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HISTOPATHOLOGICAL PATTERN OF PROSTATIC LESIONS IN A TERTIARY CARE HOSPITAL IN NORTH INDIA

Pathology

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ABSTRACT

Background: The prostate gland, a fibromusculoglandular organ encircling neck of urinary bladder and urethra is involved by a number of lesions like benign prostatic hyperplasia (BPH), inflammation and carcinoma. These diseases are an important cause of morbidity and mortality in elderly **Methods:** 110 prostatic specimens were studied in the P department of Pathology, ASCOMS , Jammu over a period of two years wef November 2017 to October 2019. Hematoxylin and Eosin stained slides were retrieved and reviewed.. The specimens and slides were analyzed according to type of specimen, age of patient, histopathological pattern and final diagnosis. **Results:** The most common benign lesion was benign prostatic hyperplasia in 96 (87.27%) cases. Malignant lesions comprised 14 (12.72%) cases of all prostatic lesions. All the cases of prostate carcinoma were acinar adenocarcinoma. The most frequent Gleason score was 9. Mean age for benign and malignant lesions were 67.2 years and 76.5 years respectively. **Conclusion:** Benign lesions of prostate are more frequent than malignant lesions. Histopathological examination of prostate specimens has important role in diagnosing various benign and malignant lesions, especially to rule out high grade PIN and incidental carcinoma.

KEYWORDS

Prostate, Adenocarcinoma, Benign prostatic hyperplasia, prostate carcinoma.

INTRODUCTION: Prostate, a retroperitoneal organ encircling neck of bladder and urethra is histologically composed of glands and fibro muscular stroma. Prostatic diseases vary in spectrum from inflammatory lesions, benign prostatic hyperplasia and carcinoma. Hyperplasia arises in transitional zone of prostate whereas carcinomas originate in peripheral zone **(1).** The incidence of benign prostatic hyperplasia increases with age with 8% occurring during fourth decade, 50% in the fifth decade and upto 75% in the eighth decade **(2).** Androgens play an important role in the pathogenesis of both adenofibroleiomyomatuos hyperplasia and carcinoma prostate. Inflammation, Benign Prostatic Hyperplasia and tumors are most important causes of morbidity and mortality in males. Almost 210 million males worldwide are affected with BPH alone which is contemplated as part of normal ageing process. Prostate cancer is the most common cancer and second most common cause of cancer related deaths in men **(3).** High grade prostatic intraepithelial neoplasia (HGPIN) is a premalignant condition **(4).** Screening of prostatic lesions includes digital rectal examination, analysis of prostatic specific antigen (PSA) values and transrectal ultrasound. PSA is an important tumor marker for prostate carcinoma **(5).** Adenocarcinomas are further graded on the basis of Gleason score and WHO grading depending on its microscopic characteristics to determine prognosis. This study was done to describe the pattern of various pathologies of prostate gland encountered in all prostate specimens received in Acharya Shri Chander College of Medical Sciences (ASCOMS) and Hospital, Jammu, a tertiary care institute.

Material and Methods: 110 prostatic specimens were studied in Postgraduate department of Pathology, ASCOMS and Hospital, Jammu over a period of two years wef November 2017 to October 2019. All transurethral resection of prostate (TURP), needle biopsies and open prostatectomy specimens were included in the study. The specimens were fixed in 10% formalin, 4-6 µ paraffin sections were cut and stained with Hematoxylin and Eosin (H&E) stain. Histopathological slides of the specimens were reviewed under light microscope. The findings were analyzed as type of specimen, age of patient, histopathological features and diagnosis. The tumors were graded according to New 2016 WHO grading system along with Gleason system.

RESULTS

A total of 110 specimens were received, out of which 105(95.45%) were TURP, 4(3.63%) were needle biopsies and 1 open prostatectomy specimen. Most of the prostatic lesions were BPH in 96 (87.27%) cases **(Fig 1).** Malignant lesions comprised 14 (12.72%) cases of all prostatic lesions. HGPIN was observed in 2 (1.81%) cases **(Fig 2).** Majority of the benign lesions were common in the age group of 61-70 years. Mean age for benign lesions was 67.2 years (Age range 51-88 years). Malignant lesions were common in the age group of 71-80 years. The mean age for malignant Lesions was 76.5 years (Age range 68-83 years). The most frequent Gleason score was 9.

BPH was the most frequent histopathological diagnosis seen in 96(87.27%) patients (**Table 1).** Microscopic findings associated with BPH comprised hyperplasia of both epithelial and stromal cells with cystically dilated glands and corpora amylacea**.** BPH was associated with moderate to severe chronic inflammation in 16.98% of all cases. All the 14 cases of prostatic carcinoma were acinar adenocarcinoma out of which 10 were incidental carcinomas seen on TURP specimens along with BPH. All the 4 needle biopsies of the prostate consisted of adenocarcinoma. Grade group 5 **(Fig 3)** was the commonest pattern in half of the cases with Gleason score 9 and 10 (**Table 2**).

