Original Research Article

Evaluation of histomorphology of prostatic adenocarcinoma and its mimics

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Abstract

Background: Prostatism is a companion of the geriatric age group and is associated with prostatic disease that leads to significant morbidity worldwide. The present study was conducted to evaluate histomorphology of prostatic adenocarcinoma.**Materials & Methods:** The present study was conducted among 40 radical prostatectomy and transurethral resection of the prostate (TURP) specimens received in the pathology department. A history followed by a clinical examination, digital rectal examination (DRE), and transrectal ultrasound (TRUS) findings were recorded. The received specimens were fixed in 10% neutral buffered formalin, and routine paraffin processing was done, followed by hematoxylin and eosin (H and E) staining of sections. Serum prostate-specific antigen (PSA) levels was assessed. All the slides were examined under microscope. Older Gleason's grading system was used for grading the carcinomas.**Results:** Histological mimics of prostatic adenocarcinoma were basal cell hyperplasia in 8, clear cell cribriform hyperplasia in 3, prostate atrophy in 1 and atypical adenomatous hyperplasia in 2 cases. The serum PSA level <4 mg/ml was seen in 4, 4-10 mg/ml in 6 and >10 mg/ml in 16 prostatic adenocarcinoma cases and <4 mg/ml in 11, 4-10 mg/ml in 2 and >10 mg/ml in 1 mimickers of carcinoma. **Conclusion:** Biopsy still remains a gold standard for diagnosis of prostate adenocarcinoma and its mimics

Key words: Atypical adenomatous hyperplasia, Biopsy, Prostate adenocarcinoma.

Introduction

Prostatism is a companion of the geriatric age group and is associated with prostatic disease that leads to significant morbidity worldwide. Benign prostatic hyperplasia (BPH) followed by prostatic adeno-carcinoma account for most of the cases of prostatic disease. With prostate carcinoma being the second most common diagnosed cancer in men, A systematic investigation of an adult male with prostatism becomes very important[1].The concept of geriatric care has not been well established in India and the situation is worse in rural areas. With increase in life expectancy, better education, increased population shift from rural to urban areas, the specific diagnosis offered to men with prostatism would increase[2].Prostate adeno-carcinoma (PC) is the sixth most common malignancy and the second commonest cancer in men worldwide. It is the most common cancer in men in Europe, North America, and parts of Africa[3]. In India, it is among the top 10 leading sites of malignancy according to the Population Based Cancer Registries constituting around 5% of all cancers. It is the second leading site of cancer among males in large Indian cities such as Delhi, Kolkata, Pune, and Thiruvananthapuram and the third leading site of cancer in cities such as Bangalore and Mumbai[4].Prostate cancer indicates a malignant neoplasm of the prostate. The vast majority of these malignant neoplasms are of epithelial origin and differentiation, and are carcinomas. There are rare malignant neoplasms in the prostate such as malignant mesenchymal neoplasms (sarcomas) and hematolymphoid neoplasms (lymphomas) of the prostate[5].The present study was conducted to evaluate histomorphology of prostatic adenocarcinoma.

Materials & methods

The present study was conducted among 40 radical prostatectomy and transurethral resection of the prostate (TURP) specimens received in the pathology department. Data such as name, age etc. was recorded.A history followed by a clinical examination, digital rectal examination (DRE), and transrectal ultrasound (TRUS) findings were recorded. The received specimens were fixed in 10% neutral buffered formalin, and routine paraffin processing was done, followed by hematoxylin and eosin (H and E) staining of sections. Serum prostate-specific antigen (PSA) levels was assessed. All the slides were examined under microscope. Older Gleason's grading system was used for grading the carcinomas.Results thus obtained were subjected to statistical analysis where p value less than 0.05 was considered significant.

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Results

Table 1:Different histological mimics of prostatic adenocarcinoma

Histological mimics	Number	P value
Basal cell hyperplasia	8	0.02
Clear cell cribriform hyperplasia	3	
Prostate atrophy	1	
Atypical adenomatous hyperplasia	2	

Table 2, Fig 1shows that histological mimics of prostatic adenocarcinoma was basal cell hyperplasia in 8, clear cell cribriform hyperplasia in 3, prostate atrophy in 1 and atypical adenomatous hyperplasia in 2 cases. The difference was significant (P< 0.05).

