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YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY® 1991

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The Year Book of PATHOLOGY AND CLINICAL PATHOLOGY®

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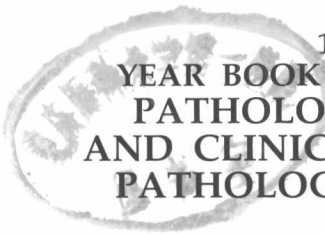

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Journals Represented

Mosby–Year Book subscribes to and surveys nearly 850 U.S. and foreign medical and allied health journals. From these journals, the Editors select the articles to be abstracted. Journals represented in this YEAR BOOK are listed below.

APMIS: Acta Pathologica, Microbiologica Et Immunologica
Acta Cytologica
Acta Neurochirurgica
Acta Neuropathologica
American Heart Journal
American Journal of Clinical Pathology
American Journal of Dermatopathology
American Journal of Diseases of Children
American Journal of Human Genetics
American Journal of Infection Control
American Journal of Pathology
American Journal of Surgical Pathology
American Review of Respiratory Disease
Annals of Clinical Biochemistry
Annals of Internal Medicine
Archives of Disease in Childhood
Archives of Internal Medicine
Archives of Ophthalmology
Archives of Pathology and Laboratory Medicine
Arteriosclerosis
Blood
British Journal of Cancer
British Journal of Haematology
British Journal of Industrial Medicine
Canadian Medical Association Journal
Cancer
Chest
Clinica Chimica Acta
Clinical Chemistry
Clinical Pharmacology and Therapeutics
Clinical Pharmacokinetics
Digestive Diseases and Sciences
Environmental and Molecular Mutagenesis
European Heart Journal
European Journal of Cancer and Clinical Oncology
Gastroenterology
Gut
Gynecologic Oncology
Head and Neck
Histopathology
Human Pathology
International Journal of Cancer
International Journal of Dermatology
International Journal of Gynecological Pathology
Journal of Clinical Endocrinology and Metabolism
Journal of Clinical Investigation
Journal of Clinical Microbiology
Journal of Clinical Pathology

Journal of Cutaneous Pathology
Journal of Dermatology
Journal of Immunology
Journal of Infectious Diseases
Journal of Internal Medicine
Journal of Investigative Dermatology
Journal of Laboratory and Clinical Medicine
Journal of the Neurological Sciences
Journal of Neurology, Neurosurgery and Psychiatry
Journal of Occupational Medicine
Journal of Oral Pathology and Medicine
Journal of Pathology
Journal of Pediatric Gastroenterology and Nutrition
Journal of Perinatology
Journal of Reproductive Medicine
Journal of Thoracic and Cardiovascular Surgery
Journal of Urology
Journal of the American College of Cardiology
Journal of the American Medical Association
Laboratory Investigation
Lancet
Mechanisms of Ageing and Development
Modern Pathology
Muscle and Nerve
Nature
Neurology
Neuropathology and Applied Neurobiology
New England Journal of Medicine
Obstetrics and Gynecology
Ophthalmology
Oral Surgery, Oral Medicine, Oral Pathology
Pediatric Neurology
Pediatric Pathology
Pediatric Research
Proceedings of the National Academy of Sciences
Quarterly Journal of Medicine
Reviews of Infectious Diseases
Science
Southern Medical Journal
Surgical Pathology
Therapeutic Drug Monitoring
Thorax
Transfusion
Virchows Archiv A: Pathological Anatomy and Histopathology
Vox Sanguinis

Standard Abbreviations

The following terms are abbreviated in this edition: acquired immunodeficiency syndrome (AIDS), central nervous system (CNS), cerebrospinal fluid (CSF), computed tomography (CT), electrocardiography (ECG), and human immunodeficiency virus (HIV).

Publisher's Preface

Publication of the 1991 YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY marks the end of an outstanding era of Editorship by Kenneth M. Brinkhous, M.D., his associates, Frederic G. Dalldorf, M.D., Joe W. Grisham, M.D., Robert D. Langdell, M.D., and William W. McLendon, M.D., and their Board of Editors at the University of North Carolina at Chapel Hill. During Dr. Brinkhous' 11 years of leadership, readers have been treated to informative and perceptive literature selections and commentary of the highest caliber.

