ORIGINAL ARTICLE

Benign Hyperplasia of Prostate : A Correlation between Clinical, Radiological & Surgical Findings

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Abstract

We evaluated 50 consecutive patients of benign hyperplasia of prostate admitted for surgery according to a standard protocol noting down specific details of history, physical examination and sonographic findings in each patient. All patients were operated upon via the transvesical route. Ultrasonography proved to be the best predictor of actual prostatic weight. Digital rectal examination seems to be a reasonably accurate method of assessment of prostatic size. Clinically the age of the patient, the severity of obstructive or irritative symptoms and the presence or absence of urinary retention do not correlate well with the size of the prostate. The severity of the symptoms or their duration proved to be poor predictors of eventual development of urinary retention. Due to the presence of associated medical problems in these patients and with the advent of trans urethral resection of prostate (TURP) and nonsurgical means of therapy, a proper preoperative assessment of size of prostate clinically and by sonography is recommended so as to assess the need and the type of surgery.

Introduction

With advancing age the prostate gland enlarges. Among men 40 years of age, 5 to 10% have prostate enlargement whereas at age 80, the percentage is as high as 80% (1).

Even though prostate enlargement in the elderly male is the rule rather than the exception, not all of those, who have enlargement, will experience significant symptoms or elect treatment. Conversely, men without prostatic enlargement may experience marked symptoms suggesting bladder neck obstruction. In other words, size of the prostate correlates poorly with severity of symptoms and patients with palpable huge prostate may have no voiding difficulties whereas some with small prostate have severe symptoms (2, 11). In addition to this, prostatic obstruction may have a static as well as a dynamic component as a result of smooth muscle tone in the bladder neck area, prostate and prostatic capsule (3) which can be abolished by alpha adrenoceptor blockers.

These patients may have superadded medical problems such as diabetes mellitus, hypertension and

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coronary artery disease. Also with the advent of trans urethral resection of prostate and alternative non surgical therapies such as transurethral laser-induced prostatectomy–TULIP (14, 15), an accurate preoperative assessment of the size of the prostate is important so as to assess the need and the type of surgery as well as to obviate any difficulties at the time of surgery. Digitial rectal examination can provide erroneous results in predicting the size of the prostate. Transabdominal sonography and more recently transrectal sonography provide accurate results (6, 16).

Material and Methods

A total of 50 consecutive non-randomised patients admitted to the surgery ward at University College of Medical Sciences and associated G.T.B. Hospital, Delhi were taken up for the study (Sept. 96 to Aug. 98). The patients were evaluated according to a standard protocol and a performa was filled up noting down specific details. In each patient the evaluation consisted of history, physical examination, digital rectal examination and transabdominal ultrasonography. The history included the presence or absence of obstructive or irritative urinary symptoms, and acute retention. The maximum duration of symptoms was also noted in each case.

On per rectal examination, approximate weight of the prostate was estimated and graded as I, II, III & IV according to a specified criteria. All patients were subjected to preoperative transabdominal ultra sonography and 3 diameters (breadth, height and length) of the prostate gland were noted. The weight of the prostate gland was calculated by the formula $d_1 \times d_2 \times d_3 \times 0.55$ where d_1, d_2 & d_3 are the diameters of the prostate (10). Presence or absence of median lobe was also noted.

All patients were operated upon via the transvesical route. Prostatectomy was done in 42 cases and in 8 cases, only wedge resection of bladder neck was sufficient treatment. Weight of the surgical specimen was noted. Corelations between this and the estimated weight by rectal examination and sonography were done.

Furthermore, we also investigated whether there was any corelation between prostatism, presence or absence of urinary retention and patient's age and the weight of the surgical specimen.

Results

The patients' age ranged from 50 to 90 years with a mean of 63.8 years. All patients presented with significant obstructive/irritative symptoms or were on catheter drainage. The duration of symptoms ranged from a minimum of 3 months to a maximum of 2 years. In all patients grade of enlargement and thereby approximate weight of the prostate was assessed by per rectal examination, transabdominal ultrasonography preoperatively and at the time of surgery actual specimen weight of the prostate was measured. The observations are as shown in Table 1.

Table 1

Mean, standard deviation and range of estimated weight by digital rectal examination, ultrasound and weight of surgical specimens.

	Rectal Examination (Gms.)	Sono-graphy (Gms.)	Specimen weight (Gms.)
Mean	60	50.06	43.42
S. D.	27.19	23.40	14.67
Range	15-105	13-110	20-70

There was no significant corelation between the age of the patient and the weight of the surgical

specimen (r = 0.2377, p > 0.10).as shown in Fig 1.

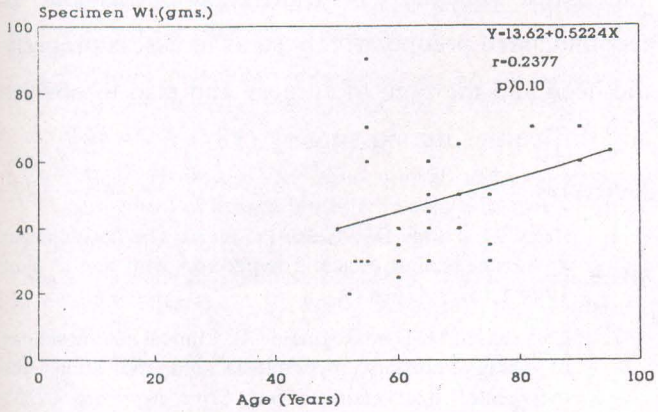

Figure 1. Correlation between specimen weight & patient age.

