STAGING OF CARCINOMA OF BILHARZIAL BLADDER

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ABSTRACT—The TNM system of clinical staging was used for 205 patients with carcinoma of the bilharzial bladder. Results of clinical staging were compared with the pathologic findings in 135 cases in which cystectomy specimens were available. The clinical error in staging was 37.2 per cent with a tendency for under-staging. Most of the patients had advanced stages of the disease with deep muscle infiltration in 56.3 per cent. Extravesical spread was noted in 12.8 per cent of cases. The relation between histology, grade, and staging is presented. Staging is an important factor in predicting the prognosis.

Determination of the extent of malignant disease is important in planning therapy and predicting prognosis. Moreover, staging allows the comparison of results from various medical centers, as well as results of various methods of treatment.

Three methods have been used for staging carcinoma of the bladder: the Marshall classification,[1] the British Institute of Urology classification,[2] and the TNM system of the U.I.C.C. (Union Internationale Contr Le Cancerum).[3]

This is an evaluation of the TNM system as applied to carcinoma of the bilharzial bladder with emphasis on the estimation of error in clinical staging, correlation of the stage with other features of the disease, and comparison of our data with those obtained from nonbilharzial tumors.

Material and Methods

The TNM system was used for staging of bladder cancer in 205 patients. The patients' ages ranged between twenty-four and sixty-seven years, and 80 per cent were men. In addition, retrospective pathologic study of 91 cystectomy specimens was included in the evaluation of the pathologic stage.

Bimanual examination of the empty bladder under anesthesia and by cystoscopy were considered mandatory to determine the clinical extent of the disease.

In this study endoscopic biopsy was used only to establish the diagnosis and not to evaluate the depth of infiltration. This is due to the high risk of this procedure in patients with advanced tumors, which constituted the majority of our cases.

Results

Most of the 205 patients (56.3 per cent) were of the T3 stage (Table I). Seventy patients were considered clinically inoperable, or of T4 stage,

TABLE I. *Clinical staging of 205 cases of carcinoma of bilharzial bladder*

Stage	Number of Cases	Per Cent
T1	...	0
T2	43	20.9
T3	115	56.3
T4	47	22.8
TOTAL	205	

TABLE II. *Sites of extravesical spread (P4) in 29 cases in 226 cystectomy specimens*

Site	Number of Cases	Per Cent
Peritoneum	13	6.0
Posterolateral ligaments	8	3.4
Intestines	5	2.2
Prostate	10	5.6*
Vagina	6	13.0*
TOTAL	42	

*Involvement of prostate and vagina was calculated in 180 male and 46 female patients, respectively.

TABLE III. *Errors in clinical staging as verified by pathologic staging in 135 cystectomy specimens**

Clinical Stage	Number of Cases	Pathologic Stage P1	P2	P3	P4
T1	...	...	...	...	...
T2	37	1	9	27	...
T3	96	...	6	74	16
T4	2	...	...	...	2

*Total clinical error, 50 cases (37.2 per cent); error due to understaging, 43 cases (31.8 per cent).

because of the advanced local extent of the disease.

The pathologic staging of 226 cystectomy specimens is presented in Figure 1. Extravesical spread (P4) was evident in 29 cases (12.8 per cent). The various sites involved at the P4 stage are given in Table II.

Table III lists the comparison between clinical staging and pathologic findings in 135 cases. The over-all error in clinical staging was 37.2 per cent and was highest at the T2 stage (75.6 per cent). In the majority of cases the error was due to clinical underestimation of the extent of disease.

A correlation between the histologic features of the tumor and the depth of infiltration is shown in Table IV. The incidence of deep infiltration increases with high-grade tumors. Moreover, adenocarcinoma tends to be more infiltrative than squamous and transitional cell tumors.

The relation between the stage and the incidence of lymph node metastases is given in Table V. Lymph node involvement was highest in the P4 stage.