Dr. Brinkhous' own introduction to his first YEAR BOOK, the 1981 YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY, provides a glimpse of the dedication and spirit that continues through the current edition. He wrote:

"With the completion of the 1980 volume and after 8 years of devoted work, Dr. Frank Carone and Dr. Rex Conn asked to be relieved of their editorial responsibilities, and I was asked to assume them. I had long been impressed with the YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY and the breadth of its coverage of the current medical literature. As a subscriber beginning with the earliest volumes, I remember enjoying every volume as it came each spring and consistently wondered how the editors accomplished each year what they did. So my first query after receiving the invitation was just that, "How is it done?" I remember being told that it is not too difficult, rather, it was more a matter of good judgement, good organization, and not least, keeping on schedule! Nevertheless, it was not until box after box of current journals and individual articles began to arrive from Chicago that the enormity of the editorial work required was firmly impressed upon me, as was the vastness and richness of our current literature. Four colleagues joined in the effort as Associate Editors and 27 fellow faculty members as Editorial Board members. We estimate that approximately 10,000 current articles were examined."

Suffice it to say that we no longer minimize the enormity of the work involved! We are tremendously grateful to Dr. Brinkhous for the leadership he has provided the YEAR BOOK through the years and for his ever-present commitment to the effort. We will miss working with him, Drs. Dalldorf, Grisham, Langdell, and McLendon, and the Board of Editors, and wish them the very best in all future endeavors.

Beginning with the 1992 edition, the Editorship of the YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY will be placed in the hands of William A. Gardner, Jr., M.D., Professor and Chairman of the Department of Pathology at the University of South Alabama Medical College, who will carry on the tradition of distinguished editorial direction of this YEAR BOOK. We welcome Dr. Gardner and the team of associates that he is establishing as we extend our heartfelt thanks to Dr. Brinkhous and his colleagues for their years of excellent service and unending support and enthusiasm for the YEAR BOOK.

Introduction

In the past decade, pathology and laboratory medicine have followed a pattern of rapid applications of new knowledge to the practice of our specialty and to the clinical and research laboratories. In this period remarkable advances have been made in elucidating mechanisms of disease. Advanced methodologies and instrumentation have been developed. The rate of advance continues at an accelerating pace. In this environment nearly everyone is faced with the dilemma of how to keep up with the important literature of his or her field. The 1991 YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY, the 44th annual volume in the series, is designed to help in this regard. Presented in this book are abstracts of significant articles and commentaries, selected and written by a Board of Editors representing the various special areas in pathology and laboratory medicine.

The volume consists of three main parts—general pathology, pathology of the organ systems, and clinical pathology—with a section on quality control and laboratory management and a list of review articles. The topics are arranged in 44 sections, grouped in 26 chapters. Two new sections have been added to the present volume, Environmental Pathology and Aging. Well over 10,000 articles published in the past 12 months and dispersed in more than 100 different journals were considered by the Editors in making their selections. The volume provides a rich and comprehensive source of information as to what is new in the field, varying from new concepts of disease and disease mechanisms to practical matters that should improve daily operations.

One example of what is new will be mentioned. A new multisystem disease is described that appeared "out of the blue"—eosinophilic-myalgia syndrome. This syndrome appeared in a peculiar epidemic form, usually diagnosed by muscle biopsy, with simultaneous onset of cases widely dispersed throughout the country. With remarkable sleuthing the etiologic agent was soon recognized as being a contaminated amino acid product, tryptophan. Several articles on the varied manifestations of this new disease are presented and discussed.

While being Editor of the series for the past 11 years, I have never ceased to be impressed and even astounded at the new ideas, the new tools, and the new findings that are described, year by year, which I call the new pathology. This year's volume, I am happy to observe, has more than its share of significant contributions.

Appreciation is expressed to all of the Editors and staff for their contributions and support in preparation of the 1991 YEAR BOOK.

Kenneth M. Brinkhous, M.D.