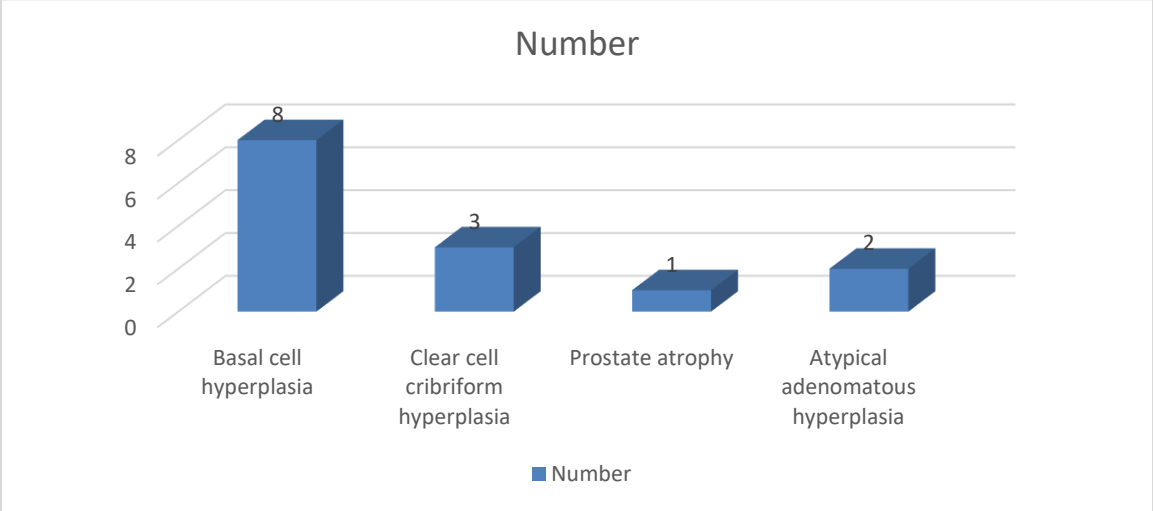

Fig 1:Different histological mimics of prostatic adenocarcinoma

Table 2: Correlation of serum PSA with different prostatic lesions

Range of serum PSA	Prostatic adenocarcinoma	Mimickers of carcinoma
<4 mg/ml	4	11
4-10 mg/ml	6	2
>10 mg/ml	16	1

Table 2,Fig 2 shows that serum PSA level <4 mg/ml was seen in 4, 4-10 mg/ml in 6 and >10 mg/ml in 16 prostatic adenocarcinoma cases and <4 mg/ml in 11, 4-10 mg/ml in 2 and >10 mg/ml in 1 mimickers of carcinoma.

