Spectrum of Lesions in Urinary Bladder Biopsies: Histopathological Study

Vaibhav Kumar Goyal¹, Surendra Prakash Vyas², Dharm Chand Kothari³

ABSTRACT

Background: Bladder tumor is the seventh most common tumor worldwide. Urothelial carcinoma is the commonest type accounting for 90% of all primary tumors of the bladder. As per Indian Cancer Registry data, it is the 9th most common cancer accounting for 3.9% of all cancers. Material method: The study was carried out in the department of Pathology, Sardar Patel medical college Bikaner. Clinicopathological data of all TURBT biopsies collected were analyzed. Results: One hundred TURBT biopsy were studied, and urothelial carcinoma were classified according to WHO/ISUP (2004) classification. The most common age group was 61-70 years (33%) with Male to female ratio was 5.25:1. In carcinoma most common type was high-grade papillary urothelial carcinoma (58%) followed by low-grade papillary urothelial carcinoma (31%) papillary urothelial neoplasm of low malignant potential (4%) moderately differentiated squamous cell carcinoma (2%)and moderately differentiated adenocarcinoma (1%). In cystitis most common type is Chronic non-specific cystitis (3%) followed by eosinophilic cystitis (1%). Conclusion: In bladder most common lesion was of high-grade urothelial carcinomas presented with lamina propria and muscle invasion. Pathological grade and muscle invasion are the important valuable prognostic factors of survival. Awareness is very much needed in the public about haematuria because they neglect it causing in an advanced stage of bladder cancer at the time of presentation.

KEYWORDS: Adenocarcinoma, squamous cell carcinoma, Urothelial carcinoma, Urinary Bladder

INTRODUCTION

Diseases of the urinary bladder both non-neoplastic and neoplastic are quite common. The non-neoplastic lesions include cystitis, malakoplakia, urachal lesions, and tuberculosis. Urothelial carcinoma is the commonest type accounting for 90% of all primary tumors of the bladder.¹

As per Indian Cancer Registry data, it is the 9th most common cancer accounting for 3.9% of all cancers.²

Urothelial bladder tumours are classified in flat and papillary type most tumours are papillary. Carcinoma in situ and few invasive tumours have a flat pattern.³⁻⁶ The papillary equivalent of flat in situ carcinoma is the high-grade noninvasive papillary urothelial carcinoma.³

Progress has been made in the field of non-invasive imaging and scientists continue to identify and characterize potential markers or surrogate end points for bladder tumor physical examination, cystoscopic evaluation and histopathological analysis of biopsy material are the mainstays of contemporary bladder cancer diagnosis and treatment.

MATERIALS & METHODS

The study was carried out in the department of Pathology, Sardar Patel medical college Bikaner including all the patients with urinary bladder lesion diagnosed on biopsy, who attended the hospital. Data were collected in a preset proforma. Clinical and cystoscopic findings with the clinical diagnosis of all cases of urinary bladder lesion sent to the laboratory were noted.

The material for the study was comprised of biopsy from Transurethral resection of bladder Tissue (TURBT).

Inclusion Criteria

All the TURBT biopsies received in the department of Pathology, Sardar Patel medical college Bikaner.

Exclusion Criteria

• Autolysed specimen
• Inadequate biopsies.

Biopsy specimens were processed as per routine histopathological technique. Paraffin section was cut and stained by haematoxylin and eosin. Then bladder lesions were studied according to WHO/ISUP (2004) classification (Table 1).

RESULTS

Total of 100 TURBT biopsies were analyzed. A spectrum of different pathological lesions was observed in the study. In our study most common age group was 61-70 years where 33% patients were found followed by 51-60 years (28%), 41-50 years (18%), >70 years (17%) and least common age group was ≤ 40 years (4%). Mean and Median Age of bladder lesion were 60.79±11.07 and 61.00 years respectively. Male to female ratio was 5.25:1.
Haematuria was the most common clinical symptoms in 91% cases followed by strangury (48%), burning (39%) and pain in 38% of cases.

According to cystoscopic findings, 72% patients had papillary mass, 21% patients had solid mass, 3% patients each diffuse thickening and ulcer while only one patient had fungating mass.

In the present study, total cases of inflammatory lesions were (4%) while carcinoma was present in (96%) patients. The most common microscopic diagnosis was high-grade papillary urothelial carcinoma (58%) while the least common microscopic diagnosis was moderately differentiated adenocarcinoma and eosinophilic cystitis (1%) and other microscopic diagnosis were also found like low-grade papillary urothelial carcinoma (31%) Papillary urothelial neoplasm of low malignant potential (4%) chronic non-specific cystitis (3%) moderately differentiated squamous cell carcinoma (2%) (Figure –1, 2, 3, 4, 5, 9), (Table 2).

