

A STUDY OF HISTOMORPHOLOGICAL SPECTRUM OF URINARY BLADDER LESIONS IN A TERTIARY CARE HOSPITAL

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Background:

Urinary bladder lesions may be either cancerous or non-neoplastic. Urothelial carcinoma is the most frequent form, accounting for 90% of bladder primary tumors. Other types of epithelial bladder cancers include squamous cell carcinomas, mixed urothelial carcinoma with squamous differentiation, adenocarcinomas, and small cell carcinomas. Our work aims to define the histomorphological spectrum of urinary bladder lesions in TURBT and cystoscopic biopsy specimens, as well as to investigate the relationship between smoking habits and urinary bladder malignancies.

Methodology:

This is a retrospective and prospective observational research of the histomorphological spectrum of urinary bladder lesions conducted in the Department of Urology and department of pathology of a tertiary care teaching hospital over a three-year period. A total of 83 biopsies were performed. The patient provided a comprehensive clinical history, with a focus on his smoking history. Patients of all ages with urinary bladder lesions who attended a urology department and had undergone or were undergoing TURBT/cystoscopic biopsy were included in the research, whereas autolyzed and insufficient specimens were excluded.

Results:

Among the study group, symptoms appear. 59 patients had haematuria, 65 had dysuria, and 59 experienced stomach discomfort. None of the seven patients with benign lesions smoked, while 51 of the 76 patients with malignant lesions smoked, and 25 were nonsmokers. Malignant tumors were found in 100% of smokers and 78.1% of nonsmokers. The difference in malignancy rates between smokers and nonsmokers was statistically significant (p -value=0.001). In this research, histopathology examinations of samples from 76 individuals (92%) revealed malignant tumors, whereas 7 patients (8%) had benign lesions.

Conclusion:

In our investigation, the most prevalent bladder lesion was urothelial carcinoma. The most prevalent kind of urothelial carcinoma was high-grade papillary carcinoma, which invaded

the lamina propria and muscularis propria. Pathological grade and muscle invasion are the most important prognostic indicators of survival. As a result, screening for bladder cancer in all smokers over the age of 40 must be made obligatory. The public must be made more aware of smoking's dangers.

Keywords: Urinary Bladder, Lesions, Smoking, Malignant.

INTRODUCTION

Urinary bladder diseases may have neoplastic or non-neoplastic lesions. Neoplastic lesions are fairly prevalent. Non-neoplastic lesions include congenital malformations, cystitis, malakoplakia, urachal lesions, TB, and metaplastic lesions such as cystitis glandular, squamous metaplasia, and nephrogenic adenoma. Urothelial carcinoma precursor lesions include noninvasive papillary tumors and flat noninvasive urothelial carcinoma. The most frequent precursor lesions to cancer are noninvasive.

Papillary tumors develop from papillary urothelial hyperplasia. Flat urothelial carcinoma, the other precursor lesion to invasive cancer, is known as carcinoma in situ. The most prevalent kind is urothelial carcinoma, accounting for 90% of all primary bladder tumors. Other epithelial bladder cancers include squamous cell carcinomas, mixed urothelial carcinoma with squamous differentiation, adenocarcinomas, and small cell carcinomas. According to Indian cancer registry statistics, it is the ninth most common cancer, accounting for 3.9% of all malignancies. Some etiological agents, including as cigarette smoking and occupational carcinogens, have a well-established link to patients undergoing radiation treatment. Other risk factors include long-term painkiller usage, high cyclophosphamide exposure, and schistosoma hematobium infections. Bladder cancer affects more males than women, with a male to female ratio of 3:1. The most typical age range affected is 50 to 80 years. [1-4]

The risk of recurrence and advancement is determined by the tumor size, grade, stage, multifocality, and the presence of associated dysplasia and/or carcinoma in situ in the surrounding mucosa. The prognosis of urothelial carcinoma is mostly determined by the tumor's histological grade and stage at the time of diagnosis. Invasive urothelial carcinoma has a 30% death rate when the tumor invades the lamina propria and a 59% mortality rate when it invades the muscularis propria. Papillary urothelial neoplasms with minimal malignant potential and low-grade papillary urothelial carcinoma have a 10-year survival rate of 98%. High grade papillary urothelial carcinomas with invasion cause mortality in around 25% of patients. [5,6] Our research aims to characterize the histopathological spectrum of urinary bladder lesions in TURBT and cystoscopic biopsy specimens, as well as to investigate the relationship between smoking habits and urinary bladder malignancies.

Materials

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Methods

This is a retrospective and prospective observational research of the histomorphological spectrum of urinary bladder lesions conducted in the department of Urology and Department of pathology of a tertiary care teaching hospital over a three-year period. A total of 83 biopsies were performed. Urinary bladder biopsies were performed in the urology department

after patients provided written and comprehensible permission. The sample is immediately placed in 10% neutral buffered formalin in a well-closed container and delivered to the histology lab using appropriate precautions. The patient provided a comprehensive clinical history, with a focus on his smoking history. Patients of all ages with urinary bladder lesions who attended a urology department and had undergone or were undergoing TURBT/cystoscopic biopsy were included in the research, whereas autolyzed and insufficient specimens were excluded. The bladder biopsy specimens were received at the Department of Pathology in 10% neutral buffered formalin. The specimens are left in the fixative for an appropriate amount of time. After sufficient fixation, tissue is processed as usual in the tissue processor, and four to five micron thick slices are cut from paraffin blocks using a microtome and stained with Hematoxylin and Eosin. The data collected is collated, and statistical analysis is undertaken.

