Urological Research 6, 193-195 (1978)

Urological Research

The WHO Histological Classification of Urinary Bladder Tumours

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Summary. The WHO histological classification of urinary bladder tumours was formulated to promote better international communication and more reliable statistical comparisons. The axes of classification concern histological type, grade of anaplasia and growth pattern.

Key words: Bladder tumours - Classification - Standardization.

Twenty years ago, WHO began a programme on the standardization of histological diagnoses of tumours in order to promote statistical uniformity and to facilitate international communication among those working in cancer research. This was necessary because terminology and the criteria for diagnosis of tumours were far from uniform on a worldwide basis. In many instances the same tumour has been referred to by a variety of terms or the same term has been used for different tumours. For example, a bladder tumour might be designated by different pathologists as transitional cell papilloma, in situ papillary carcinoma, atypical papilloma, low-grade urothelial tumour, histologically benign papilloma, non-infiltrating papillary carcinoma grade zero, papilloma with atypical cells, etc. Therefore, some cancer registries record bladder papillomas along with malignant tumours, whereas others do not.

Even with the use of standardized terms, the definitions of tumour types are often imprecise. This can account for a considerable lack of uniformity in tumour classification. The variation in the percentage of bladder papillomas in different series is largely due to the variety of definitions for this term.

Another example is a bladder tumour which might be diagnosed as an undifferentiated carcinoma with squamous areas, a squamous cell carcinoma with spindle cells, a pseudosarcoma or a carcinosarcoma depending on the definitions of tumour types.

Obviously, the danger in comparing data based on different or inconsistent definitions is that pathologists may think they are talking about the same entities when they are not.

A further area requiring standardization is the format of categorisation, i.e., how the tumours are arranged into groups and subgroups. The results of a survey of articles using histological classifications to study carcinomas of the lung showed thirteen different systems of classification to be employed in 57 papers (3). It was not a question of which classification or which definitions were better; they were all really variations on the same theme, but could not be accurately compared because different formats of categorisation were used.

As a result of the lack of standards it is often difficult to compare responses to therapy and to study the natural history and aetiology of tumours. For example, cancer registry data has shown that there is a higher percentage of squamous cell carcinomas of the bladder in the United Kingdom compared with Sweden (1). Before this can be evaluated for possible relations to environmental or host factors, it must be ascertained whether different diagnostic criteria are used by pathologists in these two countries.

The problem of lack of uniform criteria for

0300-5623/78/0006/0193/$01.00

Table 1. Histological classification of urinary bladder tumours

I. Epithelial Tumours

A. Transitional cell papilloma
B. Transitional cell papilloma, inverted type
C. Squamous cell papilloma
D. Transitional cell carcinoma
E. Variants of transitional cell carcinoma
   1. With squamous metaplasia
   2. With glandular metaplasia
   3. With squamous and glandular metaplasia
F. Squamous cell carcinoma
G. Adenocarcinoma
H. Undifferentiated carcinoma

II. Non-Epithelial Tumours

A. Benign
B. Malignant
   1. Rhabdomyosarcoma
   2. Others

III. Miscellaneous Tumours

A. Phaeochromocytoma
B. Lymphomas
C. Carcinosarcoma
D. Malignant melanoma
E. Others

IV. Metastatic Tumours and Secondary Extensions

V. Unclassified Tumours

VI. Epithelial Abnormalities

A. Papillary (polypoid) "cystitis"
B. Von Brunn's nests
C. "Cystitis" cystica
D. Glandular metaplasia
E. "Nephrogenic adenoma"
F. Squamous metaplasia

VII. Tumour-like Lesions

A. Follicular cystitis
B. Malakoplakia
C. Amyloidosis
D. Fibrous (fibroepithelial) polyp
E. Endometriosis
F. Hamartomas
G. Cysts

the diagnosis of tumours occurs at all body sites and therefore WHO has established over 20 centres for the histological classification of tumours. Most of these have published their classifications

THE WHO CLASSIFICATION OF URINARY BLADDER TUMOURS

The WHO histological classification of urinary bladder tumours was published in 1973 (2) as the tenth in the WHO International Histological Classification of Tumours series. This was the result of a collaborative study of 500 cases by 9 participating laboratories and was reviewed by 9 additional pathologists.

Since the vast majority of bladder tumours are of epithelial type, the text and illustrations concentrate on this portion of the classification. For epithelial tumours of the bladder, several axes are considered: histological type, histological grade and growth pattern.

The histological type (Table 1) refers to the separation of transitional cell tumours from squamous, glandular and undifferentiated forms.

Transitional cell papilloma has a highly restrictive definition, i.e., "a papillary tumour with a delicate fibrovascular stroma covered by regular transitional epithelium indistinguishable from that of the normal bladder and not more than six layers thick." There should be no evidence of anaplasia. This high threshold limits the proportion of papillomas in most series to less than three per cent of all epithelial tumours of the bladder.

The transitional cell carcinomas require the consideration of the other axes of classification, namely, the histological grade and growth pattern. In the bladder, more than in

many other organs, histological or cytological grading is of considerable clinical importance. The grading is based on anaplasia, i.e., cellular abnormalities in size, shape and staining, mitotic activity, etc. The method proposed in the WHO classification is one in which three grades are employed. Grade 1 applies to tumours that have the least degree of cellular anaplasia compatible with the diagnosis of malignancy; grade 3 applies to tumours with the most severe degree; and grade 2 lies in between.

The growth patterns are described using four groups, as follows:

1) papillary, in which the tumour is growing into the lumen of the bladder

2) infiltrating, in which it is growing into the wall of the bladder

3) papillary and infiltrating, in which it is doing both

4) non-papillary and non-infiltrating in which the tumour is confined to the surface

Transitional cell carcinomas with foci of differentiation to squamous and/or glandular structures are classified as variants of transitional cell carcinoma. The significance of these changes is not yet clear.

Squamous cell carcinoma has a definition which restricts this diagnosis to malignant epithelial tumours in which cells form keratin or have intercellular bridges without evidence of a transitional cell component.

Adenocarcinomas are defined as malignant epithelial tumours with cells forming glands, tubules and/or mucus.

The category undifferentiated carcinoma is used for epithelial tumours in which the cellular organization does not show more than focal evidence of transitional, squamous or glandular maturation.

The remainder of the classification deals with non-epithelial tumours such as rhabdomyosarcoma and phaeochromocytoma. In addition, there are sections on epithelial abnormalities and tumour-like lesions.

CONCLUSION

Of course, some pathologists, perhaps with good reason, will prefer the term urothelial carcinoma to transitional cell carcinoma; some will wish to limit the cell layers in a papilloma to 7 instead of 6; some prefer the term in situ for a non-invasive papillary carcinoma; some wish 4 grades of anaplasia instead of 3, etc.

But, as a step towards better communications and more accurate statistical comparisons, it is hoped that pathologists will apply the WHO standards or at least "translate" their own data into the WHO system. This could then help make international cooperation in cancer research more effective.

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