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Research Article

Epidemiological Study of Urological Malignancy in Younger Age Group - An Audit in a Tertiary Care Hospital in Eastern India

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Abstract: Urological cancers mostly affect in between 51-70 years of age group and it is common in both sexes. But it is not rare in younger age (≤40 years) group and detected early with the advent of modern imaging modalities. Male to female ratio of urological cancers in this study was 2.4 to 1 (34male and 14female) .The frequency of urological malignancies ≤ 40 years were 63% bladder cancer, 27% renal cancer, 4% patients of penile cancer, 4% cases of renal pelvis and ureteric cancer and 2% patient of prostate cancer. Bladder cancer was found to be commonest of the urological tumours in younger population ≤ 40 years age. In our study we did not find any case of testicular cancer. The study suggests that epidemiological survey should incorporated in the evaluation of urological cancer to identify epidemiological risk factors and to formulate and to plan implement any disease control programme.
Keywords: Urological malignancy, Young age, Epidemiology.

INTRODUCTION:

The incidence of urological cancer is increasing specially in younger population. It is very much important to understand the epidemiological features of cancer. Cancer of prostate is a Disease of the elderly over the age of 50 years. The incidence of clinically detected cancer is increasing in younger male patient [1]. The risk factors associated with its development Include, age, family history, socio - economic status, occupation, sexual activity and levels of androgens [2]. Men who underwent castration before puberty and those with congenital abnormalities in androgen metabolism are resistant to prostate cancer [3]. Bladder cancer ranks 9th in worldwide cancer incidence [4]. It is the 7th most common cancer in men and the 17th most common cancer in women [5]. Although the disease may occur in young persons, >90% of New cases occur in persons >55yr of age. The two most well-established risk factors for Bladder tumours are cigarette smoking and occupational exposure to urothelial carcinogens [6, 7]. Kidney cancer accounts for nearly 2% of all malignancy globally. Renal cell carcinoma is the commonest malignant tumour of the kidney in both age group worldwide [8] Smoking is an established risk factor for RCC [9] Between 15% to > 60% of RCCs are diagnosed incidentally. Tumours found incidentally constitute of a higher proportion of small, low Stage tumours, therefore more favourable for cure [10, 11].Penile cancer is a rare but an aggressive mutilating disease. The highest incidence of penile cancer is found in India with rates of 3.32/100,000 populations, and the lowest incidence is in Jewish with rates close to Zero [12].

MATERIALS AND METHODS:

It was a prospective observational study conducted in our hospital, a tertiary care centre in Eastern India with the patients ≤ 40 years who were admitted due to urological symptoms and signs for the period of January 2012– December 2014. The study was performed through personal interviews**,** by structured questionnaires, investigated by ultrasonography of abdomen, CT Scan , MRI ,Chest X –ray, CT guided FNAC (selected cases) , various biochemical Tests (when indicated -serum PSA), and histopathological examinations.

RESULTS:

A total of 48 patients were included in this study during a three years period. Table 1 and table 2 shows male to female ratio of urological cancers in this age group was 2.4 to 1 (34male and 14female),this reflects that males are more affected by urological cancers than females .

Table 1: The proportion of urological cancers according to sex

Site of cancer	Male	Female	Total
Bladder	25(73%)	5(36%)	30(63%)
Renal	6(18%)	7(50%)	13(27%)
Renal pelvis and ureter		2(14%)	2(4%)
Penis	2(6%)		2(4%)
Prostate	1(3%)		1(2%)
Total	34(100%)	14(100%)	48(100%)

Table 2: Age distribution of the study sample

Age (yrs)	Frequency	Percentage	Male	Female
<10	1	2%	1(2%)	0(0%)
10-20	2	4%	1(2%)	1(2%)
21-30	15	31%	10(21%)	5(10%)
31-40	30	63%	23(48%)	7(15%)

The frequency of urological malignancies was as follows: 30(63%) were due to bladder cancer, 13(27%) renal cancer, and only 2(4%) patients of penile cancer, and 2 (4%) cases of renal pelvis and ureteric cancer and 1(2%) patient of prostate cancer .Mean age of the patients with urological malignancies was 32.3 years with a range of 7-40 years. Table 3 shows the histological types of various types of urological tumours.

