Prostate Cancer: A Retrospective Analysis of Prostate Pathology in PUMHS-W Nawabshah and Comparison with Different Cities of Pakistan and Worldwide.

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ABSTRACT

Objective: To determine the number of malignancies in prostatic biopsies during 06 year period in Nawabshah and comparison of incidence of prostate carcinoma with other cities of Pakistan and worldwide.

Material & Method: The study type is Retrospective and duration is 06 years from 2012 to 2017. All the patients data was recorded in the pathology department, biopsies received and processed for histopathological evaluation, diagnosed under microscope following routine Haematoxylin & Eosin stain were included. The details of patients were taken and recorded on proforma and Microsoft Excel and diagnosis was confirmed from computerized record of pathology department PUMHS-W. The records of all patients who had prostate biopsies from January 2012 to December 2017 were reviewed. Pathological data were found for 697 patients of whom 87(12%) were confirmed carcinoma of the prostate. The published articles on prostate cancer and cancer incidence published in Pakistan & worldwide were selected by using google scholar and pub med. The results of all studies were selected and compared with our study. The collected data was analyzed by using SPSS 20.

Results: The record of all patients who had prostate biopsies from January 2012 to December 2017 was reviewed. Pathological data were found for 697 whom 87(12%) were confirmed adenocarcinoma prostate. The age ranges of patient were from 40 years to 80 years. Most common age group involved was from 60-69 years of age. Gleason score ranged from 2 to 8 in our study. The highest numbers of patients were seen with Gleason grade 3, 24 (28%). In Pakistan and worldwide the incidence of prostate carcinoma is variable but increased in past.

Conclusion: The carcinoma prostate incidence is variable and rising in Pakistan. We found the lower percentage of adenocarcinoma prostate in 40-49 years of age group. The frequency of patients with Gleason score less than 7 were 87% and more than 7 were 13% reflects the different trends in Pakistan as compared to other countries of Asia and Western World.

KEY WORDS: Incidence, Carcinoma Prostate, Adenocarcinoma, Gleason Score.

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INTRODUCTION:

Worldwide the variation in the incidence of carcinoma prostate were greater than 25 fold, while it is 2nd most common cancer in the world. The occurrence rate is highest in Australia, New Zealand as well in North America and North and West of Europe.[1]

In 2003 the prostate carcinoma was on top 6th position in cancers worldwide while 2nd most common malignancy in male and commonest malignancy of male in Europe, northern America and parts of Africa. The estimated new cases for prostate cancer in 2000 were 513,000, and reflecting an increase in the rate.[2] Globally the number of estimated deaths during 2012 were 307,000 (6.6% of total deaths in male) due to prostate cancer making

it the fifth leading cause of male mortality.[3] In Europe the prostate carcinoma is ranks on top while 2nd top in men worldwide. In Asia the incidence is rising rapidly during last 2 decades.[4]The variation in incidence of prostate carcinoma recorded were 25 fold with higher in Australia and New Zealand and lower in south central part of Asia.[5] In future in 2030 the expected deaths from prostate carcinoma will be 499,000 with 1.7 million new cases globally, and nearly 70% of diagnosed cancers in developed world.[6]

50 times variation in the incidence was seen in prostate carcinoma, with low incidence seen in Asian region, it is 14% of total cancer cases in 2008.[7]The age is directly related with the incidence of prostate carcinoma, approximately more than 70% cases occur in persons above 85years of age.[8]The variability in the incidence of prostate carcinoma is noticed in different parts of a India.[9] In Pakistan, Lahore the incidence of prostate carcinoma were 3.8% but it is leading cancer in male population of USA.[10]

Rationale: The rationale of our study is the determination of frequency of cancer of prostate in male, and the comparison of our results with other cities of Pakistan and the incidence in other parts of world.

Outcome: The incidence of prostate malignancy is increasing in younger age group as compared to the past. The variability was noted in the prevalence of prostate malignancy in Nawabshah, and other cities of Pakistan, between Asian countries and worldwide as well.

METHODOLOGY:

All prostate biopsy between January 2012 and December 2017 were retrospectively identified and their details were entered into a database. Clinico-pathological data were collected including age, pathological diagnosis. In the case of prostate cancer, the Gleason score and histological subtype were also recorded. Pathological analyses were conducted by specialist pathologists primarily within our institution using routine Haematoxylin and Eosin (H and E) stains. Gleason's grading system was used here to score the cancer on microscopy. Data were collected and compiled in MS Excel. Statistical analysis was performed using SPSS version 20.

RESULTS:

A total of 697 patients were registered, among them 87 were diagnosed with prostate adenocarcinoma at the department of Pathology, PUMHS-W, during the period of 2007 -2016. The mean age was 65 SD+10.50.minimum 40 maximum 80 years.

TABLE NO: 01: Table No 01 show the total number of cases received in department of pathology during 06 year period. The total number of cases were 697 among them 610 were benign prostatic hyperplasia/ inflammation, while 87 were diagnosed adenocarcinoma prostate on microscopy.

TABLE NO: 02: The results in this table shows the yearly distribution of prostate carcinoma, the yearly division of cases were shown to be increased, as 8% cases were seen in year 2012 while 25% of cases were noted during year 2017.

TABLE NO: 03: The results in table number 02 shows that only 3% of cases were seen in 40-49 years of age highest number 44% of cases seen in 60-69 years of age. Lower incidence was observed in 40-49 and above 80 years of age.

TABLE NO: 04: In this part of result we categorize the number of patients according to Gleason grading system. Higher percentage of patients were observed in grade 3 (28%), the lowest number of patients were observed in grade 1(3%).

