

TITLE: A COMPARATIVE STUDY OF NEEDLE
 ASPIRATION BIOPSY WITH HISTOLOGY
 IN THE DIAGNOSIS OF ENLARGED
 PROSTATE

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CONTENTS

	<u>Page</u>
1. Summary	2
2. Introduction	3
3. Material & Methods	7
4. Results	18
5. Discussion	21
6. Acknowledgements	26
7. References	27

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A COMPARATIVE STUDY
OF
NEEDLE ASPIRATION BIOPSY WITH HISTOLOGY
IN
THE DIAGNOSIS OF ENLARGED PROSTATE

BY: ATINGA, J.E.O.

1979/80

SUMMARY

Forty one patients with enlarged prostate were studied as regards their acid phosphatase estimation, clinical findings on rectal examination and needle aspiration biopsy. The results of this study were compared with histological diagnosis after surgery. It was found that combined needle aspiration biopsy, rectal examination plus acid phosphatase estimation gave a reliable diagnosis of pathological state of prostate gland in terms of malignancy in 82 per cent of the cases.

Since the disease in consideration is early cancer, the combined diagnostic approach as above can be quite useful in contemplating early surgery to eradicate early cancer with hope of cure. On the other hand, those who believe in hormonal therapy and want to avoid operation can start the hormonal treatment quite early.

INTRODUCTION

The enlargement of the prostate gland has been described in all age groups. In childhood an enlarged gland implies cancer, usually a sarcoma⁽¹⁾. The hope for cure in these, rests with prompt radical surgery. In the adolescent and early adulthood inflammatory conditions associated with urinary tract infections may be the main aetiological factor causing enlargement of prostate gland. In the fifties to early sixties, benign enlargement of the prostate figures significantly, elapsing into calcinomatous enlargement towards the seventies to early eighties.

Inflammatory conditions of the prostate although could be found at any age, perhaps, is more frequently encountered during the peak of sexual life in adulthood. The bacterial aetiology has often been found in association with acute prostatitis, but the chronic forms of this condition have, so far, not been clearly shown to be of bacterial origin. The important question in an enlarged prostate is whether cancer is or is not the cause. A precise diagnosis that would answer this question, is to this day not available.

Benign enlargement of the prostate gland has been variously quoted to start at 30 years⁽²⁾, but some authors like Cameroon⁽³⁾ considers the glandular enlargement to start at about 40 years. Frank et al 1954⁽²⁾ distinguishes post sclerotic hyperplasia, which he believes was a precursor of clear cell carcinoma of the prostate, from the Blandy's (1974)⁽⁴⁾ nodular hyperplasia primarily affecting periurethral glands. Frank's hyperplasia occurs in prostate proper, but Blandy's hyperplasia occurs in the periurethral glands. Although post sclerotic hyperplasia, like

cancer of the prostate, affects the true prostate gland, but Frank admits the rarity of the so called clear cell carcinoma that he observed in his series. Whether cancer of the prostate would be said to be continuous, pathology with post sclerotic hyperplasia, distinct from nodular hyperplasia remains to be varified in prospective studies.

Cancer of the prostate is seen in age groups ranging from 70 - 80 years. Its presentation has nothing peculiar from benign enlargement, and inflammatory enlargement. An obvious advanced cancer with distant metastases bones coming to hospital because of pains, found to have a Craggy hard gland on rectal examination, has nothing challenging to diagnose. The challenging problem, is the diagnosis of stage I occult prostatic carcinoma as defined by the Veteran's Administration Co-operative Urological Research Group⁽⁵⁾. There is no reliable single or combined tests that have been described.

The various remedial measures practised for cancer of prostate have been:-

1. Radical surgery: Removal of the entire prostate gland along with its true capsule, plus seminal vesicles and regional glands if possible. There are various approaches documented. Perineal approach is reputed to be more physiological, but the pelvis nodes are not accessible. Currently retropubic approach has gained wide popularity because of accessibility to the glands in the pelvic wall. According to Catalona et al⁽⁶⁾ surgery of this form, is best practised for stage B of Jewett's modified classification⁽⁷⁾. Other stages perhaps are not suitable. Stage A in patients above 60 years, does not alter their life expectancy unless it is anaplastic

Stages C and D do not benefit from any radical surgery because the disease is far too advanced.

