Original Research Article

Incidental Findings in Prostate above the Age of 50 Years in Autopsy of 100 Cases

Jasmine Kaur[1], Ravneet Badhan[2], Navneet Kaur[3], Didar Singh Walia[4], Harpreet Singh[5], Shubhpreet Kaur[6]

[1,5,6]Junior Resident, [2]Assistant Professor, [3]Professor, Pathology Department, Government Medical College Patiala, Punjab, India, [4]Associate Professor, Forensic and Toxicology Department, Government Medical College Patiala, Punjab, India.

How to cite this article: Jasmine Kaur, Ravneet Badhan, Navneet Kaur et. al. Incidental Findings in Prostate above the Age of 50 Years in Autopsy of 100 Cases. Indian Journal of Forensic Medicine and Toxicology 2023;17(3).

Abstract

Background: Autopsy study is used to disclose many hidden prostatic pathologies and their incidence. The current study aims to evaluate the histopathological pattern of prostatic lesions such as nodular hyperplasia of the prostate, precancerous lesions, and latent cancer in autopsy series of males over the age of 50 and to correlate them with age.

Methods: The present study was a prospective autopsy study carried out in the pathology department, after en bloc harvestation of prostate gland from autopsies of men aged more than 50 years by the forensic team of Government Medical College Patiala.

Results: Age ranges from 51-90 years and the mean age was 58.57 ± 8.11years. The weight of the prostate gland ranged from 18 to 42 grams with mean weight 27.01 ± 3.34g. Benign prostatic hyperplasia was the common pathological finding (79%), 38 cases of chronic non-specific prostatitis, 3 cases with acute prostatitis and 4 cases were associated with prostatic intraepithelial neoplasia. Prostatic adenocarcinoma was detected in 9 cases.

Conclusions: The present study shows that normal prostate gains weight with advancing age. The majority of cases are in the 6th decade, benign prostatic hyperplasia is the most common lesion encountered.

Key Words: Autopsy, Carcinoma, Histopathology, Hyperplasia, Prostate.

Introduction

Prostate is a retroperitoneal fibromuscular organ encircling the neck of bladder and urethra. The spectrum of prostatic diseases that older men may experience ranges from benign lesions (Benign Prostatic Hyperplasia), which are more common, to malignant lesions (Prostatic Adenocarcinoma). BPH (Benign Prostatic Hyperplasia) is a benign growth of stromal and glandular tissue of the prostate, also known as nodular hyperplasia (NH). It is the most common lesion that arises in old age and is a normal aspect of ageing. [1] The most frequent malignant tumour in men over the age of 65 is prostate cancer.[2]

Corresponding Author: Ravneet Badhan, Assistant Professor, Pathology Department, Government Medical College, Patiala, Punjab, India.

E-mail: rav269@gmail.com

Mobile: 8872152288

The clinical incidence of BPH increases in men as they age, going from 8% in the fourth decade to 50% in the fifth and 75% in the eighth. [3]"

Autopsy studies are done to evaluate the incidence of various prostatic diseases and to better understand the prostate cancer.[4] The potential to get a more precise natural history of prostate cancer is made possible by the utilisation of forensic autopsy materials.[5]

"Prostate cancer is the significant contributor to cancer morbidity and mortality as the fourth most common cancer and eighth leading cause of cancer associated death globally. According to GLOBOCAN 2020, there were 1,414,259 new cases of prostate cancer which resulted in 375,304 deaths (3.8% of all deaths caused by cancer in men), with a higher frequency in the industrialised nations.[6] With PSA level screening, prostate cancer cases have significantly decreased.[1] Prostate cancer is now frequently detected early in many asymptomatic patients in the developed world during routine medical examination or screening, thanks to the discovery of PSA (Prostatic Specific Antigen), a tumour marker.[7] Therefore, it is advised that screening start around age 40.[1] Early diagnosis of small foci of carcinoma on prostatic biopsy and clinically inconsequential prostatic cancer at radical prostatectomy has been made possible by PSA screening.[8]""

The presence of prostate cancer might be localised or invasive with systemic metastases. Bony spread is the most frequent type of hematogenous dissemination, and distant spread can happen via the lymphatic system or hematogenous route.[7]"

The aim and objective of the study is to find out any incidental findings in the prostate above the age of 50 years and to correlate prostate pathologies with age. This study can be used as a learning aid to evaluate different prostatic diseases.

