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PROSPECTIVE STUDY OF TRUCUT BIOPSY VS FINE NEEDLE ASPIRATION CYTOLOGY OF PROSTATE IN PATIENT WITH PROSTATE SPECIFIC ANTIGEN > 4NG/ML.

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Abstract

It is often difficult for the examining finger in the rectum to decide whether the enlargement is due to benign or malignant or inflammatory conditions of the prostate such as chronic inflammation, both specific and nonspecific prostatic abscess, calculi, benign hyperplasia and carcinoma of prostate. Prostatic obstruction must be diagnosed as early as possible so that definite treatment can be instituted prevent the sequele of the obstruction. Determination of histological nature of lesion is the only positive method of establishing a definitive diagnosis. A suitable and simple technique of obtaining biopsy material and aspirational material from prostate for definitive diagnosis is essential. Aim of this study was Comparision between Trucut biopsy and FNAC in lesions of prostate gland. A prospective comparative study of Trucut biopsy vs FNAC of prostate in patient with prostate specific antigen > 4 ng/ml, was conducted among 50 patient. Patients were chosen for the study on the basis of clinical history and DRE. Patient with LUTS symptoms and enlarged Prostate on DRE were further subjected to PSA screening through blood examination at pathology lab and ultrasound for measuring prostatic volume at Radiology Department. Following consent, patients are subjected for FNAC and Trucut biopsy under local anaesthesia. Out of 50 patients, by Trucut biopsy diagnosed case of BPH are 30,Ca.Prostate are 5 and chronic prostitis are 5, while by FNAC diagnosed case of BPH are 15 , Ca.prostate are 3 and chronic prostitis are 2. In developing countries like India FNAC is more preferable due to its simplicity ,very low cost and least invasiveness and very less or no complication. Overall present studies suggest that Trucut biopsy is superior to FNAC in diagnosis and management of prostate diseases.

Keywords: FNAC, Trucut biopsy, Lesions of prostate gland.

Introduction

Prostate cancer continues to be a major public health problem in both industrialized and developing countries worldwide. Prostate disease is one of the common problem of old age group and third most common cause of cancer death in males. According to the World Health Organization, there are about 2,50,000 new cases of prostatic cancer every year. When diagnosed in time, the disease has a cure rate of over 90%. Elevated prostate specific antigen(PSA) levels suggest a likelihood of malignant disease however such levels can occur in benign prostatic diseases as well. Cytology and histopathology have been the forefront of cancer detection but how well these two correlate has been a content of debate. In 1930, Russell Ferguson reported that prostate cancer could be diagnosed by transperineal fine needle aspiration (FNA); however, it took three decades before Sixten Franzen developed a trans-rectal approach to prostate biopsy and applied prostate FNA to diagnostic uropathology.[1]The development of a special instrument for prostatic aspiration led to a painless quick method of cytologic sampling of the prostate by trans-rectal FNA biopsy. In 1988, Benson[2] recommended that prostate FNA should be encouraged as a standard diagnostic tool that is performed by urologists, taught to urology residents, and diagnosed by pathologists. He mentioned that, while accuracy for cytodiagnosis was similar to that of histopathologic diagnosis, fine-needle aspiration was less traumatic and cost-effective compared to more invasive histologic biopsy methods. However, some pathologists find the Trucut biopsies easier to interpret than aspiration cytology, and hence underestimate the role of FNA as a diagnostic tool. Whereas Trucut biopsies offer the advantage of a more precise localization of the lesions within the target organ, FNA of the prostate offers its own unique advantages. First, it is an outpatient procedure, well tolerated by the patients because the discomfort and trauma from the 22-gauge needle are minimal.[3,4] Second, sampling area is larger and more representative than that of Trucut biopsies[5]. Third, smears can be processed and interpreted rapidly.

Aim: Comparision between FNAC and TRUCUT biopsy of prostate gland in lesions of prostate gland.

Material and Methods:

In this study 50 cases were collected from indoor patients in Surgery Department, GOVT. MEDICAL COLLEGE and SIR T. HOSPITAL, BHAVNAGAR with satisfying the inclusion criteria and duration was 2 years.

Inclusion criteria

- Age > 40 yrs.
- Patients with prostatic lesion diagnosed per rectal.
- Serum PSA > 4ng/ml.

Exclusion criteria

- Age < 40yrs
- Patient not willing to give consent.
- Patient with serum PSA < 4 ng/ml
- Patient with bleeding disorders.

The qualifying patients are informed of risks and benefits of each procedure/operation and are to sign a detailed informed consent in their native language. Patients were chosen for the study on the basis of clinical history and DRE. Patient with LUTS symptoms and enlarged Prostate on DRE were further subjected to PSA screening through blood examination at pathology lab and ultrasound for measuring prostatic volume at Radiology Department.