2. Endocrine therapy

The main stay of endocrine therapy is oestrogen and its derivatives. According to Huggin et al⁽⁸⁾ test-osterones produced from the adrenal gland and testes are responsible for directing certain protein syn-thesis in prostatic cells. Diethylstilbestrol is believed to reduce the amount of testosterone produced in the following ways.

- (a) It suppresses testicular steroidogenesis. Since testis accounts for 95% of testosterone that influence prostate gland, the levels are thus reduced.
- (b) It increases the concentration of testosterone binding globulins in circulation, thus reducing the free testosterone.

However there are some drawbacks to the oestrogen treatment. Firstly, it stimulates prolactin release from the pituitary gland, which in turn increases prostatic androgen concentration. This has been argued that levodopa, an antagonist, of prolactin production should always be given concurrently with oestrogen. However the side-effects become several as levodopa produces completely different side-effects from oestrogens.

Secondly increased atherosclerosis, with attendant cardiovascular accidents become an important cause of morbidity and mortality with prolonged oestrogen use.

Thirdly, the timing of oestrogen administration has always been controversial. Blackard 1975⁽⁹⁾ reported the early oestrogen chemotherapy before onset of symptoms to be beneficial in

giving a long symptom free interval, but relapses failed to respond to endocrine therapy. Late administration after symptoms set in however afforded greater symptomatic palliation. Hence, the exact role of oestrogen therapy remained undefined.⁽¹⁰⁾ Orchidectomy as a form of endocrine treatment according to Blackard, was the best palliation when urinary obstruction^{has} set in. Upto 88% of cases with obstruction had improvement in urinary flow after orchidectomy.

Surgical removal of the primary cancer still remains the ideal treatment provided the disease can be diagnosed early. The problem of early diagnosis of cancer of the prostate is still unsolved. It is with these considerations in mind, that this study was designed to evaluate simple procedures i.e. of needle aspiration biopsy, acid phosphatases levels, digital examination findings, against the eventual histological diagnosis.

Needle aspiration biopsy of the prostate has been practised since 1930 by Ferguson⁽¹¹⁾. It is however the names of Franzén 1960⁽¹²⁾, Epstein⁽¹³⁾, and Bishop⁽¹⁴⁾ that have popularized the procedure. All these veterans used special needles which were wide bore. The practice has been leaning more and more towards narrow bore needles. Kline⁽¹⁵⁾ described complication rate of 19.5% with wide bore needles in a series of 51 patients. In this series the needle used was Veenema, Franzén used Silverman needle with a modified finger extension for guiding the needle in the anal canal. He did not mention the complication rate.

The study conducted was made very simple using the readily available items. No special needles were used. A 20 cc

disposable syringe (J.K. Industries) with a disposable gauge 19 (TSK Sterijekt, Japan) needle were the only special items used. It is to be noted that these items are available in the hospital in routine use.

MATERIALS AND METHODS

Patients admitted between the periods covering July 1979 to January 1980 with features of prostatic enlargement to the surgical wards at Kenyatta National Hospital were included in the study. Patients had the option of choosing to be included in the study. The majority accepted to be included except for the few who did not want surgical treatment and preferred to be discharged after relieving retention.

The criteria for participation included:-

1. Appropriate age group.

Patients above 40 years of age admitted with complaints of either retention of urine or found on clinical examination to have enlarged prostate. Patients with probable structure of urethra or with obvious multiple sinuses of periurethral abscesses, were excluded. The diagnosis of urethral stricture was not difficult. A palpable stricture or obvious stricture not allowing catheterisation when found automatically lead to exclusion.

2. A preliminary rectal examination carried in the emergency room must have revealed an enlarged prostate and no other pathology was thought to contribute to urinary symptoms. One patient was excluded because he had cancer of the rectum obvious on rectal examination.

3. Patients had to be willing to have rectal examination and be willing to have needle biopsy during the same procedure. A vivid explanation to the patient and the need for the biopsy was always given. It included the nature of the disease and the modes of treatment available.
4. Only those patients who could be conveniently followed up were included. This meant patients in medical wards who did not directly fall under surgical care were excluded.

