of 10 patients improved with serum creatinine greater than 8 mg. In 8 the serum creatinine stabilised below 4 mg and remained at 5.5 mg in the other. No improvement was detected in 1 patient. 2 out of 4 patients with serum creatinine between 4 mg and 8 mg improved, with the creatinine remaining below 2 mg, renal function did not improve in the other 2. Of 8 patients with serum creatinine below 4 mg, renal function remained stable in 7, but deteriorated in 1.

2 patients developed septicaemia in the immediate post-operative period. 1 patient developed hepatitis and another a stroke. All recovered completely.

18 patients were treated medically and 5 out of 7 patients with serum creatinine greater than 8 mg% improved, with serum creatinine below 2 mg% on discharge. The other 2 patients remained severely uraemic. Renal function in the 2 patients with serum creatinine between 4 mg% and 8 mg% remained stable. Six patients with serum creatinine below 2 mg% maintained stable renal function. There were 3 deaths. All were uraemic and 2 died within 24 hours of admission. The other died of myocardial infarction after 7 days.

Of 26 patients with serum creatinine greater than 4 mg%, 6 had calculi in both ureters, 8 in both kidneys and 12 in one kidney and the opposite ureter. All 6 patients with bilateral ureteric calculi had serum creatinine greater than 8 mg%, 2 improved without surgery with serum creatinine remaining less than 2 mg% on discharge. Following surgery serum creatinine improved to below 2 mg% in 2 patients and 2.7 mg% and 4.5 mg% in another 2. Two patients were found to have bilateral radiolucent calculi and 2 others had primary hyperparathyroidism.

DISCUSSION

Bilateral calculi causing renal failure is uncommon (Muerchke, 1969). In a series of 200 patients with obstructive renal failure over a 10 year period reported by Chisolm (1970) 17 percent were caused by calculi. In a large series of over 1000 cases of urolithiasis, over a four and a half year period reported by Sreenevasan (1974), 10.7 percent of these patients had bilateral calculi.

Uraemia 15 (37 percent), loin pain 16 (40 percent) and hypertension 8 (20 percent) were common clinical features. Complete anuria, a characteristic (Pillay & Dunea, 1971) of complete obstruction was present in 7 patients (17.5 percent). Although the majority of patients seen had severe impairment of renal function, all except 3 patients up to the time of admission were not aware of their calculous disease. Presumably the silent nature of their disease resulted in late clinical presentation, by which time significant renal damage had occurred.

Aggressive resuscitative measures in uraemic patients allowed radiological examinations to be safely performed, followed by definitive surgery, as advocated by Chisolm (1970) and Sreenevasan (1974). The majority of patients who presented in uraemia showed improved renal function after treatment. Patients who presented in complete anuria all responded well to treatment. Patients with less severe renal impairment and presenting less acutely, responded less dramatically to medical and surgical treatment.

Despite the presence of uraemia, the intravenous urograms were helpful in providing information regarding the level and degree of obstruction. However it is less helpful in evaluating functional changes (Wilkiemayer *et al*, 1972; Hoffman and Grayhack, 1960) and in assessing recoverability of renal function following surgery. A radionuclide procedure recently reported by Buescher *et al*, 1978 is helpful in evaluating functional changes and in the following of patients with stones. The dynamic renal scan has also recently been reported to be a sensitive method in predicting recoverability of

TABLE I
BILATERAL STONES AND RENAL FAILURE
CLINICAL FEATURES

| | |
|------------------------------------|-----------|
| Uraemia | 15(37.5%) |
| Loin pain | |
| Bilateral (6) } Unilateral (10) | 16(40 %) |
| Complete Anuria | 7(17.5%) |
| Hypertension | 8(20 %) |
| Haematuria & Passage of calculi | 3 |
| Dysuria | 2 |
| Recurrent UTI | 1 |
| Gout | 5 |

renal function after surgery (Lome *et al*, 1979). These procedures may be helpful in assessing the possible benefits of surgery in cases of stones with severely impaired renal function.

Early detection, investigation for causes of urinary calculi, appropriate treatment, and prevention of recurrence, are all obviously important in preventing renal damage. Patients with bilateral stones and severe renal failure pose difficult problems in management. Despite relief of obstruction, improvement in renal function is less likely in long standing obstruction, emphasising the important for early diagnosis and treatment to prevent irrecassible renal damage.

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