Patients were explained about procedures, both Trucut biopsy and FNAC method are done blindly. Following consent, patients are subjected for FNAC and Trucut biopsy under local anaesthesia. Specimen was sent to the Department of Pathology, GOVT Medical College and SIR T. HOSPITAL, BHAVNAGAR for Histopathological and cytological evaluation.

Clinical history for patient selection **:** Obstructive symptoms like hesitancy **,**poor flow not improving by straining **,** dribbling even after micturation **,**intermittent stream- stops and starts **,** poor bladder emptying **,** episodes of near retention were asked. Irritative symptoms like , frequency , nocturia ,urgency ,urge incontinence , nocturnal incontinence were asked.

Digital Rectal Examination (DRE): It is the mainstay of examination of the prostate. Patient position: left lateral position with the patient lying on their left side and with the hips and knees flexed to 90 or more.

Method of specimen collection

In the present study specimen was collected blindly by Transrectal Trucut biopsy and FNAC under aseptic precautions in all 50 patients. Aseptic precautions and utmost care were taken not to injure neighbouring rectal mucosa or haemorrhoidal vein while doing procedure. Short course of antibiotics was advised to prevent septic complications. Serum prostate specific antigen was done.Other investigations like CBC, RBS, BT/CT, Prothromin time , CXR, HIV, HbsAg were done .

Figure 1: Trucut biopsy bard gun with needle.

Results:

The present study carried out on 50 patient having urinary complaint due to pathology of prostate in Surgery Department at Sir T. Hospital,Bhavnagar. Both procedure FNAC and Trucut biopsy done in all 50 patients. Data collected and analysis by standard method.

Table 1: Age Distribution

Age group	Number of patients
41-50 years	2
51 –60 years	9
61 –70 years	23
71 –80 years	12
81- 90 years	4
Total	50
Mean	68.200

Maximum no of patient belongs to age group of 61 to 70 years which is 46% of total patient enrolled for study. Mean age of patient in present study is 68.2 years.

Table 2: Serum PSA level according to age group .

	SERUM PSA LEVEL(ng/ml)				
AGE GROUP					
	4-10	**10.1-20**	**20.1-30**	**30.1-40**	**>40**
41-50 years	1	-	1	-	-
51 –60 years	2	4	-	2	1
61 –70 years	14	6	1	1	1
71 –80 years	5	5	1	-	1
81- 90 years	-	-	3	1	-

In present study 14 patients had S.PSA 4.0 to 10 ng/ml who belongs to age group of 61 to 70 years.

Table 3: Distribution of case of BPH, CA prostate and chronic prostitis by TRUCUT biopsy and FNAC according to serum PSA level

S.PSA (ng/ml)	BPH		CA PROSTATE		CHRONIC PROSTITIS	
	TRUCUT	**FNAC**	**TRUCUT**	**FNAC**	**TRUCUT**	**FNAC**
4.0-10	14	7	0	0	2	2
10.1-20	7	3	1	0	3	0
20.1-30	6	2	0	0	0	0
30.1-40	1	2	2	1	0	0
>40	2	1	2	2	0	0
Total	30	15	5	3	5	2

In our present study out of 50 patients, 30 patient diagnosed BPH with Trucut biopsy and 15 patient on FNAC. 14 patient with BPH diagnosed on Trucut biopsy had S.PSA level between 4-10 ng/ml, while 7 patient with BPH diagnosed on FNAC had S.PSA 4-10 ng/ml. Total 5 patient were diagnosed Ca prostate with high S.PSA level in which FNAC had diagnosed 3 cases while Trucut biopsy had diagnosed 5 cases. Total 5 patient were diagnosed chronic prostitis on Trucut biopsy in which 3 had S.PSA level between 10.1 -20 ng/ml, while 2 patient diagnosed chronic prostitis on FNAC had S.PSA level between 4-10 ng/ml.

On Trucut biopsy 15 patient with BPH between age group of 61-70 years, 2 patient with Ca.prostate between age group of 61-70 years and 3 patient with chronic prostitis between 71-80 years of age group, while on FNAC 8 patient with BPH and 2 patient with Chronic prostitis between age group of 61-70 years.1 patient with Ca.Prostate in each between 51-60,71-80,81-90 years of age group. 9 patient with BPH on Trucut biopsy had prostatic volume 51-60 cc while 5 patient with BPH on FNAC had prostatic volume 41-50 cc. Chances of prostatic malignancy are more when prostate volume increase more than 50 cc.

Table 4: Distribution of complication according to method of diagnosis.

