THE TREATMENT OF BENIGN PROSTATIC OBSTRUCTION BY INJECTIONS—A CLINICAL TRIAL

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The results of the treatment of 100 consecutive, unselected cases of benign prostatic obstruction by injection of a solution containing phenol, glacial acetic acid and glycerine are presented. The early results are compared with results of follow up 1-2 years later. A significant fall in success rate from 78·7 % to 69·1 % is noted.

Benign prostatic obstruction is usually treated by prostatectomy. This operation has an average mortality of 2·5 to 3% (Wells 1953, Hanley 1960, Nambiar and Cohen 1968). The mortality is greater in patients with acute retention of urine and in those over 80 years of age (Watts 1968). Significant morbidity is also common and refinements of surgical technique cannot be expected to reduce them (Castro 1972). Alternative methods of treatment for this essentially benign condition are therefore desirable and this has led to the search for effective non-operative methods.

The treatment of benign prostatic obstruction by intraprostatic injection of sclerosing agents was first practised by Sir James Roberts, who was the surgeon to Lord Hardinge, the Viceroy of India between 1909 and 1916. The first clinical trial of this method was reported by Talwar and Pande in 1966. They treated 188 consecutive cases of benign prostatic obstruction by intraprostatic injections and obtained a success rate of 78·2% with minimal complications. Since then there have been a few successful trials reported in the literature (Shipman and Akilie 1967, Angell 1969).

The good results claimed in the above reports prompted us to carry out a clinical trial of this method in Singapore. This mode of treatment was especially suited to our local population as most Asian patients have a strong preferance for non-surgical treatment of most diseases.

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MATERIAL

We report here the immediate and late follow up results of 100 consecutive cases of benign prostatic obstruction treated by intraprostatic injections. The composition of the injection fluid was as used by Talwar and Pande (1966) and consisted of carbolic acid 0·6 ml., glacial acetic acid 0·6 ml., glycerine 1·2 ml. and distilled water 27·6 ml. The solution was sterilised by autoclaving at 15 pounds pressure for 15 minutes. The cases were treated at the Unit of the Senior Surgeon, Outram Road General Hospital, Singapore between June 1970 and July 1971. Among the 100 cases, six were found on subsequent investigation to be unsuitable for injection therapy because of associated pathology such as bladder tumours, prostatic cancer, vesical and prostatic stones and perineal sepsis. Out of the remaining 94 cases included in this survey, 88 cases (93·6%) presented with acute retention of urine and 6 cases (6·4%) with symptoms of prostatism.

The cases selected for the trial were started on injections after 24 hours of urethral catheter drainage, and the necessary investigations carried out as soon as possible subsequently. All cases had routine urological investigations such as blood urea, urine microscopy and culture, intravenous pyelography and cystoscopy. In doubtful cases prostatic needle biopsy and serum acid phosphatase levels were done to exclude prostatic carcinoma.

Technique

The patient was placed in the left lateral position. A weal was raised with local anaesthetic in the mid-point of the perineum. The injection fluid was drawn into a labat syringe

and with the index finger of the left hand in the rectum as a guide to the position of the prostate, the long injection needle was introduced transperineally into the substance of the prostate. If the needle was in the correct place, some resistance could be felt during injection. If the patient complained of pain in the penis or blood appeared at the urethral meatus, the needle was judged to have been introduced too deeply and was withdrawn a little. If there was no resistance to the injection the needle might have been introduced too far into the bladder.

In 71 cases the transperineal method was used. For 23 cases the injections were given transrectally (without any special bowel preparation) as it was felt that the injections might be more accurately placed by this method. No significant difference was noted in the results between the two methods. There was no increased incidence of infection using the transrectal method.

In the first 27 cases only 2-3 ml. of fluid was used per injection as recommended by Talwar and Pande (1966). It was felt that the amount of fluid could be increased for larger sized prostates and in 68 cases we used up to 10 ml. of fluid per injection. There were no untoward results attributable to the increased injection dose.

After each injection, the patient was maintained on indwelling catheter drainage for about 24 hours to allow the inflammatory reaction to subside. The catheter was then removed and the patient encouraged to pass urine. If he was unable to void, the catheter was reintroduced and the injection treatment continued. The patients were injected twice weekly and a maximum of 10 injections were given. The patients who presented without acute retention were treated without the use of a catheter. However, some of these patients occasionally developed acute retention of urine following the injections requiring a short period of catheter drainage until the acute inflammatory response had subsided.

RESULTS

Early Results

The early results were encouraging (Table I).

Immediately after the completion of treatment 84 cases (87·9%) were able to pass urine and 10 cases (10·6%) failed. 74 (78·7%) out of the 84 were completely free of urinary symptoms while 10 patients had some residual symptoms of prostatism on close questioning.

7 out of the 10 failed cases were subsequently treated by prostatectomy while the rest were unfit for any form of surgery and were treated by permanent suprapubic cystostomy. Prostatectomies following failed injection treatment were not found to be unduly difficult although there was an increased incidence of urinary tract infection in these cases.

Late results

All the patients in the 'success' group were followed up for between 1-2 years following injection treatment. The results are shown in Table II. While the majority of patients (69·1%) were still passing urine without symptoms, nine patients returned with recurrence of symptoms and were treated by prostatectomy. At the end of 1972 there were 18 (19·2%) failures and only 65 'success' cases.