Materials and Methods

The present study was a prospective analytical autopsy study in which prostate were removed from men aged more than 50 years who died of causes not related to prostate. This study was carried out over a 18-month time period from January 2021 to June 2022 in the Department of Pathology, Government Medical College and Rajindra Hospital, Patiala, Punjab. Well preserved specimens of prostates removed from autopsy were included in the study and inadequate and autolyzed specimens of prostate were excluded. After en block removal of prostates, fixation in 10% formalin was done. After proper fixation, prostates were weighed and measured. The prostate lobes were inked with different inks, red for right lobe and green for left lobe. The tissue was processed in histokinette for 15 hours. After tissue dehydration, clearing and impregnation in molten wax, tissue was sectioned at 3-5 micron interval. Microscopic examination was done after Hand E staining to report various prostatic diseases."

Statistical Analysis

"Data was recorded in MS excel. XL Miner Analysis Toolpak was used for data analysis."

"Descriptive statistics were elaborated in the form of mean/standard deviations and median/ IQRs for continuous variables, and frequencies and percentages for categorical variable."

"Data were presented in the graphical manner wherever appreciate for data visualization using histogram for continuous data and bar charts for categorical data."

"Linear correlation between two continuous variables was explored using pearson's correlations (if the data were normally distributed) and statistical significance was kept at P value <0.05."

Results and Discussion

Demographic Characterstics of Study Population:

In this study incidental findings in prostate were observed in 100 post-mortem autopsies. "The ages of the patients ranged from 51-90 years. While the mean age was 58.57 ± 8.11, the median and modal ages were 55 and 51 years respectively. The number of cases were more in the 6^{th} decade followed by 7^{th} and 8^{th} decade as shown in the figure 1 below."

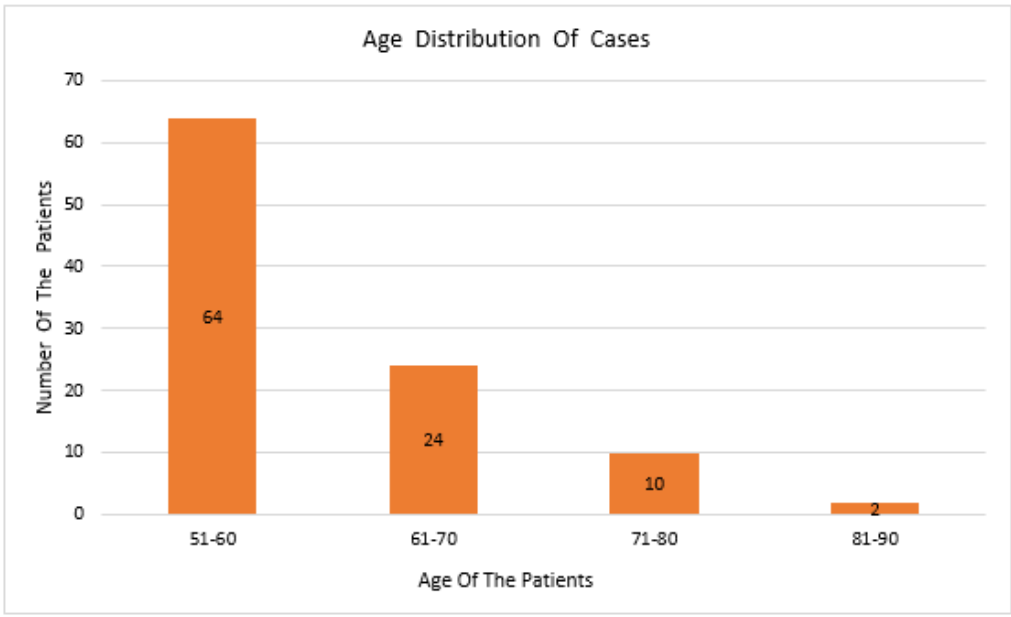

Figure 1: "A histogram showing age distribution of patients in the population under study."

"DISTRIBUTION OF PROSTATIC WEIGHT

The weight of the prostate gland ranged from 18 to 42g. The mean weight of the prostate glands was 27.01 ± 3.34g. There was a significant increase in the mean weight of the prostate gland with age, r=0.76, p<0.001 as shown the figure 2 below."