COMPLICATION	TRUCUT	FNAC
PAIN	26 (52%)	15 (30%)
BLEEDING	15 (30%)	5 (10%)

In Trucut biopsy incidence of pain seen in 52% cases and incidence of bleeding seen in 30% cases. In FNAC incidence of pain in 30% cases and bleeding seen in10% cases.

Table 5: TRUCUT biopsy and FNAC among study participants (n=50)

Diagnosis	TRUCUT BIOPSY	FNAC	
BPH	30 (60%)	15	(30%)
Adenocarcinoma of prostate	5 (10%)	3	(6%)
Chronic prostitis	5 (10%)	2	(4%)
NAD	10 (20%)	30	(60%)
Total	50(100%)	50 (100%)	

Diagnosed case of BPH is 30 (60%), adenocarcinoma is 5 (10%) chronic prostitis 5 (10%) and no any deformity seen in 10 (20%) with trucut biopsy method, while diagnosed case of BPH is 15 (30%), adenocarcinoma is 3 (6%) chronic prostitis 2 (4%) and no any deformity seen in 30 (60%) with FNAC.

Discussion:

Prostatic carcinoma is one of the most important causes of mortality in elderly men mainly because of the late detection despite of the fact that it is a potentially curable disease. As FNA is painless, simple, low-cost, repeatable, with low risk of complications, it can be employed to detect occult or early prostatic carcinoma and in follow-up of confirmed cases. However the usefulness of FNA and the robust supportive data behind it in replacing or being an adjunct to tru-cut biopsy is a matter of contention. There has been numerous research supporting the use and accuracy of FNA. In a study done by Saleh AF et al,[6] the sensitivity was 88% and specificity was 93% with an accuracy of 91.7%. FNA seems to be very effective in identifying benign lesions as shown in another prospective study by Singh et al where the accuracy for benign and malignant lesions of prostate were 98.33% and 81.88%, respectively.[7] These facts argue that FNA could have a high negative predictive value and be a useful tool in low prevalence populations who may not need a more invasive test. By securing a larger sampling area FNA is less likely to miss early malignant pocket of cells. Tru-cut biopsies with more cores also carry higher rates of complications which can be avoided by FNA. Polito M, et al showed that FNA had a sensitivity of 98.2%, specificity of 98.1% and accuracy of 96% which is almost similar to our study.[8] A similar study by Honig et al also showed that aspiration cytology of prostate increased the incidence of finding adenocarcinoma from 10% to 14% in patients undergoing transurethral resection of the prostate (TURP).[9] In this study 50 cases were collected from Govt. Medical College and Sir T. Hospital, Bhavnagar. All patients with various clinical features suggestive of prostatic disease and those with positive DRE and have S.PSA level >4 ng/ml were investigated by Trucut biopsy and FNAC method blindly. Maximum number of patient belongs to age group of 61 to 70 years which is 46% of total patient enrolled for this study. Mean age group in present study is 68.2 years. Maximum number of patient diagnosed as BPH by Trucut biopsy (14) and FNAC (7) had S.PSA level between 4-10 ng/ml. Patients diagnosed as Ca.prostate by Trucut biopsy and FNAC had high S.PSA level > 40 ng/ml. Patients diagnosed as chronic prostitis by Trucut biopsy and FNAC had S.PSA level below 20 ng/ml. On Trucut biopsy diagnosed case of BPH and Ca.prostate were more in 61-70 years age group and chronic prostitis were more in 71-80 years age group. On FNAC diagnosed case of BPH and chronic prostitis were more in 61-70 years age group while diagnosed case of Ca.prostate were increase after 70 year age. Chances of prostatic malignancy are more when prostate volume increase more than 50 cc. In Trucut biopsy pain seen in 26 patients and bleeding seen in 15 patients while in FNAC pain seen in 15 patients and bleeding seen in 5 patient. Trucut biopsy diagnosed 30 cases of BPH , 5 case of adenocarcinoma, 5 case of chronic prostitis and 10 case were no any deformity. FNAC diagnosed 15 cases of BPH, 3 case of adenocarcinoma, 2 case of chronic prostitis and 30 cases were no any deformity.

Conclusion:

In present study we conclude that disease of prostate were more common among the age group between 61-70 years. Patient with S.PSA level between 4-10 ng/ml had more BPH while high S.PSA level favours diagnosis of Ca.Prostate. As the volume of prostate increases, chances of developing BPH and Ca. Prostate also increases. Our study favour that Trucut biopsy is more accurate in diagnosis of BPH and Carcinoma of prostate as compared to FNAC. Though the complication like post procedure pain and bleeding are more with Trucut biopsy, it can be managed easily.In developing countries like India FNAC is more preferable due to its simplicity, very low cost and least invasiveness and very less or no complication. Overall present study suggest that Trucut biopsy is superior to FNAC in diagnosis and management of prostate diseases.

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