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PART ONE
PATHOLOGY

1 General Pathology

Cell Pathology

Use of Nucleolar Organizer Region Determination in Diagnostic Pathology

The observation that the argyrophilic staining of intranuclear nonhistone proteins (nucleolar organizer regions, AgNOR) reflect protein synthesis and the proliferative rate of neoplastic cells has prompted an influx of reports describing the use of this property as a novel new method in diagnostic pathology. This subject was briefly reviewed in a previous edition of the YEAR BOOK (1), and an update will be presented in this report.

The basic concept of nucleolar organizer regions was recently reviewed by Ruschoff et al. (2). The method uses the argyrophilic properties of loops of nuclear DNA that transcribe for ribosomal nucleic acids (rRNA), and thus leads to protein synthesis. These sites are localized in the nucleolus, the fibrillar centers, and the associated dense fibrillar component. The proteins are selectively stained with aqueous silver nitrate and are therefore referred to as AgNOR proteins. Most studies have focused on the differences in AgNOR counts between benign and malignant tumors. Nearly all have shown that tumor cell proliferation is associated with an increase in AgNOR counts. Comparisons of AgNOR counts with other methods used to assess cellular proliferation, monoclonal antibody Ki-67 immunostaining, and flow cytometry have shown comparable results in delineation of the proliferating cell population and therefore illustrate that the technique is of value in documenting cellular proliferation (3).

Using an animal model of bladder carcinogenesis, Takeuchi et al. (4) showed a stepwise increase in the number of AgNORs when benign and hyperplastic lesions were compared to transitional cell carcinomas, and was therefore a reflection of the proliferative rate of cells compromising the more malignant cellular changes. Rosa et al. (5) reported similar findings in gastric lesions and carcinomas in humans. The study, using AgNOR counts, suggested a possible relationship between chronic atrophic gastritis-intestinal metaplasia and dysplasia and the subsequent development of gastric carcinoma counts of AgNOR in intestinal metaplasia overlapped with carcinoma in 85% of cases compared to 19% of normal controls. Yang et al. (6) showed a similar trend in colonic lesions. Significantly more AgNORs were detected in colonic carcinomas than were present in tubular adenomas or villous adenomas with moderate atypia, illustrating that an increase in AgNORs was present in actively proliferating cells. Interestingly, the size of the NORs showed a decrease in size from the more benign to the malignant lesions. Egan et al. (7) and Ruschoff et al. (2) also showed that in cells with an increasing grade of malignancy, the mean size of the AgNORs decreased, whereas the mean

number increased. The significance of this difference is not clear but appears to be a consistent finding in a variety of tumors.

Delahunt et al. (8) studied AgNORs in seminoma and intratubular malignant germ cells. In all examples, AgNORs were found to be increased. The number of AgNORs in intratubular malignant germ cells was significantly different from typical and spermatocytic seminomas. Hansen and Ostergard (9) studied hyperplastic and neoplastic prostate tissues. In this study, AgNORs were classified into three types based on the morphology and arrangement of the argyrophilic staining. Types A(1–3), described as single, scattered, or grouped satellite AgNORs, predominated in hyperplastic lesions. Types B(2–3) and C(1–2), finely granular, coarse to semisolid, and of variable size AgNORs, were predominant in prostatic intraepithelial neoplasia and carcinomas. Some overlap was shown between intraepithelial neoplasia and hyperplastic lesions. Counts in carcinomas overlapped minimally with hyperplastic lesions.

One recent study (10) evaluated smooth muscle cell proliferation in developing atherosclerotic lesions and showed that this technique was useful in defining the proliferating cell population in atherosclerotic lesions. A zonal phenomen was shown to exist in the fibrous cap of these plaques. The majority of the AgNOR positive cells were present in the fibrofatty core.

Not all studies have shown such promising results. Kram et al. (11) were unable to demonstrate significant correlations with malignancy in their study of colonic carcinomas. The technique as described allows for rapid staining but is somewhat labor-intensive. In spite of this, the technique does appear to be useful in diagnostic pathology. With computerization, the procedure for counting may become less labor-intensive and thus further facilitate use of AgNOR counts in the determination of cellular proliferation.

R. L. Reddick, M.D.

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