Results of the weight estimation by per rectal examination and ultrasound were compared to the surgical specimen weight. There was good correlation (r = 0.7972, p 0.01) between the weight estimated by per rectal examination and the surgical specimen weight (Fig. 2).

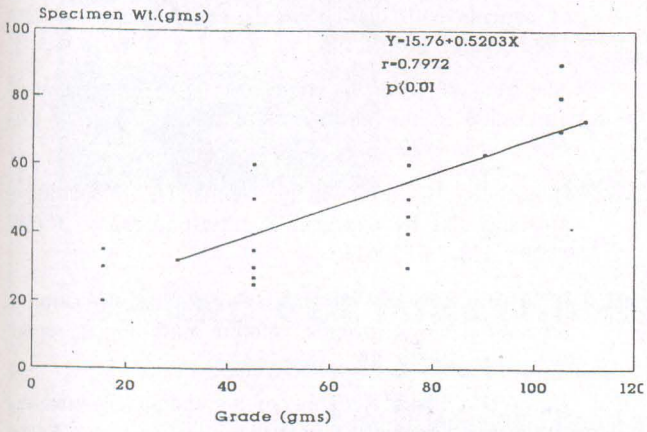

Figure 2. Correlation between specimen weight & P/R grade.

The sonographic estimation provided the best results as seen in Fig. 3 (r = 0.7793, p = 0.01) and almost all values are within the residual variance lines.

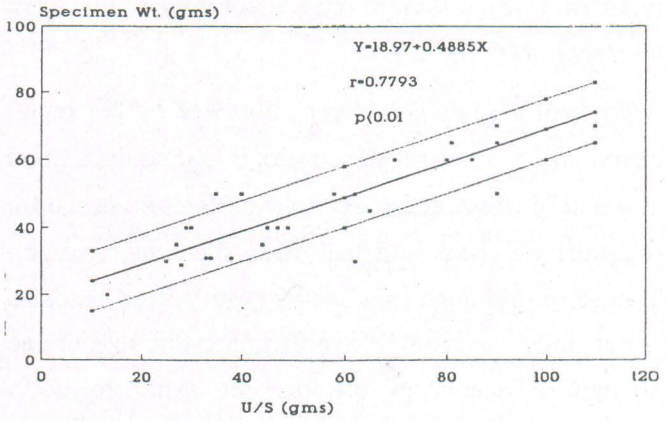

Figure 3. Correlation between specimen weight and ultrasound (U/S) weight.

The mean difference test showed no significant difference in the weight of the surgical specimen in patients with or without retention of urine, however, patients with retention of urine tended to have higher surgical weight.

Discussion

As previously reported we also found a poor correlation between the age of the patient, presence or absence of obstructive or irritative symptoms and the weight of the surgical specimen (2, 6). Patients who are in urinary retention tend to have a larger gland but no statistical significance could be established to this, signifying that the dynamic component of prostate obstruction could be important in the production of urinary retention (3).

Many patients with acute retention had symptoms of less than 3 months duration. This suggests that retention often develops in the patients with minimal or short lived symptoms (2, 17). Therefore, subjective features such as symptoms and their duration as well as objective features such as prostatic size are not good predictors of eventual development of urinary

retention (4,5), although reports contrary to this have appeared recently (19).

Clinical assessment of prostatic size by per rectal examination is not very accurate. In our study, a good correlation was seen between the per rectal estimation of prostatic size and surgical specimen weight. Therefore, although, per rectal examination tends to either underestimate or overestimate the size of the prostate it seems in the present study to be a reasonable accurate method of assessment of prostatic size clinically.

Transabdominal ultrasonography has proved to be the most accurate predictor of actual prostatic size (6-9). Our study showed good correlation between the weight as estimated by ultrasound and the surgical specimen weight. In addition, sonography provided information as to the presence of vesical calculus, median lobe and also the state of the kidneys and ureters. The extremely good correlation between predicted weight and surgical specimen weight permits the hypothesis that whenever the resected specimen weighs significantly less than predicted weight the resection most likely was incomplete (6).

In 8 patients no evidence of enlarged gland was found at operation and only wedge resection of the bladder neck was sufficient treatment. It has been demonstrated that there can be considerable variation in estimated prostatic weight between different examiners and the measurement error is less significant in larger prostates than in smaller prostates (10).

In conclusion, it is important to determine whether prostate gland is enlarged or not in patients with obstructive voiding symptoms. Accurate assessment of the size of the prostate by transabdominal ultrasound and more recently by transrectal ultrasound is recommended preoperatively so as to assess properly the need and the type of surgery and also to obviate any difficulties during surgery (18).

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