TABLE 1 DISTRIBUTION OF VARIOUS PROSTATIC LESIONS (N=110)

DIAGNOSIS	NO. OF CASES	PERCENTAGE
BHP ALONE	96	87.27
BHP WITH PROSTATE CANCER	10	9.09
PROSTATE CANCER ALONE	04	3.63

TABLE 2 GLEASON SCORE/GRADE GROUPING OF PROSTATIC CARCINOMA

GLEASON SCORE	GRADE GROUP	NO OF CASES	%AGE
3+3=6	1	1	7.14
3+4=7	2	2	14.28
4+3=7	3	1	7.14
4+4=8	4	3	21.42
4+5=9	5	4	28.56
5+4=9	5	2	14.28
5+5=10	5	1	7.14

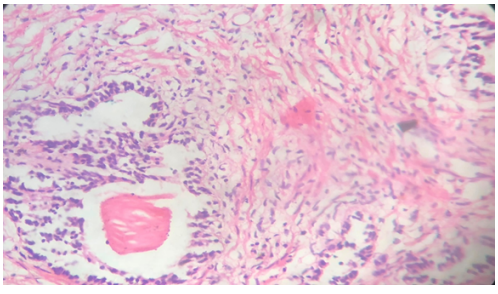

FIG 1 Benign prostatic hyperplasia. Note the presence of corpora amylacea (H&Ex100)

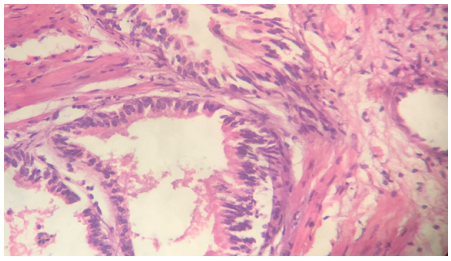

Fig 2 High grade prostatic intraepithelial neoplasia (H&E x 400)

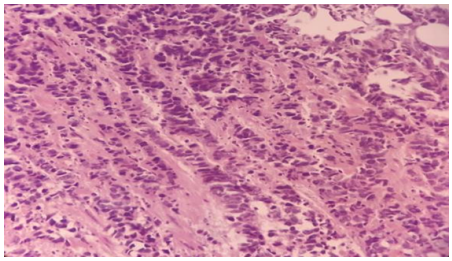

FIG 3 Gleason grade 5 showing infiltrating cords and single cells without gland formation (H&Ex100)

DISCUSSION

110 patients who underwent TURP, needle biopsy of prostate and open prostatectomy were included in the study. BHP and prostatic carcinomas are the most common diseases of prostate. Most of our cases comprise BHP (87.27%). Prostate carcinoma was present in 12.72%. In 10 out of 106 TURP specimens, carcinoma was incidentally present (9.43%). All the 4 needle biopsies were positive for cancer. BHP was seen most commonly in 61-70 yrs age group (35.45%) followed by 71-80 years age group (29%) of all cases of BHP with mean age of 67.20 years. Most of the studies have reported similar age group for BHP. **Yadav *et al* (2017)** reported age range of 45-85 years, exactly the same as in our study **(6). Koteswari and Sudhakar (2018)** and **Kohale *et al* (2016)** observed that most common age group in cancer patients was 71-80 years **(7,8).** The morphological changes in BHP consist of fibroleiomyoadenomatous hyperplasia. Fibroglandular hyperplasia is the most common pattern in different studies **(9).** Moderate to severe chronic inflammation was present along with BPH (16.98%). High grade PIN (HGPIN) is more commonly associated with cancer than without cancer. HGPIN is a precursor to some carcinomas. HGPIN is more closely related to peripheral as compared to transitional zone carcinoma. HGPIN was noted in 2 patients (1.81%) in our study, one of them accompanying carcinoma. **Bostwick *et al* (2004)** reviewed PIN and reported that HGPIN is detected in an average of 9% (range 4%-16%) of prostate biopsies **(10). Sharma A *et al (2017)*** found 2.04% HGPIN in their Studies **(11).** All the prostate carcinomas were histologically adenocarcinoma in the present study. 14 carcinomas were present in our series, 10 incidental in TURP specimens and 4 in needle biopsies of prostate. All the cancers were acinar adenocarcinomas except in 1 case which showed both acinar and focal ductal differentiation. Half of the cancers belonged to grade group 5. **Yadav *et al* (2017)** in their study of 100 TURP specimens, found carcinoma in 7 cases with Gleason's score of 6 in 4 cases and 8 in 3 cases **(6). Gupta *et al* (2015)** studied 100 prostate specimens and detected carcinoma in 8 specimens with Gleason's score of 7 in six cases and 6 in two cases (**12**).

CONCLUSION

Out of 110 prostate biopsies, TURP was the most common type of specimen received. Predominant benign lesion was nodular hyperplasia of prostate. Patients diagnosed as BHP including those with incidental carcinoma were mostly in 7th and 8th decade of life. Majority of carcinomas were poorly differentiated with Gleason score 8-10/grade group 4-5. Histological examination of prostate biopsies is of utmost importance for diagnosis of various prostatic lesions which serves as a guide towards patient's problems and therapy.

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