

CYTOMORPHOLOGICAL STUDY OF LESIONS OF PROSTATE WITH ITS HISTOPATHOLOGICAL CORRELATION

Ravindra Kumar Shrivastava¹, Sanjay Kumar Nigam²

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ABSTRACT: BACKGROUND: Large numbers of male elderly population suffers from prostatism due to enlargement of the prostate as a result of what is now regarded as male climacteric. Prostatic obstruction must be diagnosed early so that a definite treatment can be instituted to relieve the patient of symptoms and to prevent the sequelae of the obstruction. Diagnosis of prostatic cancer was first described in 1930 by transperineal aspiration biopsy. Many published papers demonstrate the higher sensitivity of FNA of the prostate than core biopsy. FNAC has been evaluated as screening test for occult prostatic cancer, benign hyperplasia of prostate and various inflammatory lesions of prostate. **AIMS AND OBJECTIVES:** This study has been undertaken with the objective of finding as to how far needle aspiration method is reliable to establish the diagnosis of lesions of prostate and to correlate them with histopathological findings. **MATERIAL AND METHODS:** The study of 50 cases of prostatic lesions was conducted in the department of pathology on the patients admitted to surgery wards. **OBSERVATIONS:** The present study was conducted on 50 cases having symptoms of prostatism. The highest incidence of prostatic enlargement is seen in 6th decade followed by 5th decade and least in 3rd decade. Out of 50 cases, 21 cases (42%) were diagnosed as benign nodular hyperplasia, 23 (46%) as benign nodular hyperplasia with chronic prostatitis, 4 cases (8%) as malignancy and two cases (4%) were inconclusive due to inadequate material. Maximum benign nodular hyperplasia and benign nodular hyperplasia with chronic prostatitis were observed in 5th to 7th decade but malignancies were observed in 6th to 7th decade. The accuracy of diagnosing BNH by FNAC is 80%. The accuracy of diagnosing prostatitis by FNAC is 88%. Sensitivity of diagnosing non malignant lesions was 100% while specificity 80%, positive predictive value 97.4% and negative predictive value were 100%. Sensitivity of diagnosing malignant lesions was 80%, specificity 100%, positive predictive value 100% and negative predictive value 97.4%. **CONCLUSION:** FNAC by transrectal route is easiest, accurate, quick with minimal discomfort to the patient and can be used as OPD diagnostic procedure in the prostatic lesions. It may also be helpful for early detection of malignancy of prostate.

KEYWORDS: Benign Nodular Hyperplasia, Carcinoma prostate, Fine Needle Aspiration Cytology, Histopathological correlation, Prostatitis.

INTRODUCTION: Large numbers of male elderly population suffers from prostatism due to enlargement of the prostate as a result of what is now regarded as male climacteric. [1] It is often difficult for the examining finger in the rectum to decide whether the enlargement is due to benign or malignant conditions of the prostate.

Prostatic obstruction must be diagnosed early so that a definite treatment can be instituted to relieve the patient of symptoms and to prevent the sequelae of the obstruction. Diagnosis of prostatic cancer was first described in 1930 by transperineal aspiration biopsy.[2] Since then

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aspiration biopsy of prostate received little attention until its adoption by Sweden's Karolinska Institute, where researchers developed a finger guide and used flexible, small calibre needle to sample the prostate transrectally and developed it as a preferred method for diagnosing prostate cancer.^[3]

It is tragically apparent that normal prostate were removed because of suspected carcinoma and because lack of adequate method of pre-operative diagnosis.^[4] The prostatic obstruction due to carcinoma is far more dangerous and grave in its consequences. Although a significantly high incidence has been demonstrated in the general public, only a few cases are discovered clinically. Early and accurate diagnosis is essential for effective surgical treatment. Many published papers demonstrate the higher sensitivity of FNA of the prostate than core biopsy, complications are fewer and procedure is cost effective and can be performed without anaesthetic in the OPD.

Classification of prostatic carcinoma into well, moderately and poorly differentiated can be reliably assessed by fine needle aspiration cytology.^[5] FNAC has been evaluated as screening test for occult prostatic cancer, benign hyperplasia of prostate and various inflammatory lesions of prostate.