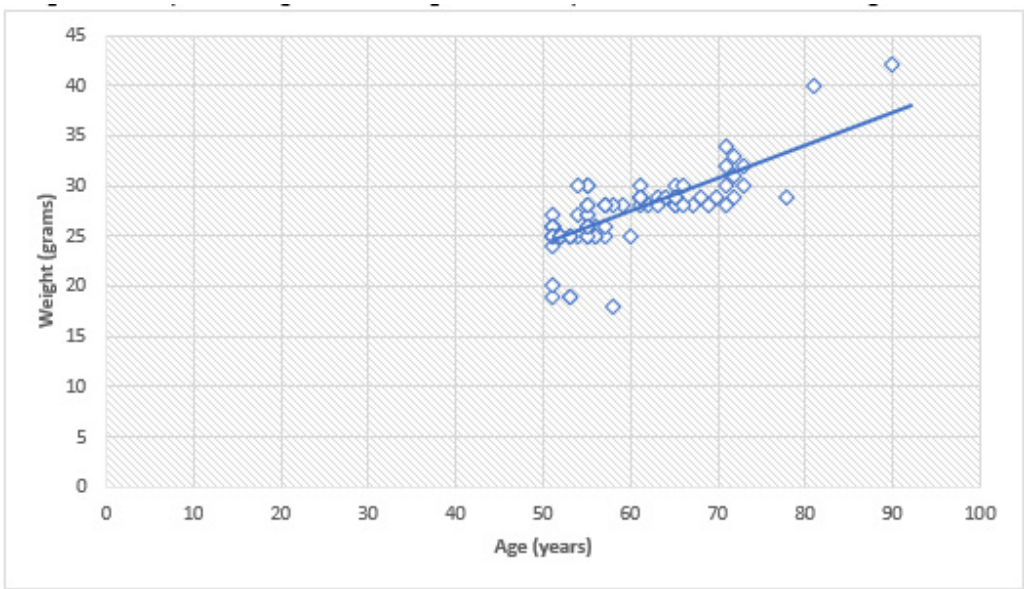

Figure 2: "A scatter diagram of positive significant correlation (r=0.76,p<0.001) between age and weight of prostate, where r (pearsons coefficient)=0.76 and p (P value) <0.001"

CORRELATION OF VARIOUS HISTOPATHOLOGICAL DIAGNOSIS WITH AGE.

In the present study, nodular hyperplasia cases were seen highest in the 6th decade (51 cases), followed by 7th (22 cases) and 8th (6 cases). Acute Inflammation and PIN were seen in 3 and 4 cases in the 6th decade. Prostatic adenocarcinoma was seen highest in the 8th decade (4 cases) followed by 2 cases in the 7th and 9th decade and 1 case in the 6th decade as shown in the figure 3 below.

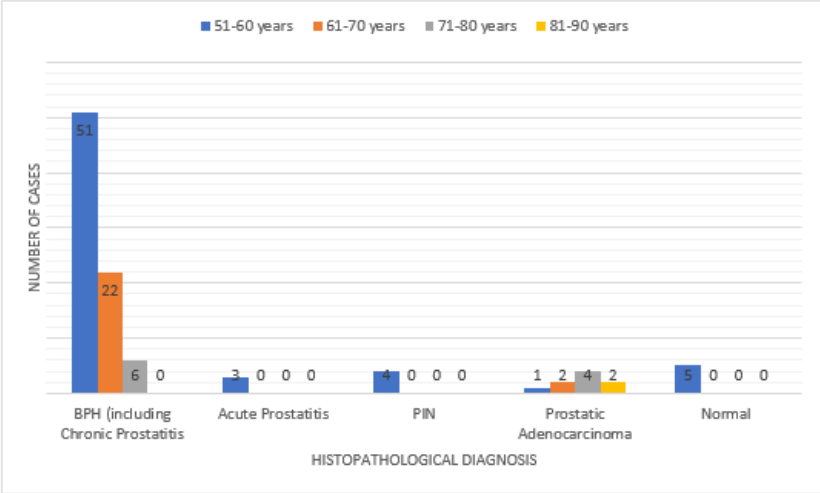

Figure 3: showing number of cases in the study population with various histological diagnosis in different age groups.