Patients were admitted through the Casualty department as emergencies or through consultation clinics for elective prostatectomy. Those admitted as emergencies presented to the Casualty department with acute retention of urine. Few patients presented with gross haematuria with anaemia necessitating admission. A preliminary examination enabled a working diagnosis of retention of urine due to prostatic enlargement to be made.

In the surgical wards a detailed clinical work up was done. History was recorded in patient's own words, factors that could have precipitated retention were specifically enquired into. History of alcohol consumption was directly elicited from the history. A general physical examination was then followed with a formal rectal examination. During the day time, blood was always taken before rectal examination but during the night, due to lack of storage facilities blood was not taken until the next day for acid phosphatase estimation. Bannerjee et al 1979⁽¹⁶⁾ in his controlled trial of 200 patients clearly showed there was no difference in the levels of acid phosphatases before and after rectal examination.

The patients for rectal examination were given explanation of the nature of their illness and the site of the disease. To establish a diagnosis, they were further told, a small tissue had to be removed and sent for examination. They were detailed on the position, procedure and need for co-operation to make the procedure painless and less tedious. Sim's position (the standard left lateral position) was adopted in all patients. Knee-chest position, although could have been convenient for patients lying on the floor was avoided because of the objectionable exposure and a few patients simply described it as unorthodox.

Digital examination was done twice. The items available on the rectal tray included:

1. A 20 c.c. disposable syringe (J.K. Industries)
2. A gauge 19 (100 x 38 mm)(T.S.K. Sterijekt, Japan) disposable needle.
3. Two glass slides.
4. Labels.

The first rectal examination located a suitable nodule for biopsy. The second digital examination, was for biopsy. The procedure based on Franzén principle⁽¹⁹⁾ with Bishop's modification⁽⁴⁾ was done with both hands gloved. Digital examination was first done the routine way with the right index finger introduced into the anal canal with the patient in the left lateral position. A suitable nodule was located. The choice was based on:

1. Consistency of the nodule:

Epstain⁽¹³⁾ emphasized that the difference in consistency from the surrounding gland was the most important

consideration. A nodule which is softer than the surrounding gland had same significance as a nodule which is harder than the rest of the gland. Thus a nodule of different consistency from the surrounding gland was chosen.

2. Level of the nodule.

Jewett et al 1968⁽⁷⁾ distinguished a malignant nodule from a post inflammatory nodule based on their mucosal level. A malignant nodule, was situated deep in the gland and never rose above the mucosal level, the rest of gland around it feeling discrete. A fibrous nodule, post-inflammatory, was generally elevated above the mucosa and appeared to emerge with the adjacent glandular tissue. A deeply seated nodule, discrete was often chosen. Obviously an infiltrative cancer invading beyond the confines of the gland would not fall in this category.

3. Mucosal induration.

Mucosal induration suggested malignancy in such nodules. Gross signs like loss of central sulcus, ulcerations and rectal strictures are seen in advanced cancers which are not likely to benefit from surgical treatment.

The biopsy was taken with left index finger guiding the needle to the nodule. The 20 c.c. syringe fitted with a gauge 19 needle was held in the left hand. The left index finger, guided the needle, placed with the slanted tip of the needle pressed against the pulp of the index finger. Once the needle passed the anal sphincter guided to the nodule, the finger tip

was released from the needle end, and pushed into the gland.

Tension was kept on the piston in a sucking movement while short jerks^{of}/forwards and backward excursions were made. After about 3 - 4 jerks the needle was withdrawn out of the gland letting the pressure equalize before getting it out of the anal canal to avoid sucking faecal material.

The tissues were then spread out on the glass slides which were then labelled, and air-dried. Appropriate forms were filled and sent for cytology.

The slides were stained by Giemsa method and examined for malignant cells. Although the processing of the slides was extremely simple, the interpretation of the slides required skill and specialized experience. The cytology technician made provisional diagnosis. The final histological diagnosis was made by a panel of specialists.

All patients were subjected to needle aspiration biopsy. After the results of needle biopsy result coupled with clinical findings and acid phosphatase levels, a group of patients for operation were selected. They were patients regarded to show features of benign prostatic hyperplasia. Although the above results were the main criteria for operation and non-operation, obviously an overlap was inevitable, because these criteria were not foolproof. The tissues removed during the operation were submitted for histology in 10 per cent formalin.