Table 3: Histological type of urological tumours

Site of cancer	Transitional Cell ca	Squamous Cell ca	Adeno Carcinoma	Renal Cell ca	Others	Total
Bladder	28(93%)				2(7%)	30(100%)
Renal				11(85%)	2(15%)	13(100%)
Renal pelvis and ureter	2(100%)					2(100%)
Penis		1(50%)			1(50%)	2(100%)
Prostate			1(100%)			1(100%)

The overall peak age incidence at presentation was 31-40 years. Transitional cell carcinoma was the commonest bladder malignancy with peak age of incidence of 31-40 years. The peak age incidence at presentation 31-40 years for renal cell carcinoma and clear cell carcinoma was the commonest histological variety. One case of squamous cell carcinoma of the penis was seen at the age of 29 years and one case of angiosarcoma of penis at the age of 27 years. Two cases of transitional cell carcinoma of renal pelvis and ureter were seen at the age of 30 and 39 years respectively. One case of adenocarcinoma of prostate was detected at the age of 40 years. Table 4 shows commonest presentation features in urological tumours. Haematuria was the commonest presenting symptoms in this study.

DISCUSSION:

Urological malignancy is becoming a major health problem. Urothelial carcinoma of the urinary tract is the most common urological malignancy. The peak incidence occurs in the sixth decades of life, but the condition is rarely noted individuals younger than 40 years old, thus giving a reported incidence of about 0.8% .Carcinoma of urinary bladder was the most common urological tumour encountered in this study and accounted for 63 % and followed by renal tumour accounted by 27%, renal pelvis and ureteric tumour 4%, penile carcinoma 4% and prostate carcinoma 2%. According to a study in South Korea, the bladder cancer was the most common urological cancer with the incidence of 52% and peak incidence of urological was noted after 70 years of age. In another study by Sharma et al. in India in 1994, the renal and bladder tumours constituted 10.64% and 29.52% of all malignant tumours in men. The present report from this study shows that transitional cell carcinoma was the commonest histological type 27 cases (93%). This in contrast to reports from African countries where squamous cell carcinoma is reported to be the dominant histological type though frequency of transitional cell carcinoma is increasing. This increasing rate of transitional cell carcinoma may be attributed to increasing urbanisation and industrialisation, exposing the population to new carcinogenic agents. The aetiopathogenesis of urinary bladder cancer is believed to be due to excessive synthesis or local conversion of tryptophan metabolites to potent carcinogenic products.

Table 4: Clinical presentation of urological tumours

Presentation	No (%)
Urinary bladder	
Haematuria	28(93%)
Wasting	8(27%)
Pain abdomen	11 (37%)
Anaemia	18(60%)
Kidney	
Haematuria	5(38%)
Loin mass	4(31%)
Pain	4(31%)
Incidental finding	3(23%)
Fever	2(15%)
Weight loss	2(15%)
Renal pelvis and ureter	
Haematuria	2(100%)
Penis	
Fungating mass	2(100%)
Prostate	
Poor urinary stream	1(100%)
Frequency	1(100%)
Nocturia	1(100%)
Urgency	1(100%)

Table 5: Associated risk factors in bladder carcinoma

Risk factors	**No. of cases (%)**
Smoking	20(67%)
Analgesic abuse	4(13%)
Occupational exposure	10(33%)
Coffee and Tea drinking	21(70%)
Alcohol intake	8(27%)
UTI	7(23%)
Chemotherapy, radiation exposure	0(0%)