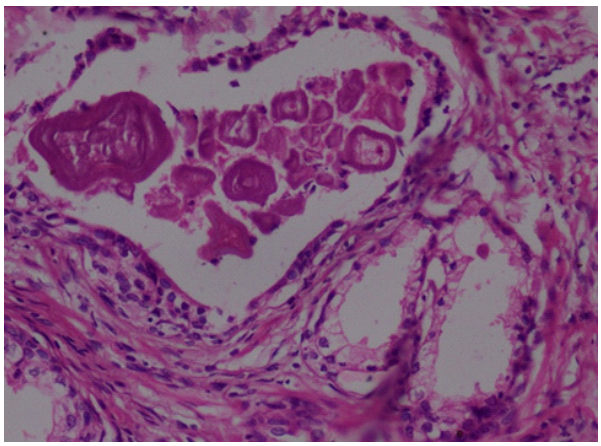

Figure 4: Photomicrograph showing back to back arrangement of glands, lymphomononuclear cell infiltrate in the stroma and corpora amylacea in the gland in BPH with Prostatitis (H&E stain; 400X)

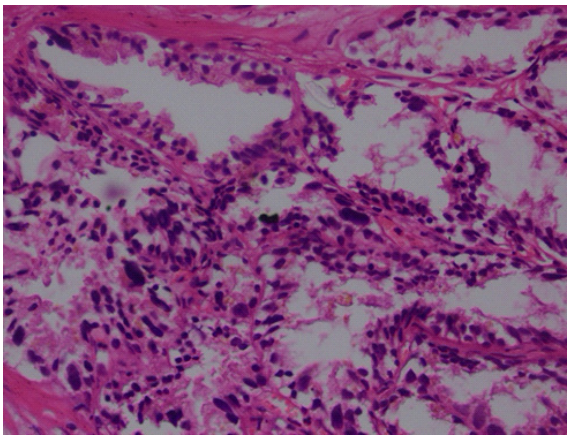

Figure 5: Photomicrograph showing glands lined by few atypical cells with enlarged nuclei and irregular nuclear contour but intact myoepithelial layer in PIN (H&E stain; 400X)

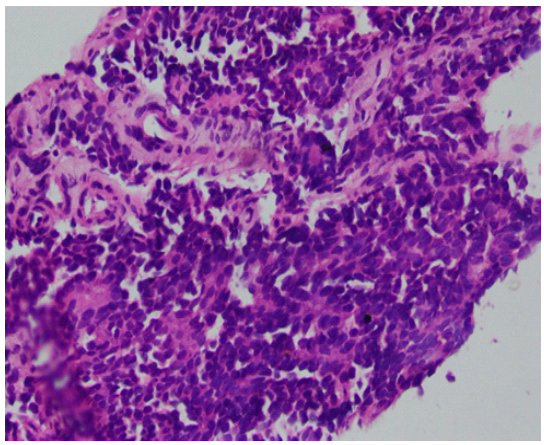

Figure 6: Photomicrograph showing glandular and sheeting arrangement of malignant epithelial cells in Prostatic Adenocarcinoma, Gleason score 5+3=8, Gleason Grade IV (H&E stain; 400X)

"In the present study, we observed highest number of cases in the 6th decade with mean age, 58.57±8.11, ranging from 51 to 90 years. Similar studies was done by Abid AH et al [12] on medicolegal autopsy and their mean age was 59.3±6.9 years."

"The present study showed that minimum weight was 18 grams in age range 51-60 age group and it gained with age up to 42 grams in 81-90 age group which was in concordance with the study done by Ghartimagar et al [9] in which the weight of prostate gained from 15 grams in 11-20 years age group up to 60 grams in 81-90 age group."

"Prostatitis may be divided into several categories: acute and chronic bacterial prostatitis and chronic abacterial prostatitis and granulomatous prostatitis. Chronic abacterial prostatitis is the most common form of prostatitis seen. In present study,

acute prostatitis was seen in 3 cases and chronic inflammatory changes in 38 cases in association with BPH. The cases of inflammation in the autopsy studies done by Abid AH et al[12] and Kumar R et al [13] were being 48% and 32% respectively."

In NH, proliferation of glandular and stromal component was noted. In the present study, NH was the most common lesion accounting for 79 cases (79%). In previous autopsy studies also, BPH remained as the most frequently occurring lesion. The NH frequency similar to present study was done by Okani C et al [11] and Kumar R et al [13] were 81% and 76% respectively.

