

Clinico-Etiological Profile of Patients Presenting with Urinary Bladder Carcinoma: An Observational Study**Barun Kumar**

Associate Professor, Department of General Surgery, Lord Buddha Koshi Medical College and Hospital, Saharsa, Bihar, India

Received: 14-01-2023 / Revised: 16-02-2023 / Accepted: 28-03-2023

Corresponding author: Dr. Barun Kumar

Conflict of interest: Nil

Abstract**Aim:** The aim of the present study was to find out common causes of urinary bladder carcinoma in patients presenting to tertiary care centre.**Methods:** The present study was conducted in the Department of General Surgery, Lord Buddha Koshi Medical College and Hospital, Saharsa, Bihar, India on all newly diagnosed bladder cancer patients for the period of one year. There were 200 patients included in the present study.**Results:** The mean age of presentation of carcinoma urinary bladder was 54.36 ± 14.26 years (30-89 years) with the maximum number of patients being in the age group of 60-69 years 25% followed by 30-39 years 21%. 92% of the patients of carcinoma urinary bladder in our study were non-smokers. The history of UTI was present in only 20% of the patients of carcinoma urinary bladder. The maximum number of patients of carcinoma urinary bladder was Hindus followed by Sikhs. The maximum number of patients of carcinoma urinary bladder was farmers by occupation followed by labourers (mainly workers of dye, chemical, fertilizer industry and housewife in female's subset). The maximum number of patients of carcinoma urinary bladder belonged to A+ blood group followed by B+ and the least number of patients belonged to O- blood group.**Conclusion:** We concluded that the majority of the patients turned out to be non-smokers and A +ve blood group in contrast to the strong predilection of smoking and bladder cancer.**Keywords:** Carcinoma bladder, Etiology, Non-smoker.

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Introduction

The diseases of the urinary bladder are quite common and include both non-neoplastic and neoplastic lesions. Urothelial tumors represent about 90% of all bladder tumors. Urinary bladder cancer is the most common malignancy of the urinary tract, responsible for significant mortality and morbidity worldwide. [1] Cancer of the urinary bladder accounts for about 3.2% of all cancers worldwide and is considerably more common in males than in females (ratio worldwide is about 3.5:1). Most cases of urothelial carcinoma of the bladder present in patients over the age of 50 years, but they can also occur in younger adults and children. [2] Improvements in early detection have made reproducible grading and staging important criteria for clinical management and prognosis.

Recurrence of cancer can happen in the urinary bladder or another nearby organ after having been treated. [3] Bladder cancers are classified (staged or graded) by how deeply the bladder wall is invaded. Superficial bladder cancer is limited to the innermost lining of the bladder known as the

mucosa and lamina propria. Invasive bladder cancer has at least penetrated the muscular layer of the bladder wall. Nearly all wall cell cancers are invasive. Most urothelial cell carcinomas are not invasive. More than 90% of case of UBC occur in people older than 55, and 50% of cases occur in people older than 73. Ploeg et al4 reported in 2009 that more than 2.7 million people have a history of UBC, and more than 12 million new cases occurred worldwide in 2003.3 Of those, 5.4 million occurred in developed countries and 6.7 million in developing countries. [4,5]

There are several risk factors connected to bladder carcinoma. The use of tobacco with its release of α -naphthalene and β -naphthalene into the urine is an important risk factor. [6] Another risk factor for development of bladder cancer is occupational exposure to aromatic amines (2-naphthylamine, 4-aminobiphenyl and benzidine) and 4,4'-methylenebis (2-chloroaniline), which can be found in the products of the chemical, dye and rubber industries as well as in hair dyes, paints, fungicides,

cigarette smoke, plastics, metals and motor vehicle exhaust, drinking water contaminants and phenacetin-containing analgesics. [7] There are multiple factors involved with the etiology of UBC. Many studies have been done on its etiology the world over which further show that different regions have a different etiological profile.

The aim of the present study was to find out common causes of urinary bladder carcinoma in patients presenting to tertiary care centre.

Methods

The present study was conducted in the Department of General Surgery, Lord Buddha Koshi Medical College and Hospital, Saharsa, Bihar, India on all newly diagnosed bladder cancer patients for the period of one year. There were 200 patients included in the present study.

Inclusion criteria

All patients with a diagnosis of bladder cancer presenting during the study period were included in the study.

Exclusion criteria

Patients unwilling or unable to give consent were excluded from the study.

After obtaining ethical approval from the institutional ethics committee, all newly diagnosed patients with urinary bladder carcinoma were included for their etiological analysis. Clinical details including history of hematuria, smoking, daily fluid intake, dietary history, symptoms of urinary tract infection (UTI), loss of weight/appetite, past medical history and blood tests including hemogram, renal function tests, liver function tests, imaging like ultrasonography of kidney, ureter, urinary bladder (USG KUB), contrast enhanced computed tomography of kidney, ureter, urinary bladder (CECT KUB) (if needed) and chest X-ray (CXR) was done in all the patients as per the standard protocol in the department of surgery. In addition, blood grouping of every patient was done and recorded. All patients underwent treatment in the form of transurethral resection of bladder tumor as per the standard protocol in the department.

Results

Table 1: Age distribution

Age (years)	Number	Percentage
30-39	42	21
40-49	32	16
50-59	30	15
60-69	50	25
70-79	38	19
80-89	8	4
Total	200	100
Mean±SD	54.36±14.26	

The mean age of presentation of carcinoma urinary bladder was 54.36±14.26 years (30-89 years) with the maximum number of patients being in the age group of 60-69 years 25% followed by 30-39 years 21%.

