Epitomes

Important Advances in Clinical Medicine

Pathology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in pathology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in pathology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Pathology of the California Medical Association and the summaries were prepared under its direction.

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Immunohistochemistry and the Diagnosis of Spindle Cell Neoplasms

THE HISTOLOGIC DIAGNOSIS of poorly differentiated or unusual neoplasms by traditional methods may be difficult, relying on routine paraffin-embedded, hematoxylin-eosin-stained tissue sections augmented by special stains or ultrastructural examination or both. Recent advances in immunohistochemistry have added another dimension to tumor evaluation, giving immunologic clues to the diagnosis and decreasing the volume of cases previously examined by electron microscopy.

The antibodies generally used in immunohistochemistry are myriad, directed against structural "intermediate filaments" (keratin, vimentin, desmin, neurofilaments and glial fibrillary acidic protein), enzymes (such as neuron-specific enolase), other proteins (such as factor VIII, S-100) and other material. The literature, replete with immunologic characterization of various tumors, shows that few, if any, antibodies that have been developed are actually "specific" to a particular tumor. Despite this, immunohistochemistry is a powerful tool, especially when used to answer specific questions or to narrow a differential diagnosis formulated by review of more traditionally prepared material.

For example, the differential diagnosis of a spindle cell neoplasm arising in deep soft tissues and growing in long, sweeping fascicles includes fibrosarcoma, synovial sarcoma, leiomyosarcoma and malignant schwannoma. A battery of immunoperoxidase stains would show vimentin positivity in each because all are felt to be of mesenchymal origin. Of the four, only synovial sarcoma expresses cytokeratins—a finding similar to only three other mesenchymal tumors: mesothelioma, epithelioid sarcoma and adenomatoid tumor. The smooth muscle-derived leiomyosarcoma generally expresses desmin, whereas malignant schwannoma, being of neural crest derivation, reacts for S-100 protein. If all of the stains were negative (except for vimentin) then fibrosarcoma would be seriously considered.

The differential diagnosis of spindle cell tumors that occur more superficially in the subcutis or cutis includes melanoma, squamous carcinoma and several mesenchymally derived neoplasms including dermatofibroma, dermatofibrosarcoma protuberans, leiomyoma and leiomyosarcoma. Melanoma may be distinguished by its expression of S-100 protein and vimentin, while epithelial-derived squamous carcinoma produces only cytokeratin. The smooth muscle tumors show desmin and vimentin positivity whereas histiocytic markers such as α_1-antitrypsin, lysozyme and α_1-antichymotrypsin are generally found in dermatofibroma and dermatofibrosarcoma protuberans.

As techniques improve and antibodies are developed that are more tumor-specific, immunohistochemistry will become an even more powerful tool, improving the reproducibility of diagnosis in these and other difficult tumors.

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Barrett's Esophagus

BARRETT'S ESOPHAGUS is the eponym for replacement of the squamous epithelium of the distal esophagus by columnar epithelium. This replacement is now considered to be an acquired metaplasia that follows the epithelial injury caused by chronic gastroesophageal reflux and can therefore often be associated with strictures or peptic ulceration of the esoph-