Acid phosphatase was estimated in the blood samples submitted to the laboratory by the method of King and Kind 1954, and recorded in King-Angstrom units. It was done by

bioassay using disodium phenyl phosphate substrate with aminophenazone and potassium ferrocyanide for final colour indication and read on a photolorimetric scale against a standard of known colour density.

TABLE 1

COMPLAINTS	NO. OF PATIENTS
Retention of urine	21
Abdominal pain	16
Frequency of micturition	10
Nocturia	8
Painful micturition	6
Poor stream	5
Dribbling of urine	4
Difficulty in passing urine	4
Hematuria	3
Hernia	2
Constipation	1
Mass in abdomen	1

N = 41

There are instances where one patient complained of more than one symptom.

Age distribution:

AGE	PATIENTS
50 - 55	7
56 - 60	7
61 - 65	7
66 - 70	12
71 - 75	5
76 - 80	1
Above 81	4

TABLE 2

Histology compared with procedures of rectal examination, cytology and acid phosphatase in operated patients

	Rectal Examination	Cytology Result	Acid Phosphatase
Consistent with histology	60%	70%	82%
Not consistent with histology	40%	30%	18%
N	N = 23	N = 23	N = 17

Results described as consistent, are those where a diagnosis was made by one of the procedures and the histological result

was found to confirm the same diagnosis. Elevated acid phosphatase, level above the local standard of normality of 0-0.8 KA* units was regarded as suggestive of cancer and normal values as suggestive of benign prostatic hyperplasia.

TABLE 3 A

PATIENTS WHO WERE OPERATED

PATIENT	Rectal examination diagnosis	Needle aspiration result	Histological Diagnosis	Prostatic and Acid Phosph. KA
1.L.N.	Adherent mucosa Ca. prostate	Clumps of malignant cells present	Infiltrated adenocarcinoma.	3.3
2.M.M.	Indurated mucosa hard nodule Ca. prost.	Clumps of suspicious cells	Features of benign prostatic hyperplasia	0.9
3.M.K.	Nodular B.P.H.	Clumps of suspicious cells	Features of BPH	0.3
4.J.W.	Ca prostate	Epithelial cells no malignant cells	Feature BPH with suppurative prostatitis.	1.8
5.M.N.	Ca. prostate	Clumps of malignant cells present	Nodes infiltrated with cancer 2 ^o from prostate	
6.G.T.	Ca prostate	Epithelial cells no evidence of malignancy.	Well differentiated adenocarcinoma	spoiled in process
7.J.N.	Ca prostate	Clumps of malignant cells	Adenocarcinoma of prostate	13.3
8.W.W.	BPH.	Few epithelial cells present	Features BPH.	0.6
9.D.K.	BPH	Few epithelial cells	Features BPH	3.6
10.K.S.	Ca prostate	Clusters of benign cells	Features BPH No malignancy	0.3

BPH = benign prostatic hyperplasia
Ca = Carcinoma of prostate

...../cont.

TABLE 3 A (cont.)

PATIENT	Rectal examination diagnosis	Needle aspiration result	Histological diagnosis	Prostatic and Phosph.KA
11.E.K.	BPH	Sheets of epithelial cells	Nodular BPH	0.3
12.K.D.	BPH	Clumps of suspicious cells	BPH with features of prostatitis	0.5
13.P.K.	BPH	Clumps of suspicious cells	BPH with prostatitis	2.0
14.M.P.	BPH	Clumps of malignant cells	BPH with suppurative prostatitis	0.6
15.S.K.	Ca prostate	Clumps of degenerate epithelial cells	Features of BPH	0.6
16.J.C.	Clinically BPH	Clumps of malignant cells	Infiltrative adenocarcinoma	2.3.
17.K.J.	BPH	Inflammatory cells no malignant cells	Moderately differentiated adenocarcinoma	16.2
18.K.M.	Ca prostate	Epithelial cells	Well diff. adenocarcinoma	-
19.E.N.	BPH	Clumps of malignant cells present	BPH features	0.8
20.W.W.	BPH	Degenerate epithelial cells	BPH with infected areas with squamous metaplasia	-
21.K.G.	Ca prostate	No malignant cells seen	Features of BPH	0.3
22.W.G.	BPH	Clumps of suspicious cells	Infiltrative anaplastic carcinoma	-
23.W.D.	Ca prostate	Degenerate epithelial cells	BPH with acute prostatitis	-