Results

During the research period, the Department of Pathology received 83 bladder biopsies. The average age of the patients who had bladder biopsies (TURBT / Cystoscopic) at the Department of Urology was 61.13 years, with ages ranging from 23 to 86 years. The biopsy results revealed that patients with benign lesions had an average age of 39.57 years (range: 23-54 years), whereas those with malignant lesions had an average age of 63.11 years (range: 41-86 years).

In this research, 68 male patients (82%), and 15 female patients (18%), had bladder biopsies performed. Out of 76 patients with malignant lesions, 65 (86%) were men and the remaining 11 (14%) were female. Of the seven patients with benign lesions, three (43%) were men and four (57%) were female. Symptoms were reported by members of the research group. 59 patients presented with hematuria, 65 with dysuria, and 59 with stomach discomfort.

Table 1: Distribution of samples according to smoking history

Smoking History	Malignant	Benign	p-value
Smokers	51 (100.0%)	0	0.001
Non-Smokers	25 (78.1%)	7 (21.9%)	

None of the seven individuals with benign lesions smoked, while 51 of the 76 patients with malignant lesions smoked and 25 did not. Malignant tumors were found in 100% of smokers and 78.1% of nonsmokers. The difference in malignancy rates between smokers and nonsmokers was statistically significant (p-value=0.001).

Of the 83 biopsies, 81 were TURBT specimens (98%) and two were cystoscopic biopsy specimens (2%). In this research, histopathology evaluation of samples from 76 individuals (92%) revealed malignant tumors, whereas 7 patients (8%) had benign lesions. Out of the seven benign lesions, six (7%) developed cystitis and cystitis glandularis. One (1%) had a urothelial papilloma.

Of the 76 malignant cases, 50 (66%) were classified as papillary urothelial carcinoma high grade, with one demonstrating squamous differentiation, and 26 as papillary urothelial carcinoma low grade (34%). Out of 76 papillary urothelial carcinoma patients, 71 (95%) were invasive. In 5 instances (5%), the sample showed no invasion. Of the 71 instances with

invasive tumors, 44 (62%) had muscle invasion. In 27 instances (38%), only the lamina propria was invaded.

Discussion

This research, done at the Department of Pathology at Coimbatore Medical College, contained 83 cases. The age range in the current research was 23 to 86 years, with a mean of 61.13 years. According to the biopsy findings, the average age of patients with benign lesions was 39.5 years, with a range of 23 to 54 years. The average age of patients with malignant lesions was 63.11 years, with a range of 41–86 years. This conclusion is consistent with a research by Mojgan Karbakhsh et al [7], who found that the highest incidence of urothelial carcinoma occurred at 62.14 years. In the current research, the male to female ratio is 4:1, indicating male preponderance. Three of the seven patients with benign lesions were male (43%), whereas four were female (57%). Out of 76 individuals with malignant lesions, 65 (86%) were men and 11 (14%) were women. According to this research, the male-female ratio for malignant tumors is 4:1. This observation is analogous to a research done by Johansson with a sex ratio of 3:1. Studies conducted by Rajesh Singh Laishram et al [8] (2012) revealed a male preponderance with a male to female ratio of 2:1. Out of 83 patients, 59 had hematuria, 65 had dysuria, and 59 had stomach discomfort. These characteristics were consistent with previous research by Kalpana et al [9]. Out of the 83 individuals investigated, all seven with benign lesions were nonsmokers. Among the remaining 76 patients with malignant lesions, 51 were smokers and 25 were nonsmokers, which is statistically significant and indicates a nearly doubled risk of urothelial carcinoma in individuals with a history of persistent smoking. This is consistent with studies by Hartge P, Silverman D, Hoover R, et al. [10], which found an elevated incidence of malignancy among smokers, with males having a 50-65% risk and women having 20-30%. Out of the 83 samples examined, 81 were TURBT specimens and two were cystoscopic biopsy specimens. According to the survey, we had only 7 biopsies revealed benign lesions such as cystitis, cystitis glandularis, and urothelial papilloma. In most instances, urologists sent samples to rule out cancer owing to the patient's lack of symptoms, which is consistent with findings by Vaidya et al [11], Vaibhav Kumar Goyal et al [12]. All 83 malignant cases had papillary urothelial carcinoma morphology, with one displaying squamous differentiation. This is similar to a research by Vaibhav Kumar Goyal et al. [12], which found a 96.8% incidence of urothelial carcinoma among malignant patients. Of the 76 malignant cases examined, 50 (66%) were high grade papillary urothelial carcinoma, whereas 26 (34%) were low grade papillary urothelial carcinoma. This is similar to the findings obtained by Mahesh Kumar et al [13]. The greater frequency of high grade tumors is most likely attributable to patients' late presentation, as well as unknown environmental or genetic variables. Of the 76 instances analyzed, 71 (95%) indicated invasion, whereas the remaining 5 (5%) were non-invasive. Out of 71 invasive tumors, 44 (62%) showed invasion into the muscularis propria, and the remaining 27 (38%) showed lamina propria invasion, which is comparable to

Vaibhav Kumar Goyal et al [12], who showed tumors with muscle invasion at 62.9%, and Shah et al, who showed muscle invasion at 69% [14].

Conclusion

In our analysis, the most prevalent bladder lesion was urothelial carcinoma. The most prevalent kind of urothelial carcinoma was high-grade papillary carcinoma, which invaded the lamina propria and muscularis propria. Pathological grade and muscle invasion are the most important prognostic indicators of survival. Smokers have about twice the incidence of urothelial cancer compared to nonsmokers. As a result, screening for bladder cancer in all smokers over the age of 40 must be made obligatory. The public must be made more aware of smoking's dangers.

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