The comparisons of early and late results are given in Table III. The success rate had fallen from 78·7% immediately after completion of

TABLE I

IMMEDIATE RESULTS OF INJECTION TREATMENT (AUGUST 1971)

(1)	Total No. of Cases	: 94	
(2)	"Successful" Injections	: 84 cases	(87·9%)
	(a) Passing Urine without symptoms	: 74 cases	(78·7%)
	(b) Passing Urine with some residual symptoms	: 10 cases	(10·6%)
3)	Failed Injections	: 10 cases	(10·6%)
	(a) Permanent Suprapubic Catheter	: 3 cases	(3·1%)
	(b) Prostatectomy	: 7 cases	(7·5%)

TABLE II

LATE RESULTS OF INJECTION TREATMENT (DECEMBER 1972)

(1)	Total No. of Cases	: 94	
(2)	"Successful Cases"	: 76 cases	(80·8%)
	(a) Passing Urine without symptoms	: 65 cases	(69·1%)
	(b) Passing Urine with some residual symptoms	: 11 cases	(11·7%)
(3)	Failed Injections	: 18 cases	(19·2%)
	(a) Permanent Suprapubic catheter	: 4 cases	(4·3%)
	(b) Prostatectomy	: 13 cases	(13·8%)

TABLE III

TREATMENT OF BENIGN PROSTATOMAGALY BY INJECTIONS—EARLY AND LATE RESULTS

No. of Cases : 94

	Complete Success	Residual Symptoms	Failed
Early Result Aug. 1971	74 cases (78·7%)	10 cases (10·4%)	10·4%
Late Result Dec. 1972	65 cases (69·1%)	11 cases (11·7%)	19·2%

injections to 69·1% one year later. The failure rate had increased from 10·4% to 19·2% a year later and 11 cases (11·7%) still had residual symptoms of prostatism.

Morbidity and Mortality

The commonest complication noted was transient haematuria including microscopic haematuria in 23·1% of cases. Acute epididymo-orchitis occurred in 5 cases (5·3%). This was probably due to prolonged catheterisation rather than to the treatment itself.

During the follow up there were four deaths from uraemia and one from septicaemia secondary to prostatic abscess. Two of the patients who died from uraemia were admitted in extremes. The two other patients were initially discharged well from hospital and were able to pass urine. They later developed difficulty in passing urine at home but did not seek hospital treatment.

Ten other patients have died during follow up from causes unrelated to prostatic obstruction (Table IV).

TABLE IV

INJECTION TREATMENT OF PROSTATOMAGALY—MORTALITY

Cause of Death	No. of Cases
Uremia	4
Prostatic Abcess	1
Cerebro-vascular Accident	2
Bleeding Peptic Ulcer	1
Carcinoma Oesophagus	1
Pulmonary Tuberculosis	1
Hypertensive Cardiac Failure	1
Bronchopneumonia	1
Cor Pulmonale	1
Unknown	2

DISCUSSION

Various methods of non-operative treatment have been tried over the years for benign prostatic obstruction. The use of testosterone and oestrogen in the 1930s had such varying results that Clarke (1937) concluded that his best results were achieved without any treatment at all. The symptoms of benign prostatomegaly may be produced by a wide variety of lesions, some of them may be transitory. Hence, it is extremely difficult to assess the results of treatment on short term and any improvement may not be a direct consequence of the treatment used.

More recently there has been a renewed interest in the use of hormones based on the

hypothesis that benign prostatic hypertrophy was the result of a change in the hormone milieu. The results of the use of both androgens and progestogens were equivocal. A double blind trial using a potent progestogen—Gestronol Hexanoate was found to produce both subjective improvement and a significant reduction of residual urine in many cases (Pitchford 1972).

The revival of intraprostatic injections has opened up a new technique in the management of benign prostatic hypertrophy. Although the actual mechanism of action is unknown the prostatic tissue around the site of injection undergoes lysis and necrosis but no suppuration or infection.

Talwar and Pande (1966) reported a good immediate success rate of 78·2% following injections and had a recurrence rate of only 2·6%. Shipman and Akilie (1967) used the injection treatment on 17 cases with acute retention of urine who were unfit for general anaesthesia and obtained a 100% success rate. Angell (1969) reported on the treatment of 85 poor risk cases and had an overall success rate of 56·7%. He stressed that the results were better (68·1%) for cases with acute retention than for those without retention (44·9%). Our experience confirmed this observation.

The above results of sclerosant treatment are encouraging. However, there have been no follow up results in these studies. As good immediate results can be achieved by many forms of conservative treatment no proper assessment of the success of therapy can be made without long term follow-up. It may be stressed that with the passage of time many cases initially relieved of symptoms returned with urinary obstruction and the early success rate of 78·7% had fallen to 69·1% at the end of one year. There has also been no objective measurement of success such as measurement of urine peak flow or residual urine by catheterisation.

From among the patients who were completely symptom free 29 cases were called back at random for measurement of residual urine. In none of these cases the residual urine exceeded 30 mls. In successful cases the injection treatment has obvious advantages. The method is simple and easy to use, it is applicable to poor risk patients and there is saving on hospital beds, blood transfusion and operating theatre facilities. Apart from the obvious complications of haemorrhage, perineal pain and infection there are two major disadvantages when the technique is applied in every case of prostatic enlargement. In patients without retention of urine the injections may precipitate an acute obstruction. This would warrant a period of catheter drainage with all the dangers of infection. Secondly, in patients who are relieved of acute obstruction following injections recurrence of urinary symptoms may occur rather insidiously leading to obstructive uropathy and chronic renal failure.

CONCLUSION

From our study it has become clear that the initial good results of intra-prostatic injection therapy for benign prostatic obstruction cannot be taken as conclusive. The majority of previous reports show a high success rate. While there is some morbidity and mortality associated with this treatment, a significant fall-off of the initial success rate is also seen on 1-2 years follow up. The treatment cannot be recommended to patients fit for operative treatment and for those without acute obstruction. While this method may be used with success in poor risk patients unfit for prostatectomy careful follow up is required to assess insidious onset of recurrent symptoms and deterioration of renal function.

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