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Uro-Oncology
Editorial

Golden rules in practice of cancer pathology

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Guidelines

Abstract
The pathologic diagnosis of cancer is an essential initial step in the management of patients, a great responsibility facing the pathologist. The present review is a critical analysis of current practice. The aim is to disclose defects, describe diagnostic strategies and outline recent changing trends in the use of diagnostic methods. The importance of recognizing syndromic cancers, interpathologist consultation and interdisciplinary cooperation is emphasized. Twenty advises and guidelines are presented which may hopefully minimize errors and assure an accurate diagnosis. Recent 5-year survival data of different cancer sites are presented with a proposed classification into four prognostic categories. Curability from cancer is not uncommon with modern therapy. It is confirmed by the demonstration of a plateau slope graph between 5 and 20 years after therapy.

"*Patients worry over the great number of diseases, pathologists worry over the difficulty to diagnose them, whereas, clinicians worry over the scarcity of effective therapy*."

The practice of oncology aims to achieve four goals, namely: correct diagnosis, effective treatment, adequate follow up and fruitful research. Interdisciplinary cooperation of staff is essential to accomplish these goals. Diagnosis must precede treatment, since it determines the line of therapy. It must be rapid and precise. This great responsibility lies on the pathologist who is expected to type the disease, as well as, to predict its biologic behavior. In most of cases, these diagnostic and prognostic challenges are successfully accomplished, but in few problematic cases, difficulties arise and errors are inevitable. The following are a group of advises and general rules that may help to avoid or minimize diagnostic pitfalls and assure a complete and accurate final pathology report.

1. Specimen identification and fixation are two essential and immediate steps. Labeling of specimen by the name of patient avoids the serious interchange of specimens. Bilateral specimens should be submitted separately with labeling of laterality. Immediate fixation is essential to preserve both morphology and biology of samples. The type of fixation varies according to the aim of investigation (Table 1).

"*Practice only does not make perfection, only perfect practice makes perfection*"

2. Full clinical data should be available to the pathologist, including: age, exact site of specimen, clinical diagnosis, type of operation, any previous biopsy or therapy. Thus, without reviewing previous biopsies, it is difficult to tell if a new mass lesion is a recurrence or a new primary. In addition, histopathologic studies after therapy are usually unreliable.

"*Pathologic reports without clinical data are both impossible and dangerous*."

3. Adequacy of a biopsy is essential for proper pathologic evaluation. For tissue needle biopsy, the WHO recommends multiple

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Table 1 Fixation of specimens.

Method	Fixative
Routine pathology	10% formalin
Electron microscopy	2.5% glutaraldehyde
Cytology	90% ethyl alcohol or air dryness
Biologic studies	Deep freezing (−20 °C to −80 °C)
Frozen section	Fresh unfixed
Tissue culture	
Karyotyping	
Flow cytometry	

cores not less than 14 mm long, a condition rarely encountered in practice. There are several causes of inadequate sample, including: scanty material (<1 mm), non-representative tissue, necrotic, crushed, cauterized or autolyzed samples. In such cases, rebiopsy of adequate material should be requested.

"*The best way to escape from a problem is to solve it*."

4. Gross data of resected cancer specimens must include the following: (a) presence of any cutaneous surgical wound denoting previous lumpectomy, (b) longest diameter (single or multiple tumors), (c) invasion of muscle layer (gut, bladder or myometrium), (d) if capsule of the organ is intact or penetrated by tumor (in thyroid, kidney and ovary), (e) number and size of regional lymph nodes and (f) longest and shortest clearance of normal tissue around the tumor in cm. Tissue for surgical margin evaluation should be taken from the shortest clearance by blocks parallel or perpendicular to the surgical margin (Fig. 1). A clearance of 1 cm is satisfactory for most cancers, but a larger distance (2–3 cm) is needed in melanoma.

5. Size of sarcomas can help to assess the expected biologic behavior. Soft tissue sarcomas usually present as deep bulky masses (>5 mm). Similarly, cartilaginous tumors >5 cm are usually malignant. It is wise not to diagnose a sarcoma <2 cm. Exception to this rule is sarcomas of the skin which may be <1 cm but behave malignant (e.g. Kaposi sarcoma, primary cutaneous lymphomas and dermatofibrosarcoma).

6. The triad foundation for diagnosis. In the nervous and skeletal systems, tumor types are numerous and show special age distribution. Imaging is the only way to gain information on their gross features. For these reasons, an accurate pathologic diagnosis is only possible after considering these three types of information, namely: the age, radiography or MRI and histology.

7. Diagnosis by probability. In the search for a diagnosis, it is wise to consider common rather than rare diseases. Thus, an axillary lymphadenopathy in a female usually represents metastasis from breast, but in males it is commonly a lymphoma or melanoma.

"*a rare presentation of a common disease is more common than a common presentation of a rare disease*."

8. The importance of consultation. A difficult case confronting a beginner pathologist will end up by misdiagnosis and mismanagement. Consultation with a senior pathologist will help to avoid this pitfall.

"*What the mind does not know, the eye can not see*"

"*Good judgment comes from experience, and experience comes from bad judgment*"

9. Diagnosis by exclusion. In difficult cases, differential diagnosis must be considered and a Sherlock Holmes detective strategy adopted. For example, in a spindle cell malignancy, fibrosarcoma is the ultimate diagnosis if neural, myogenic and sarcomatoid carcinoma are excluded (by S-100, desmin and cytokeratin negativity).

"*When you have excluded all the impossible, whatever remains must be the truth.*"

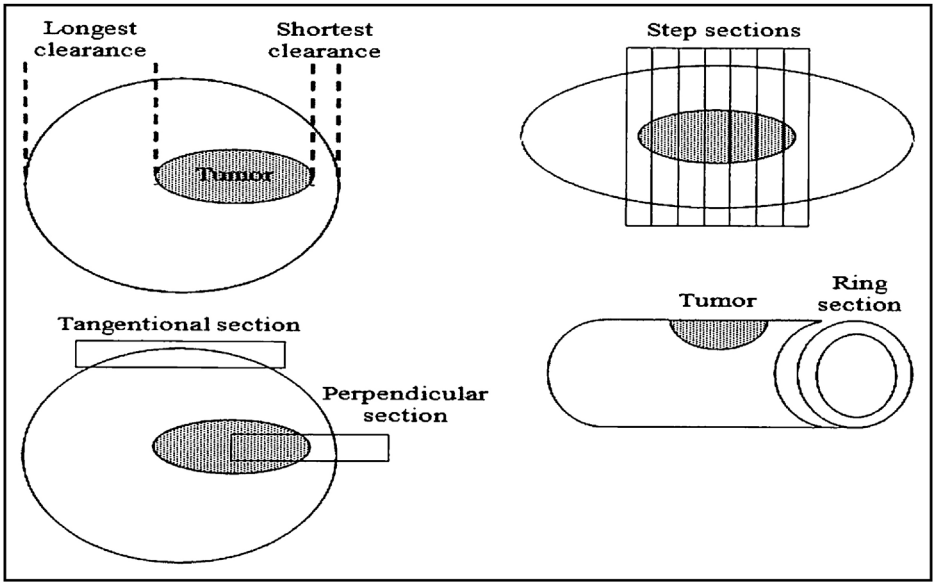

Figure 1 Tissue clearance and selection of surgical margins from excised specimens.

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