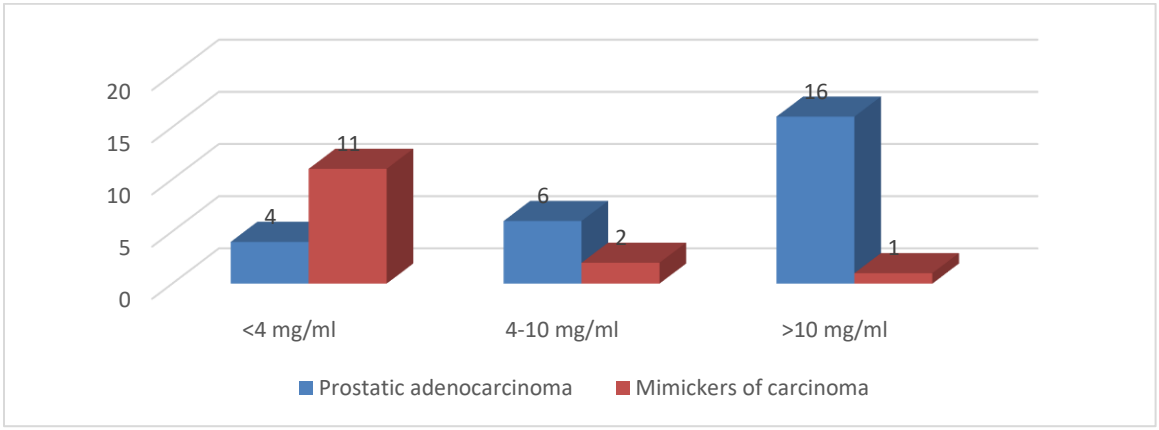

Fig 2:Correlation of serum PSA with different prostatic lesions

Discussion

Establishment of a histopathological diagnosis of prostate cancer requires light microscopic examination of hematoxylin and eosin (H&E)-stained tissue sections[6]. The most common prostatic parenchymal tissue samples examined in surgical pathology laboratories in the United States are, in order, 18-gauge needle cores, transurethral resections, radical prostatectomy specimens, open (simple or enucleation) prostatectomy specimens (uncommon), and

fine-needle aspirates (rare). Needle core biopsies and fine needle aspirates may be used to diagnose metastatic prostate cancer[7]. Prostatic adenocarcinoma displays an abnormal architectural glandular pattern with disturbance of benign epithelial–stromal relationships[8].These alterations are best appreciated at low-power scanning magnifications. Many of the common growth patterns of prostatic adenocarcinoma are well illustrated by the International Society of Urological Pathology (ISUP) 2015 modified Gleason grading schematic diagram which presents five patterns of growth[8]. The lowest grades, comprised of Gleason patterns 1 through 3, form grade group 1 in the new grade group scheme. These malignant glands are single, separate, and well formed. They may be crowded and nodular, as seen in Gleason patterns 1 and 2, which are characteristically detected in the transition zone[10]. Gleason pattern 3 glands may be crowded or the glands may be haphazardly arranged and infiltrative into stroma. The infiltration may be recognized as growth in between and around benign glands[11]. The present study was conducted to evaluate histomorphology of prostatic adenocarcinoma. In present study, histological mimics of prostatic adenocarcinoma was basal cell hyperplasia in 8, clear cell cribriform hyperplasia in 3, prostate atrophy in 1 and atypical adenomatous hyperplasia in 2 cases. Mahapatra et al[12]in their study50 cases of operated surgical specimens of prostate were studied. PC was the most frequent diagnosis in 28 patients of 50 cases (56.0%). Basal cell hyperplasia formed the predominant mimic (26.0%), followed by prostatic intraepithelial neoplasia (8%), prostate atrophy (4%), clear-cell cribriform hyperplasia(4%), and one case of atypical adenomatous hyperplasia (2%). Serum PSA was >4 ng/mL in all the cases of PC. In three of the mimics, PSA was >4 ng/mL and in the rest it was <4 ng/mL. Immunohistochemistry (IHC) was not applied. We found thatserum PSA level <4 mg/ml was seen in 4, 4-10 mg/ml in 6 and >10 mg/ml in 16 prostatic adenocarcinoma cases and <4 mg/ml in 11, 4-10 mg/ml in 2 and >10 mg/ml in 1 mimickers of carcinoma. Puttaswami et al[13]analyzed the clinical and microscopic anatomy of the lesions encountered.The clinical and laboratory data of each patient were noted from the case records. The clinical and histomorphology findings of the pathological lesions encountered were analyzed.A total of 62 prostate biopsies were studied over a 2-year period which included TURP (88.70%) and needle biopsy specimens (11.30%). The most common pathology encountered was benign lesions constituting 80.6% (50 cases). Premalignant and malignant lesions constituted 19.4% (12 cases). Both benign and malignant lesions were common in the age group of 51-80 years and had presented clinically with frequency, hesitancy, and dysuria. Gleason's score of 7 was the most common, seen in 36.3% of cases. Gleason score of 8 and 9 was seen in 27.2% cases each.One case of adenocarcinoma showed neuroendocrine differentiation. Sinha et al has suggested that in a vast and diverse country as India, caution should be exercised in extrapolating data obtained from one region of the country to the other. He has reasoned this disparity as to the study population, who may seek medical attention at different stages of disease[14].

Conclusion

Authors found that biopsy still remains a gold standard for diagnosis of prostate adenocarcinoma and its mimics

Conflict of Interest: Nil
Source of support:Nil

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