During the study period a total of thirty patients with bladder cancers were enrolled , out of this 25(83%) were males and 5(17%) females, the prevalence of bladder cancer was higher in males compared to females , with a ratio of 5:1, demonstrates the male preponderance of urothelial bladder carcinoma. The higher male to female ratio was attributed to fewer female smokers compared to male and females' exposure to industrial carcinogens, or other female protective factors. It is now established that smoking status and increased amount and duration of smoking were associated with a strong increased risk of urinary tract cancer. Although smoking is well recognised most important risk factor for development of bladder cancer, additional factors play a role in modifying the risk posed by smoking. History of tobacco smoking is present in 19 cases (63 %) male and one case(20 %)female in our study. There are populations with increased smoking rates but low bladder cancer rates. This suggests difference in the metabolism of smoking related carcinogens. In our study occupational exposure is present in 10 (33%) of patient. People having non-vegetarian diet 26(87%) are the victims of bladder cancer. This may be explained by their poor socio-economic status 21 (70%) of study population who can not afford balanced diet lacking antioxidants like fruits and green leafy vegetables. High arsenic load in water may be one of the risk factors because of high arsenic content in drinking water which could be included in the study. Chronic urinary tract infection is associated with development of bladder carcinoma. The most affected age group was 31 to 40 years (65%). Patients with bladder cancer came with different presentation as hematuria (93%); anaemia (18%), wasting (8%) and pain abdomen (37%).Renal cancer was the second common urological tumour in this study (27%). Thirteen patients were seen, among these, their histopathological review revealed that 11 patients had clear cell carcinoma (85%), others represented 15%. This data related to a study done in United states in 2006 by Nguyen et al, reported that renal cell carcinoma was predominant by 85% and most arose from renal cortex, and TCC represented less than 10% , and other uncommon renal tumours represented

by less than 1% of the total [13] Contrary to study done in Indonesia, showed only 18% of renal cell carcinoma among kidney cancers, majority were nephroblastoma [14]. This study showed that the male to female ratio was 1:1.17, females had frequency of 7 patients out of total thirteen .The aetiology of renal cell carcinoma is not known but it is associated with tobacco smoking (46%), hypertensions(38%), obesity(8%), occupational exposure(8%) .Two cases (4%) of renal pelvis and upper ureteric cancer were detected in this study. They were presented with hematuria. Histopathological findings revealed transitional cell carcinoma. Both patients are female under 40 years of age. Cancers of the kidney and bladder may develop in people of either sex but are roughly as common among men in most age groups, except 51 to 70 years age group females had higher renal cancer than males, as well in 31 to 50 years for bladder cancers. In this study renal cancer is more common in female in younger age group ≤ 40 years (1.17:1=F: M).Penile cancer is a rare disease worldwide. It showed lower prevalence in most developed countries. In less developed countries, it is more serious health problem especially in Africa, Asia and South America [15]. During the period of the study, two cases (4%) of cancer of penis were enrolled. One patient with squamous cell carcinoma and the other angiosarcoma presented with ulceration and fungating masses. The age mostly affected was 21 to 30 years. This cancer is common in south India and certain parts of North Africa. Cancer of the penis is associated with previous penile scar, sexually transmitted human papilloma virus (HPV) and uncircumcised penis. Prostate carcinoma is very rare under 40 years of age. In this study only one case of prostate cancer (2%) was found less than 40 years of age group. Patient presented with frequency, urgency, poor urinary stream. Digital rectal examination, blood PSA, ultrasound and trucut biopsy done to confirm diagnosis. Histopathological finding was consisted with adenocarcinoma of prostate. According to the result of our study and similar previous epidemiological investigations, bladder cancer is the commonest urological cancers not only in elderly but also among younger age group. Therefore, public programs should be focused on designation of population –based protocols for the screening and prevention of these common cancers in the early life. Also, determination of the main predictors of the incidence of these malignancies are most important, especially bladder and renal cancers, for the implementation of these programs.

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