AIMS AND OBJECTIVES: This study has been undertaken with the objective of finding as to how far needle aspiration method is reliable to establish the diagnosis of lesions of prostate and to correlate them with histopathological findings.

MATERIALS AND METHODS: The study of 50 cases of prostatic lesions was conducted in the department of pathology on the patients admitted to surgery wards. The cases were selected and proper consent was taken for the procedure and investigation. The detailed examination, routine tests and FNAC was done and recorded according to predesigned proforma.

OBSERVATIONS: The present study was conducted on 50 cases having symptoms of prostatism.

TABLE - I: AGE INCIDENCE IN STUDY GROUP

Age (years)	No. Of cases	%
31-40	1	2
41-50	6	12
51-60	12	24
61-70	18	36
71-80	11	22
81-90	2	4
Total	50	100

The highest incidence of prostatic enlargement is seen in 6th decade followed by 5th decade and least in 3rd decade.

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TABLE - II: PRESENTING CLINICAL SYMPTOMS AND THEIR PERCENTAGE IN PROSTATIC ENLARGEMENT

Symptoms	No. Of cases	Percentage
Acute retention	45	90
Retention with overflow	8	16
Burning in micturition	20	40
Dysuria	45	90
Frequency of micturition	46	92
Hematuria	2	4
Bone pain	1	2

The patients present with acute retention, retention with overflow, burning, micturition, dysuria, frequency of micturition and hematuria. Out of 50 cases, 46 patients (92%) presented with frequency of micturition and 90% of acute retention with dysuria. Hematuria was found in few cases (4%). Eight patients (16%) presented with retention with overflow. One patient presented with bone pain.

TABLE - III: FINDINGS OF DIGITAL RECTAL EXAMINATION IN RELATION TO AGE

Age gp.	No. Of cases	Size mild	Size moderate	Size massive	Consistency Firm	Consistency hard	Consistency Firm to hard	Involvement of lat. lobe	Median groove obliteration
31-40	1	1	-	-	1	-	-	1	-
41-50	6	3	3	-	5	1	-	16	-
51-60	12	5	7	-	10	2	-	12	-
61-70	18	4	12	2	15	2	1	17	1
71-80	11	6	3	2	7	3	1	8	3
81-90	2	-	2	-	2	-	-	2	-
Total	50	19	27	4	40	8	2	46	4

In the rectal digital examination of 50 cases of prostatic obstruction, massive enlargement was seen in 4 cases (8%), 27 cases (54%) showed moderate enlargement and rest 19 cases (38%) showed mild enlargement. 19 cases out of 27 cases of moderate enlargement were between 5th and 6th decade. Out of 50 cases 40 cases (80%) had firm consistency while 8 cases (16%) had hard consistency and only two cases (4%) showed firm to hard consistency.

Almost all 46 cases (92%) had lateral lobe enlargement, only 4 cases (8%) had median groove obliteration. Out of 46 cases, 37 cases were in 5th to 7th decade.

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TABLE – IV: FINDINGS OF FINE NEEDLE ASPIRATION CYTOLOGY

Diagnosis	No. Of cases	%
Benign nodular hyperplasia	21	42
Benign nodular hyperplasia with chronic prostatitis	23	46
malignancy	4	8
inconclusive	2	4

Above table reveals the diagnosis of prostatic lesions. Out of 50 cases, 21 cases (42%) were diagnosed as benign nodular hyperplasia, 23 (46%) as benign nodular hyperplasia with chronic prostatitis, 4 cases (8%) as malignancy and two cases (4%) were inconclusive due to inadequate material.