TABLE 3 B

PATIENT WHO WERE NOT OPERATED

PATIENT	P.R.	PROSTATIC AND PH. KA	CYTOLOGY	
W.M.	Ca prostate	0.6	Clumps of malignant cells.	
W.N.	Ca prostate	0.3	Inadequate for cytological interpretation	
L.W.	BPH	-	Clumps of suspicious cells	
T.K.	BPH	2.0	Degenerate epithelial cells	
S.S.	Ca prostate	12.5	Clumps of suspicious cells	
H.K.	BPH prostatitis	-	Numerous bacterias no malignant cells	
K.K.	BPH	0.3	No evidence of malignant cells.	
K.C.	Ca prostate	15.2	Clumps of malignant cells present	
K.K.	Ca prostate	1.1.	Clumps of malignant cells	
M.K.	Ca prostate	5.1.	Numerous malignant cells.	
S.J.	BPH	0.3	Epithelial cells.	
M.M.	Ca prostate	-	Clumps of malignant cells.	
A.O.	BPH	-	Clumps of suspicious cells.	
J.W.	BPH	0.3	Epithelial cells	Ca oesophagus
N.B.	BPH	0.3	Clumps of malignant cells	Incisional hern

TABLE 3 B (cont.)

PATIENT	PR	Prostatic and phsp. KA	Cytology	Comment
M.M.	BPH	0.3	Inflammatory cells + few clumps of malignant cells.	
M.M.	BPH	0.3	Epithelial cells No malignant cells.	
K.K.	BPH	0.4	Clumps of benign cells. No malignant cells.	Paraumbilical hernia

P.R. = rectal examination

TABLE 4

SHOWING CYTOLOGY REPORTS AGAINST
EVENTUAL HISTOLOGICAL DIAGNOSIS

CYTOLOGY	HISTOLOGY				
	Total	operated	Cancer	Benign	Prediction accuracy
Clumps of malignant cells	12	7	5	2	72.5%
Sheets of epithelial cells	15	14	2	12	86%
Suspicious cells	8	6	1	5	-
Inflammatory cells	3	1	1	-	-
Unsuitable	3	1	-	-	-

N = 41

RESULTS

1. COMPLAINTS

As shown in table I, the commonest complaint was retention of urine noted in 21 patients out of total number of 41. Abdominal pain was next most common complaint noted in 16 patients. This complaint, was notably not as striking as would be expected in other situations of acute retention of urine. This suggests that the majority were cases of acute exacerbation of chronic retention. Alcohol consumption was noted in the majority of patients before onset of symptoms, but because of the evident shyness of patients when questioned about consuming alcohol, the number of patients admitting was unreliable. Abdominal pains referable to the iliac regions, was frequently associated with iliac deposits in advanced stages of carcinoma.

Frequency of micturition was difficult to elicit from the history partly because the majority of patients learnt to attribute it to some fluid consumed in the day. Urgency was readily accepted because it often made their pants wet before reaching the toilet.

Gross haematuria was noted in only three patients, but microscopic haematuria was noted in 26 patients out of the 41. The microscopic haematuria was not due to catheterisation.

Evaluation of patient's complaints was unfortunately made difficult by the language barrier, patients having to interpret their symptoms into Swahili. Most of the patients were seen towards the end of the disease process making the complaints useless in evaluating the stage of the disease.

2) RECTAL EXAMINATION - Table 2

Based on the criteria as defined above, of consistency, level of nodule and mucosal feel, rectal examination alone was consistent with histology in 14 patients (60%) in a total of 23 patients operated.

The 9 patients whose diagnosis were inconsistent were further analysed. They were wrongly diagnosed to have cancer, but actually had prostatitis. Two patients thought to have features of benign hyperplasia had cancer. One patient who was diagnosed to have cancer, turned out to have infarction of the gland with squamous metaplasia. In the final analysis only 3 patients were mis-diagnosed, it was also difficult to exclude a superimposed prostatitis giving a false impression of cancer.