TABLE NO: 05: When we compared the available statistics in different cities of Pakistan it is quite variable, comparison is presented in table no: 04, here the position of prostate malignancy is shown in five

big/medium cities. The data for Nawabshah Cancer Statistics for prostate carcinoma is not available on internet.

TABLE NO: 06: In table number five we compared the position of prostate carcinoma in different regions/ countries of world, it is leading cancer in Australia, New Zealand, and USA during 2015, while in Japan its incidence was increased with time. In China it was on 6th position. The carcinoma prostate is 2nd leading cancer in India but the results are different when compared between big cities in India while it is 4th cancer in male in Karachi Pakistan.

Table 1: FREQUENCY OF BENIGN AND MALIGNANT PROSTATIC CONDITIONS

S.NO	BENIGN HYPERPLASIA PROSTATE	MALIGNANT ADENOCARCINOMA PROSTATE	TOTAL
1	610 (88%)	87 (12%)	697

Table 2: yearly distribution of prostate cancers N=87

2012	2013	2014	2015	2016	2017
7/8%	9/10%	13/15%	17/20%	19/22%	22/25%

Table 3: FREQUENCY OF PROSTATE ADENOCARCINOMA IN 05 AGE GROUPS

	40-49YRS	50-59YRS	60-69YRS	70-79YRS	80 YRS AND ABOVE
1	1 (3%)	7(22%)	14(44%)	9(28%)	1 (3%)

Table 4: FREQUENCY OF ADENOCARCINOMA PROSTATE ACOORDING TO THE GLEASON GRADING SYSTEM.

GLEASON SCORING SYSTEM							
G 1	G 2	G 3	G 4	G 5	G 6	G 7	G 8
0	14(16%)	24(28%)	18(21%)	10(11%)	10(11%)	06(7%)	05(6%)
TOTAL 87/100%							

Table 5: Comparison of position of prostatic carcinoma in different studies conducted in Pakistan.

S: NO	STUDY NAME/INSTITUE (REF:)	PLACE OF STUDY	YEARS OF STUDY	POSITION OF PROSTAE CARCINOMA
01	Badar et al. (Punjab Cancer Registry)[11]	Lahore	2010-2012	1ST
02	Atique et al. (Combined Military Hospital)[12]	Lahore	1997-2002	2ND
03	Bhurgri et al. (Aga Khan University Hospital; ZainabPunjwani Hospital and Jinnah Postgraduate Medical Center)[13]	Larkana	2000-2002	3RD
04	Ahmad S et al. (Ayub Medical College)[14]	Abbotabad	2007-2012	4TH
05	Globocon 2018[15]	Pakistan	2018	4TH

Table 6: COMPARISION OF PROSTATE INCIDENCE WITH OTHER AREAS OF WORLD

S NO	SOURCE	PLACE OF STUDY	YEAR OF STUDY	POSITION
01	PROTATE CANCER STATISTICS (16)	Australia	2015	First
02	CANCER MINISTRY OF HEALTH(17)	New Zealand	2015	First
03	CANCER FACTS & FIGURES 2019 (18)	United States of America	2015-17	First
04	CANCER STATISTICS JAPAN 2017 (19)	Japan	2015 2017	Sixth Third
05	CANCER STATISTICS IN CHINA (20)	China	2015	6th
06	JAIN S ET AL (21)	INDIA	2014	2ND
07	BADAR ET AL (13)	Pakistan	2010-2012	First

DISCUSSION:

The Asian population is more than 60% of the world population, and the major numbers of Asian countries are developing. The number of increasing cancer patients in Asia requires urgent bigger policies for health.[22] In Asia the changing incidence and death rate for prostate carcinoma is suggesting an increase in the disease burden in future.[23] In Pakistan the age adjusted incidence or carcinoma prostate is 5.3 per 100,000 is relatively lower to other countries of Asia, but increasing numbers of cases are being reported.[24]

The prostatic malignancy in our study accounted for 12% of our biopsies. A study conducted in Saudi Arabia, [25] the rate of malignancy on biopsy was recorded to be 17.7%, while, in a biopsies review done in Nigeria, that malignancy were 28.9%. So the results from Saudi Arabia are in confirmation with our study. In the UK and the United States the documented rates of malignancies on biopsies were 33% and 44%, and 51.8% were recorded in Trinidad and Tobago.[26] Here the results from United Kingdom, United States and Trinadad and Tobago were in contradiction with our results.

The higher percentage of patients were seen in 60to 69 years of age 44%, the study results are in confirmation with results of Kobayashi M, Japan.[27]

The lower percentage1% of patients with adenocarcinoma prostate were seen in 40 to 49years of age and above 80 years of age, these results are in contradiction with results of Peter D at Australia.[28]

In our study the frequency of patients with less than 7 score of Gleason system were 87% the results are in confirmation with Bhugri Y et al Karachi and in contradiction with Afiffa et al Karachi.[29]

The frequency of patients with Gleason score more than 07 were 13% confirmation with Hsing et al West Africa[30] and Affifa Karachi and contradiction with Bhurgri Y et al Karachi.[29]

Conclusion:

This study provides cancer prevalence data for prostate carcinoma in Nawabshah as well as comparison of incidence in multiple cities of Pakistan and with other countries worldwide. The variability in incidence and the occurrence in lower age group male in Nawabshah is alarming for community and health personnel's, but it could serve as useful essential information for local governments in cancer management, to carry out more practical and reasonable countermeasures for cancer.

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