TABLE – V: CORRELATION OF AGE WITH DIFFERENT DIAGNOSIS OF FINE NEEDLE ASPIRATION CYTOLOGY

Age group (yrs)	No. Of cases	Benign nodular hyperplasia	Benign nodular hyperplasia with chronic prostatitis	Malignancy	inconclusive
31-40	1	-	1 (2%)	-	-
41-50	6	2 (4%)	4 (8%)	-	-
51-60	12	6 (12%)	6 (12%)	-	-
61-70	18	6 (12%)	9 (18%)	1 (2%)	2 (4%)
71-80	11	5 (10%)	3 (6%)	3 (6%)	-
81-90	2	2 (4%)	-	-	-
Total	50	21 (42%)	23 (46%)	4 (8%)	2 (4%)

Out of 50 cases, 21 cases (42%) were diagnosed as benign nodular hyperplasia, 23 (46%) as benign nodular hyperplasia with chronic prostatitis, 4 cases (8%) as malignancy and two cases (4%) were inconclusive due to inadequate material. Maximum benign nodular hyperplasia and benign nodular hyperplasia with chronic prostatitis were observed in 5th to 7th decade but malignancies were observed in 6th to 7th decade.

TABLE – VI: CORRELATION OF CYTOLOGICAL DIAGNOSIS WITH HISTOLOGICAL DIAGNOSIS USING FNAC

FNAC	Histology BNH	Histology BNH with chronic prostatitis	Histology malignancy	Histology tissue not available	Total
BNH	16 (32%)	2 (4%)	0	3 (6%)	21 (42%)
BNH with chronic prostatitis	0	20 (40%)	1 (2%)	2 (4%)	23 (46%)
malignancy	0	0	4 (8%)	0	4 (8%)
Inconclusive	1	0	0	1 (2%)	2 (4%)
Total	17 (34%)	22 (44%)	5 (10%)	6 (12%)	50

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This table shows 21 cases (42%) of benign nodular hyperplasia which were diagnosed by FNAC, histopathology reveals 16 (32%) cases as benign nodular hyperplasia, 2 cases (4%) BNH with chronic prostatitis and in 2 cases (4%) tissue for histopathological examination was not available. So the accuracy of diagnosing BNH by FNAC is 80%. Prostatitis is the major source of suspicious diagnosis and it is missed because of the area of needle aspiration is limited and needle has not touched the area of inflammation. 23 cases (46%) of BNH with chronic prostatitis which were diagnosed by FNAC, histopathology reveals 20 cases (40%) as BNH with chronic prostatitis, one case as malignancy and in 2 cases (4%) tissue was not available. So the accuracy of diagnosing prostatitis by FNAC is 88%.

4 cases (8%) cases of malignancy were diagnosed by FNAC while histopathology reveals 10% cases. One false negative case of malignancy was diagnosed where the prostatic biopsy showed small foci of carcinoma along with the area of BNH with chronic prostatitis.

TABLE – VII: COMPARISON BETWEEN CYTOLOGICAL AND HISTOLOGICAL DIAGNOSIS AS A PREDICTOR OF MALIGNANCY.

FNAC	Histology Non malignant	Histology Malignant	Histology Tissue not available	Total
Non malignant	38 (76%)	1 (2%)	5 (10%)	44 (88%)
Malignant	-	4(8%)	-	4 (8%)
Inconclusive	1 (2%)	-	1 (2%)	2 (4%)
Total	39 (78%)	5(10%)	6 (12%)	50

This table shows 39 cases (78%) of non malignant lesions which were diagnosed by FNAC and tissue was available for histopathological examination. Out of 39 cases histology revealed 38 cases (76%) as non malignant and one case (2%) had malignancy. One case of malignancy was missed on FNAC.

Thus sensitivity of diagnosing non malignant lesions was 100% while specificity 80%, positive predictive value 97.4% and negative predictive value were 100%.

4 cases (8%) of malignancy which were diagnosed by FNAC also proved histopathological examination. One case of malignancy was missed by FNAC. So sensitivity of diagnosing malignant lesions was 80%, specificity 100%, positive predictive value 100% and negative predictive value 97.4%.