3) ACID PHOSPHATASES Table 2

The local standard level of acid phosphatase prostatic component in King Angstrom units is 0 - 0.8 KA units. The prostatic acid phosphatase, being the tartrate labile component. The results of the investigation were available in 29 patients. Sixteen patients (55%) had normal levels while thirteen, had elevated level. 7 patients with elevated acid phosphatase level were thought to have cancer both on rectal examination and cytological results. Four had benign hyperplasia with prostatitis. Two were however straight forward simple hyperplasia without prostatitis at the eventual histology.

The level of acid phosphatases was consistent with histology in 82% cases. The patients who were inconsistent being 3 in number, could be regarded as misdiagnosis. Two of the three had benign hyperplasia with no other apparent pathology. One however had suppurative prostatitis.

Acid phosphatases level estimation has problem which could partly account for some discrepancies. It was noted that even blood samples taken at the same time from same patients, no two samples ever gave same results. The unreproducible results could be largely due to bioassay technique regarded to be inaccurate and not specific enough.

4) CYTOLOGY - Table 4

A two-slide technique was found helpful to the pathologists particularly where one slide appeared equivocal. The cytologist looked at the two slides and made a provisional diagnosis on the slide. The slides were further forwarded to the chiefs of cytology to ratify the results.

Broadly the results given fell into three broad categories

1. A group reported to contain clumps^{of} malignant cells. This constituted 12 patients of which seven were operated. Five of these seven were found to be malignant glands on histology, a predictive value of 72.5%.
2. A group reported to show sheets of benign epithelial cells. A total of 15 patients in this group of which 14 were operated. Twelve patients of the operated were found to be benign enlargement at histology. Thus giving a diagnostic accuracy of 86%.
3. This consisted of a group of cells described as showing clumps of suspicious cells. The total number in this group were 8 of which 5 operated were benign hyperplasia. These 5 constituted the category of cells that were described by Epstein 1976(12) as benign atypia. They confuse the cytological diagnosis, appearing as malignant cells, yet they are not.

DISCUSSION

1. PRESENTATION

The symptomatology of an enlarged prostate has been variously classified. Symptoms could be looked upon as early and late. Blandy 1974⁽⁴⁾ described early symptoms marked by periodicity with symptom-free recurrent intervals. Urinary tract infection due to stasis, and intermittent frequency relapsing in periods of weeks or months. These early symptoms lapse into the late symptoms marked by bladder damage. When retention starts bladder detrusor is decompensated and fibrous tissues invade and replace the atrophic muscular wall. The bladder becomes a - tonic. It is hard to imagine the bladder functionⁱⁿ the majority of the patients after prostatectomy, considering that 50% presented with established chronic retention of urine.

Anderson et al.⁽¹⁷⁾ grouped the symptoms in a different way. His classification distinguished irritative symptoms from obstructive symptoms and signs. Retention of urine, poor stream, hesitancy are features of obstruction. The irritative symptoms when predominant indicate infection. In situations where surgery can not be immediately offered, medical treatment plays an important role. Patients operated before the urine is rendered sterile are said to have high incidence of post operative infection. Figures as high as 50% have been quoted. Although majority of our patients had sterile urine before operation those who had organism isolated before surgery and later developed post-operative infection clearly showed no correlation between preoperative urinary organism and the post operative infecting organism. Ascending catheter infection is the main cause of post operative sepsis.

2) RECTAL EXAMINATION

It takes experience to be able to decide on digital examination that a gland is neoplastic or benign when enlarged. However even with experience, an infected fibrotic gland can not be distinguished with any certainty from a malignant gland. Jewett et al 1968⁽¹⁾, and Cameron 1974⁽³⁾ both suggested that a malignant nodule could be distinguished from a fibrotic nodule. Besides being non tender and appearing deeply situated, malignant nodule is by no means easy to say because inflammation and malignancy can frequently co-exist. A malignant nodule has always been regarded to be hard and this is true but Epstein 1976⁽¹³⁾ drew attention to other features. A whole gland feeling hard, or an abnormally soft nodule are equally important in suggesting cancer. These features in a gland which is not tender support a possibility of cancer. The point to emphasize at this stage is that an invading gross cancer involving Denonvilliers fascia or cancer invading the adjacent tissue is not the disease in question. It is stage A or B of catalona et al 1978⁽⁶⁾ that is being considered.