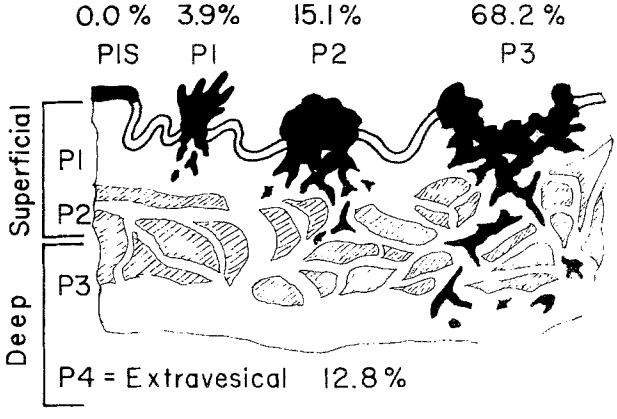

FIGURE 1. *Diagram indicating pathologic staging of 226 cystectomy specimens.*

Comment

Both clinical and pathologic staging are essential for classification of patients with bladder tumors. In a deeply seated organ, such as the urinary bladder, pathologic staging is more accurate, but can only be done if cystectomy specimens were available or surgical exploration was performed. Clinical staging, although liable to a variable but definite margin of error, is of value in the following conditions:

1. For a given case the choice of a particular treatment modality depends on the clinical evaluation of the extent of the disease.
2. Cases in which pathologic staging cannot be done, such as patients treated with radiotherapy or considered clinically to be inoperable.

The TNM system makes a distinction between clinical (T) and pathologic (P) staging. Thus it

TABLE IV. *Incidence of deep infiltration (P3 and P4) in relation to histology and grade of tumors*

Histologic Type	Grade I	II	III	Total	Per Cent
Squamous-cell	54/72	50/61	18/19	122/152	80
Transitional cell	1/4	12/14	27/31	40/49	81.6
Adenocarcinoma	3/4	8/9	6/6	17/19	89.5
Undifferentiated	...	...	3/3	3/3	100
TOTALS	58/80	70/84	54/59		
	72.5%	83.3%	91.5%		

TABLE V. *Relation of stage to lymph node involvement*

Stage	Number of Cases: Negative Nodes	Positive Nodes	Per Cent
P1	7	...	0
P2	30	3	9.1
P3	132	22	15
P4	20	9	31.1
TOTALS	189	34	

allows the investigator to assess the accuracy of his clinical staging and to determine the cause and nature of his clinical error.

The over-all error in this series was 37.2 per cent with a tendency toward underestimation of the extent of the tumor in most of the cases. Whitmore and Marshall[4] gave a lower incidence of error (22.7 per cent). On the other hand, Marshall[1] and Kenny, Hadener, and Murphy[5] gave a higher incidence of clinical error, 36.7 and 56 per cent, respectively.

Various factors could contribute toward understaging in this series: (1) Certain difficult sites for palpation, such as tumors of the vault or anterior wall; (2) endoscopic biopsy was taken only to establish the diagnosis but not to evaluate the depth of muscular infiltration; and (3) inaccessibility of the regional lymph nodes for clinical assessment.

The majority of tumors in this series were in the advanced stage with infiltration of the deep muscles (56.3 per cent), or extravesical spread (12.8 per cent). This is similar to previous reports on bilharzial bladder cancer. Sebai[6] reported that the majority of his cases (82 per cent) were in the C or D groups of Marshall's classification. Extravesical spread was seen in 42 sites in 29 cases (12.8 per cent). Metastasis to the intestine or peritoneum was found in 8.2 per cent of cases compared with 7.6 per cent reported by Sebai.[6] The prostate was involved in 5.6 per cent of cases while the figure given by Melicow[7] was 50 per cent in nonbilharzial tumors. This can be attributed to the fact that the trigone is a rare site of origin for carcinoma of the bilharzial bladder.

Statistical correlations of the results in this study revealed that advanced stages are associated with a greater chance of lymph node involvement and an obviously higher incidence of recurrences. These findings are in agreement with those of Jewett and Strong[8] and Baker[9] in the nonbilharzial bladder tumors.

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