DISCUSSION: In our study, maximum 36 % cases were present in 6th decade followed by 24% cases in 5th decade and least percentage (2% was observed in 3rd decade). One study reported enlargement of prostate was very common over the age of sixty years and changes could be detected by the end of 4th decade.^[6] In this study frequency of micturition (92%) was the most common symptoms followed by acute retention (90%) among benign nodular hyperplasia patients. In malignant cases it was found that acute retention was the most common presenting symptom followed by bone pains. Similarly other study revealed the most common symptom related to prostate disease in men over 50 years of age were bladder outlet obstruction, hesitancy, frequency of micturition and diminished urinary stream.^[7]

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Out of 50 cases 88% cases of BNH were in 5th to 7th decade, and 8% of malignancies were found in 6th to 7th decade. Other workers had also reported that BNH was extremely less common before the age of 40 years. In between 40-70 years most of the patients were showing benign lesions, while after 70 years of age, the chances of malignancy was extremely high.^[8,9] Their findings are in accordance with our study.

In present study, 42% cases of BNH were diagnosed by FNAC. On histopathological examination of same cases showed 32% BNH, 4% as BNH with chronic prostatitis and in 6% biopsy tissue was not available. 4% of chronic prostatitis was missed by FNAC. Prostatitis is the major source of false positive diagnosis and it is missed because the area of needle aspiration is limited so, it may not be reached to the area of inflammation. Therefore, the accuracy of diagnosing prostatitis is 88%. Other workers had also reported false positive results in FNAC and missing of prostatitis due to same reason.^[10]

Cytological diagnosis of BNH with chronic prostatitis by FNAC was found in 46% cases. The histopathological examination revealed 40% as BNH with chronic prostatitis, 2% had malignancy and in 4% cases tissue was not available. One case of malignancy which was missed by FNAC turned out to be malignant. In this case biopsy showed small foci of carcinoma along with areas of BNH and extensive areas of chronic prostatitis. Thus finally specificity was 80%, sensitivity 100%, positive predictive value was 97.4% and negative predictive value was 100%.

Four cases of malignancy were diagnosed by FNAC and also proved as malignant by histopathology. Therefore, specificity of diagnosing malignancy was 100% and sensitivity 80% as one case was missed in FNAC. Positive predictive value and negative predictive value was found 100% and 97.4% respectively.

In a series of 162 cases no false positive diagnosis was reported. On cytological diagnosis of malignancy overall accuracy rate of 95% and 82% respectively was reported.^[11,12] Other workers had also found confirmation of diagnosis, in 96% cases of BNH, 77% cases of malignancy and 100% with chronic prostatitis.

Cytodiagnostic accuracy rate was 99% in identification of benign or malignant nature of lesions and 94% in cytology specific diagnosis exactly similar to histopathologic diagnosis.^[13] In one study the accuracy of diagnosis by FNAC for benign or malignant lesions of prostate was 98.33% and 81.81% respectively.^[14]

Similarly in 2001 one study showed utility of FNAC in the diagnosis of prostatic tumors with sensitivity 86%, specificity 96%, positive predictive value 95%, negative predictive value 93% and efficacy was 92%.^[15] These findings are in accordance with present study.

CONCLUSION: Almost all benign lesions of prostate occur in 5th to 7th decade while most of the malignancies occurred in 6th to 7th decade. Overall accuracy of clinical diagnosis by digital rectal examination of prostate is 87.4%. It is more accurate in benign lesions rather than malignancy. In the diagnosis of BNH FNAC showed sensitivity 100%, specificity 80%, positive predictive value 97.4% and negative predictive value 100%. On FNAC in the diagnosis of malignancy sensitivity is 80%, specificity is 100%, Positive predictive value is 100% and negative predictive value is 97.4%. Thus it is concluded that FNAC by Transrectal route is easiest, accurate, quick with minimal discomfort to the patient and can be used as OPD diagnostic procedure in the prostatic lesions. It may also be helpful for early detection of malignancy of prostate.

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AUTHORS:

1. Ravindra Kumar Shrivastava
2. Sanjay Kumar Nigam

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Pathology, Major S.D. Singh Medical College & Hospital, Bewar Road, Fatehgarh, Farrukhabad, U.P.
2. Professor, Department of Pathology, Rama Medical College Hospital & Research Centre, Mandhana Kanpur, U.P.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Ravindra Kumar Shrivastava,
Flat No. 203, Surya Kiran Apartment,
117/5Q, Sharda Nagar,
Kanpur, U.P. – 208025.
Email – sknigam@yahoo.com

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