3) ACID PHOSPHATASES

Acid phosphatases has been always estimated in patients with enlarged prostate before rectal examination, or if blood for estimation was not taken before then 24 - 48 hours had to elapse before taking blood. Bannerjee et al 1979 has dispelled this religious belief in his controlled study. No precaution was taken to obey this belief yet 14 out 17 acid phosphatases estimated in operated patients consistently reflected on the pathology of the prostate. In the other three patients with inconsistently elevated levels, two had prostatitis, an entity

known to cause elevation of prostatic acid phosphatases.

Bioassay method of acid phosphatase estimation is perhaps the most inaccurate method still in use because the tartrate stability of prostatic acid phosphatase is not specific as used to be thought.⁽¹⁸⁾

Moncure 1970⁽¹⁹⁾ described antigenic specificity of prostatic acid phosphatase. His principle is the current basis for estimation of acid phosphatase in many advanced centres. Having said all these, be it as crude as it may, bioassay has in my series given an accuracy of 82%.

CYTOLOGY

Needle aspiration biopsy of the prostate has been in use since it was described by Ferguson⁽¹¹⁾ in 1930. It has been popularised in Continental Europe where it is practised routinely in the diagnosis of prostatic pathology. The practice however, has been adopted in other continents and popularised by the name of Franzén⁽¹²⁾ 1960, who vividly described the method of doing the procedure. Various modifications include Epstein's⁽¹³⁾ and Diana Bishops⁽¹⁴⁾. The advantages of needle aspiration biopsy of the prostate may be enumerated as:-

1. It can be done as an O.P. clinic procedure.
2. It causes little or no discomfort.
3. It requires no anaesthesia.
4. It practically causes no complications.

The originally described needles include Veenema needle, Silverman needle, Tru-cut needle and lumbar puncture needles. These are all wide bore needles. Kline⁽¹⁵⁾ using some of these wide bore needles reported a complication incidence of 19.5% in his 51 cases. The complications include haemorrhage, deep

vein thrombosis, febrile response and perineal tumour transplantation all using Veenema needle. This high incidence of complication using wide bore needles was perhaps unnecessary considering that narrow-bore needles could produce equally good results. Perhaps there is a place for repeated biopsies with small needles rather than using wide bore needles. Using the narrow bore needles we got consistent results with histology in 70% of our patients. The main problem encountered by the champions of the procedure, Epstein and Bishop was the cytopathological interpretation of the results, necessitating considerable experience on the part of the cytologist. The pathological variants in the spectrum of cell morphology certainly accounts for the false diagnosis. Although Epstein, discusses at large cell morphological features in the 118 cases she analysed she still had a false negativity rate of 12%. Her criteria of benign cells were:-

1. Arranged sheets in group of cells.
2. Round or oval nuclei.
3. Regularly arranged nuclei.
4. Fine granular chromatin pattern.
5. Distinct cell borders.
6. Honey comb pattern.

The criteria for malignancy as described by Epstein are:-

1. Loss of polarity at the edges.
2. Presence of nucleoli.
3. Nucleoli pleomorphism.
4. Moulding of nucleoli.
5. Acinor arrangement of group of cells with nucleoli.

Any four of these criteria including loss of polarity constitute malignancy. The Epstein criteria gave an accuracy of 86.6%, but notes a group of cells called the atypical prostatic cells associated with chronic non-specific prostatitis. The comparison in our study was the group of cells called suspicious cells, found in benign hyperplasia in 63%. The incidence of benign atypical cells in Epstein series were 19.5% was comparable with our series of 8/41 (19.5%) reported as suspicious.

Needle aspiration biopsy of the prostate although an out-patient clinic procedure with minimal complications, caution has to be taken in patients known to have cardiac disease. Thomson et al 1980⁽²⁰⁾ reported an incidence of 73% transient bacteraemia following needle aspiration biopsy.

In a patient with a valve lesion this incidence is too high to be ignored. Although no infection developed following the bacteraemia in a cardiac valve lesion, the bacterial endocarditis should be considered following the biopsy procedure. Most of the organism were enteric gram negative organisms with *Escherichia coli*, being the predominant organism. Ashby et al 1978⁽²¹⁾ recommended prophylactic use of antibiotics. Wide bore needles are also known to cause a worsening of the prostatism features.

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