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Papillae</th>
<th>Papillary Neoplasm Of Low Malignant Potential</th>
<th>Low Grade Papillary Carcinoma</th>
<th>High Grade Papillary Carcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papillae</td>
<td>Delicate</td>
<td>Delicate, occasionally fused</td>
<td>Fused, branching, and delicate</td>
<td>Fused, branching, and delicate</td>
</tr>
<tr>
<td>Organization</td>
<td>Polarity</td>
<td>Polarity identical to normal; any thickness, cohesive</td>
<td>Predominantly disorderd, yet minimal crowding and minimal loss of polarity; any thickness, cohesive</td>
<td>Predominantly disorderd with frequent loss of polarity; any thickness, often disordered</td>
</tr>
</tbody>
</table>

Table 1: Histologic features used to classify urothelial papillary lesions according to the scheme proposed by the WHO/ISUP (2004)

<table>
<thead>
<tr>
<th>Microscopic Diagnosis</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflammatory Lesions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic non-specific cystitis</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>Eosinophilic cystitis</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Carcinoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-grade papillary urothelial carcinoma</td>
<td>58</td>
<td>58.0</td>
</tr>
<tr>
<td>Low-grade papillary urothelial carcinoma</td>
<td>31</td>
<td>31.0</td>
</tr>
<tr>
<td>Moderately differentiated adenocarcinoma</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Moderately differentiated squamous cell carcinoma</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Papillary urothelial neoplasm of low malignant potential</td>
<td>4</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2: Distribution of Cases according to Microscopic Diagnosis

According to the invasion, Lamina Propria was present in 73.03% of cases while the muscular invasion was present in 62.92% of patients (Figure-6), (Table 3).

In the present study, differentiation was present in seven cases (7.86%) and out of them Glandular was present in one case (1.12%), nested was present in one case (1.12%) and squamous was present in five cases (5.61%) while remaining eighty-two cases (92.13%) patients had no differentiation (Figure- 7, 8, 10). (Table 4).

According to the invasion, Lamina Propria was present in 65 cases (73.03%) and Muscular was present in 56 cases (62.92%).

Table 3: Distribution of Cases According to Invasion in urothelial carcinoma

Table 4: Distribution of Cases According to Invasion in urothelial carcinoma
Goyal VK et al: Spectrum of Lesions in Urinary Bladder Biopsies

Figure 3: Papillary urothelial neoplasm of low malignant potential (H&E, 10x).

Figure 4: Low grade papillary urothelial carcinoma showing papillae with mild pleomorphism of cells with maintained basal polarity (H&E, 10x).

Figure 5: High grade papillary urothelial carcinoma with fused papillae with marked pleomorphism and loss of basal polarity (H&E, 4x).

Figure 6: High grade urothelial carcinoma showing muscle invasion (H&E, 10X).

Figure 7: Showing high grade urothelial carcinoma with squamous differentiation and keratin pearls (H&E, 10x).

Figure 8: High grade urothelial carcinoma with glandular differentiation (H&E, 40x).

Figure 9: Moderately differentiated adenocarcinoma bladder (H&E 10X).

Figure 10: Moderately differentiated squamous cell carcinoma (H&E, 40x).
DISCUSSION

Diseases of the urinary bladder both non-neoplastic and neoplastic are quite common. Bladder tumor is the seventh most common tumor worldwide. Urothelial carcinoma is the commonest type accounting for 90% of all primary tumors of the bladder.

Hundred cases of urinary bladder lesions were included in our study. In our study haematuria was the most common clinical symptoms (91%), while pain was present in 38% of cases, burning was present in 39% of cases and strangury was present in 48% of cases which was correlated with the study of Eble and Young (2013) who find that 91% of urinary bladder patients were presented with painless haematuria.

In our study we found the male to female ratio was 5.25:1 which was correlated with Lim et al8 and Vaidya et al9 and they found male to female ratio in their study was 5:1 and 4.5:1 respectively. The male to female ratio of our study was slightly higher than the study of Hasan et al10 (2.58:1), Cheng et al11 (3.3:1.0) and lower than Matalka et al12 (9:1).

In our study the most common age group was 61-70 years with 33% cases which was correlated with Vaidya et al9 of 33.73% cases of 61-70 years while Mean age of presentation was 60.79 years (range 35-85) which was correlated with Matalka et al12 studied in which mean age of the patients was 60.6 years (range 19-91) and median age of presentation was 61.00 years (range 35-85) which was correlated with Vaidya et al9 in which median age of the patients was 65 years (range 16-88).

We found the urothelial carcinoma was 96.87% out of total bladder carcinomas cases which were nearly correlated with the study of Ebbe and Young13 (80%) and Sharma et al14 (91.9%) (Table 5).

Small no of cases of chronic non-specific cystitis was due to unawareness of symptoms by patient and biopsy was sent in most of the cases only for carcinoma by the clinician (Table 6).

In our study muscle invasion was seen in 62.92% cases of urothelial carcinoma which was correlated with Shah et al15 whose result showed muscle invasion in 69% cases while lamina propria invasion in our study was seen in 73.03% cases of urothelial carcinoma which was correlated with Sathya et al16 whose results showed lamina propria invasion in 87% cases (Table 7).

In our study we found pure urothelial carcinoma was (92.13%) cases, Squamous differentiation (5.61%), glandular differentiation (11.2%), nested differentiation (1.12%) which was nearly correlated with study of Billis et al17, which showed (92.72%) were conventional urothelial carcinomas and 7.27% showed squamous and glandular differentiation.

CONCLUSION

In our study most common bladder lesion was urothelial carcinoma. Out of total carcinoma cases most common carcinoma was of high-grade urothelial carcinoma presented with lamina propria and muscle invasion. Another bladder tumor was squamous cell carcinoma followed by adenosquamous carcinoma. Pathological grade and muscle invasion are the most valuable prognostic predictors of survival. Awareness is very much needed in the public about haematuria because they neglect it causing in an advanced stage of bladder cancer at the time of presentation.

REFERENCES


Source of Support: Nil
Conflict of Interest: Nil