Table 2: Smoking history, Distribution according to UTI history and Religion wise distribution

Smoker/non-smoker	Number	Percentage
Non-smoker	184	92
Smoker	16	8
UTI history		
Absent	160	80
Present	40	20
Religion		
Christian	10	5
Sikhs	40	20
Muslim	4	2
Hindu	146	73

92% of the patients of carcinoma urinary bladder in our study were non-smokers. The history of UTI was present in only 20% of the patients of carcinoma urinary bladder. The maximum number of patients of carcinoma urinary bladder was Hindus followed by Sikhs.

Table 3: Distribution according to occupation and blood group

Occupation	Number	Percentage
Businessman (owner)	10	5
Farmer	120	60
Housewife	24	12
Labourer	30	15
Others	16	8
Blood group		
A+	70	35
A-	6	3
AB+	14	7
B+	54	27
B-	4	2
O+	50	25
O-	2	1

The maximum number of patients of carcinoma urinary bladder was farmers by occupation followed by labourers (mainly workers of dye, chemical, fertilizer industry and housewife in females' subset). The maximum number of patients of carcinoma urinary bladder belonged to A+ blood group followed by B+ and the least number of patients belonged to O- blood group.

Discussion

Urothelial carcinoma of urinary bladder cancer is the fourth most common cancer in men and eighth most common malignancy in women in Western world. [9] In India, according to the recent reports of the National cancer registry programme, the overall incidence rate of the urinary bladder cancer is 2.25% (per 100,000 annually): 3.67% among males and 0.83% for females. [10] There are several risk factors connected to bladder carcinoma. The use of tobacco with its release of α -naphthalene and β -naphthalene into the urine is an important risk factor. [11]

The mean age of presentation of carcinoma urinary bladder was 54.36±14.26 years (30-89 years) with the maximum number of patients being in the age group of 60-69 years 25% followed by 30-39 years 21%. The history of UTI was present in only 20% of the patients of carcinoma urinary bladder. The maximum number of patients of carcinoma urinary bladder was Hindus followed by Sikhs. The maximum number of patients of carcinoma urinary bladder was farmers by occupation followed by labourers (mainly workers of dye, chemical, fertilizer industry and housewife in female's subset). Cigarette smoking is the most important risk factor for bladder cancer on a population basis, additional factors play a role in modifying the risk posed by the smoking. 92% of the patients of carcinoma urinary bladder in our study were non-smokers. It depends on amount and duration as it is observed throughout the world. [12] Exogenous agents (such as vitamins C and E intake) may modify the susceptibility to smoking induced bladder cancer as well. Familial bladder cancer is a fairly rare phenomenon compared with the familial

occurrence of cancer in many other tumor sites. Numerous case reports describe familial clustering of urothelial carcinoma and early age of onset suggesting a genetic component. [13]

A study was conducted by Sharma et al carried out in urinary bladder cancer (UBC) subjects and healthy control subjects with an aim to determine the role of GST and GSTT1 polymorphism and its implication on the organophosphate compounds (OPC) detoxification or bioaccumulation which may increase the risk of UBC in humans. [14] A study in Costa Rica finds heavy pesticide use in rural counties is associated with an increased risk for bladder cancer in males (OR 1.71). [15] People having non-vegetarian diet (3/4th of cases) and poor water intake (almost half of the cases) are the victims of TCC. This can be explained by their poor socio-economic status (82% of the study population) who cannot afford balanced diet lacking anti-oxidants like fruits and vegetables. High heavy metal level in water may be one of the risk factors which could be included in the study. Chronic UTI is associated with the development of bladder cancer, especially invasive squamous cell carcinoma. [16]

The maximum number of patients of carcinoma urinary bladder belonged to A+ blood group followed by B+ and the least number of patients belonged to O- blood group. Genes for ABO blood group antigens are located on chromosome 9q34. [17] This area of chromosome 9 has been seen to be frequently affected by gene deletions in carcinoma urinary bladder. It has been seen that these deletions might lead to loss of ABO antigen expression in about 25% of the cases. [18] In the study by Chihara et al loss of heterozygosity of ABO gene or hypermethylation in the promoter region of the ABO gene showed significant reduction of A antigen expression in UBC, while the expression of the A antigen is maintained in concomitant dysplasia or normal urothelium, suggesting that loss of the ABO gene and/or its promoter hypermethylation is a specific marker for TCC. [19] The Rhesus factor gene is located on the

short arm of chromosome 1, a region of tumor suppressor genes and the proto-oncogene L-Myc, which is down-regulated in UBC. [20] The Rhesus factor proteins are expressed on erythrocyte membranes as well as various epithelial tissues, facilitating the oxygenation of tissue and removal of deoxyribonucleic acid (DNA)-damaging agents. [21]

Conclusion

We concluded that the majority of the patients turned out to be non-smokers and A +ve blood group in contrast to the strong predilection of smoking and bladder cancer. The true natural history of bladder cancer is not yet fully known. Every effort has been made to explore epidemiological risk factors and for appropriate diagnosis. The study suggests that epidemiological survey should be incorporated in the evaluation of bladder cancer to formulate any disease control programme. However, large well designed prospective multicentre studies are needed to standardize the protocol.

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