In PIN lesions, branched acini lined by atypical cells at places with retained myoepithelial cell layer was noted. In the present study, PIN was seen in 4 cases (4%). Our study was in concordance with the Kumar R et al[13] with 2% PIN as shown below.

"Prostatic Adenocarcinoma was characterised by more compact glandular and sheeting architecture with loss of papillary infolding and absent myoepithelial cell layer. The tumor cells had hyperchromatic nuclei and prominent nucleoli with amphophilic cytoplasm. In the present study, 9 cases (9%) of prostatic adenocarcinoma were noted with 4 cases with gleason grade 4 and 5 cases with gleason grade 5. The present study showed similar prostatic carcinoma cases percentage with the autopsy studies done by O O Erinomo et al [10] and Kumar R et al [13] with 10% and 7% cases respectively."

Conclusion

Incidental autopsy findings are useful in studying the prevalence of undiagnosed prostatic lesions in the males. Many prostatic lesions remain undiagnosed even at the time of death which may or may not be related to the cause of death. The present study shows that normal prostate gains weight with advancing age. The majority of cases are in the 6th decade, BPH is the most common lesion encountered in old age. Amongst cancers, Prostate Adenocarcinoma is the most common cancer found incidentally.

Conflict of Interest: None

Source of Funding: None

Ethical Clearance: Taken from Institutional Ethical Committee.

Bibliography

1. Epstein JL. The Lower Urinary Tract and Genital System. In: Kumar V, Abbas AK, Aster JC, eds. Robbins and Cotran Pathologic Basis Of Disease. 10th Edition. Philadelphia (USA): WB Saunders Company Elsevier; 2020;975-77.
2. Neal DE, Shaw G. The Prostate and Seminal Vesicles. In: Williams N, O'Connell PR, McCaskie AW, eds Bailey & Love's Short Practice Of Surgery, 27th edn. USA : CRC Press Taylor and Francis Group; 2018;1456-59.
3. Mckenney JK. Prostate and Seminal Vesicles. In: Goldblum JR, Lamps LW, eds. Rosai and Ackerman's Surgical Pathology, 11th ed. USA : Elsevier; 2018;1097-134
4. Zlotta AR, Kuk C. Prevalence of prostate cancer across the globe: what can autopsy studies teach us about this peculiar disease? *Archivos Espanoles De Urologia.* 2014 Jun;**67(5)**:400-8.
5. Takaso M, Hitosugi M, Nakagawa R, Mukaisho K, Moriguchi S, Koh M, Sugihara H. Forensic Autopsies can determine Latent Prostate Cancer prevalence. *Journal Of Forensic Sciences.* 2020 Sep;**65(5)**:1557-62.
6. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA A Cancer Journal For Clinicians.* 2021 May;**71(3)**:209-49.
7. Salako AA, Arowolo OA, Omonisi EA, Adisa AO, Titiloye NA, Adelusola K. Incidental carcinoma of the prostate gland presenting with initial manifestation of disseminated intravascular coagulopathy (dic) in a middle aged man: a case report. *Cases Journal.* 2009 Sep 29;**2**:144.
8. Giannico GA, Hameed O. Evaluation of Prostate Needle Biopsies. *Advances In Experimental Medicine And Biology.* 2018;**1096**:69-86.
9. Ghartimagar D, Naik R, Gupta A, Ghosh A. Histopathology Of Prostatic Lesions – An Autopsy Study Of 100 Cases. *The Internet Journal of Forensic Science.* 2012;**Vol.5(1)**:1540-1622.
10. Erinomo OO, et al. Autopsy study of prostatic weight and lesions in LUTH: a 12 month prospective study. *Nigerian Quaterly Journal Of Hospital Medicine.* 2013 Apr-Jun;23(2):85-9.
11. Okani C, Akang E, Ogunbiyi O. Incidence of sub-clinical prostatic disease at autopsy in the University College Hospital, Ibadan. *Open Journal Of Urology.* 2013;**33**:80-6.
12. Abid AH, Mohammad EJ, Abdulrazaq AA. Histopathological findings of prostatic autopsy in a sample of over 50 years old men in Baghdad, Iraq. *International Surgery Journal.* 2017;**4(11)**:3606-10.
13. Kumar R, Kaur N, Chahal JS, Bal MS, Kundal R. Incidental findings in the prostate above 50 years in an autopsy study in a tertiary care center from North India. *International Journal Of Health and Allied Sciences* 2019;**8(2)**:135-8