

YEAR BOOK[®]

YEAR BOOK OF DIAGNOSTIC RADIOLOGY[®] 1993

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BARRY H. GROSS
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1993

The Year Book of DIAGNOSTIC RADIOLOGY®

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addition, the editor indicates when to include figures and tables from the article to help the YEAR BOOK reader better understand the information.

Of the quarter million articles scanned each year, only 5% are selected for detailed analysis within the YEAR BOOK series, thereby assuring readers of the high value of every selection.

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The publisher's abstracting staff is headed by a physician-writer and includes individuals with training in the life sciences, medicine, and other areas, plus extensive experience in writing for the health professions and related industries. Each selected article is assigned to a specific writer on this abstracting staff. The abstracter, guided in many cases by notations supplied by the expert editor, writes a structured, condensed summary designed so that the reader can rapidly acquire the essential information contained in the article.

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The editorial boards of each YEAR BOOK organize the abstracts and comments to provide a logical and satisfying sequence of information. To enhance the organization, editors also provide introductions to sections or individual chapters, comments linking a number of abstracts, citations to additional literature, and other features.

The published YEAR BOOK contains enhanced bibliographic citations for each selected article, including extended listings of multiple authors and identification of author affiliations. Each YEAR BOOK contains a Table of Contents specific to that year's volume. From year to year, the Table of Contents for a given YEAR BOOK will vary depending on developments within the field.

Every YEAR BOOK contains a list of the journals from which papers have been selected. This list represents a subset of the nearly 1,000 journals surveyed by the publisher, and occasionally reflects a particularly pertinent article from a journal that is not surveyed on a routine basis.

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Journals Represented

Mosby subscribes to and surveys nearly 1,000 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.

Acta Radiologica
American Heart Journal
American Journal of Gastroenterology
American Journal of Medicine
American Journal of Neuroradiology
American Journal of Otolaryngology
American Journal of Roentgenology
American Journal of Surgery
American Journal of Surgical Pathology
American Surgeon
Annals of Emergency Medicine
Annals of Surgery
Annals of Thoracic Surgery
Annals of Vascular Surgery
Archives of Disease in Childhood
Archives of Emergency Medicine
Archives of Internal Medicine
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Arthritis and Rheumatism
Australasian Radiology
British Heart Journal
British Journal of Industrial Medicine
British Journal of Obstetrics and Gynaecology
British Journal of Radiology
British Journal of Surgery
British Medical Journal
Canadian Association of Radiologists Journal
Canadian Journal of Neurological Sciences
Cancer
Cardiovascular and Interventional Radiology
Chest
Childs Nervous System
Circulation
Clinical Genetics
Clinical Imaging
Clinical Nuclear Medicine
Clinical Orthopaedics and Related Research
Clinical Radiology
Critical Care Medicine
Diseases of the Colon and Rectum
Epilepsia
European Journal of Nuclear Medicine
Gastroenterology
Gastrointestinal Radiology
Hepatology
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Journal of Clinical Ultrasound
Journal of Computer Assisted Tomography
Journal of Hand Surgery (British)
Journal of Laryngology and Otology
Journal of Medical Ethics
Journal of Medical Genetics
Journal of Neurology, Neurosurgery and Psychiatry
Journal of Neurosurgery
Journal of Nuclear Medicine
Journal of Pediatric Gastroenterology and Nutrition
Journal of Pediatric Orthopedics
Journal of Pediatric Surgery
Journal of Pediatrics
Journal of Rheumatology
Journal of Thoracic and Cardiovascular Surgery
Journal of Trauma
Journal of Ultrasound in Medicine
Journal of Urology
Journal of Vascular Surgery
Journal of the American College of Cardiology
Journal of the American Medical Association
Journal of the Neurological Sciences
Kidney International
Lancet
Magnetic Resonance Imaging
Magnetic Resonance in Medicine
Medical Physics
Neuroradiology
Neurosurgery
New England Journal of Medicine
Nuclear Medicine and Biology-Part B
Obstetrics and Gynecology
Ophthalmology
Orthopedics
Pediatric Cardiology
Pediatric Infectious Disease Journal
Pediatric Radiology
Radiology
Respiratory Medicine
Seminars in Oncology
Skeletal Radiology
Southern Medical Journal
Spine
Stroke
Surgical Neurology
Urologic Radiology
Urology
Zeitschrift fur Kinderchirurgie

STANDARD ABBREVIATIONS

The following terms are abbreviated in this edition: acquired immunodeficiency syndrome (AIDS), central nervous system (CNS), cerebrospinal fluid (CSF), computed tomography (CT), diethylenetriaminepentaacetic acid (DTPA), electrocardiography (ECG), gadolinium (Gd), human immunodeficiency virus (HIV), and magnetic resonance (MR) or MR imaging (MRI), positron emission tomography (PET), and single-photon emission computed tomography (SPECT).

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1 Thorax

Introduction

Although it was a great pleasure to contribute to the 1992 YEAR BOOK OF DIAGNOSTIC RADIOLOGY, it is an even greater pleasure to get to do it again in 1993—even after they've seen my work! I am certain that this is in no small part a reflection on Murray Rebner's excellent comments on mammography. I thank him for helping to keep me on the team and for his even larger contribution this year. Murray's articles on breast cancer and breast imaging follow his introductory comments and constitute the first section of this chapter.

I have subdivided the remainder of the chapter under almost exactly the same headings as were used in the 1992 YEAR BOOK. The first section is topics in CT. I especially call your attention to Swensen's article on CT of the solitary pulmonary nodule. It may change our practices as profoundly as the Hopkins work in the mid-1980s on thin-section CT evaluation of diffuse calcification of pulmonary nodules.

The next section is lung cancer. Several articles discuss missed radiographic findings in lung cancer patients, and several others deal with new imaging agents for lung cancer. The key article in this section is by McCloud. This is a reassessment of the accuracy of mediastinal staging by CT in lung cancer patients. As with Swensen's article, the potential impact on the role of CT in real life is profound.

A new section for me is ultrasound. Although I (and my American chest radiology colleagues) don't do much with thoracic ultrasound, there are many interesting applications that have been pursued by our Asian and European counterparts. It may be time to expand the role of ultrasound in chest radiology; if so, the articles presented here may be a good place for us to start.

Under the heading of new applications in diagnosis and therapy, I expected a flood of articles on digital chest radiography, because more departments are using this new technology. The flood didn't materialize; I actually saw more ultrasound articles this year. Nevertheless, 2 excellent articles on digital chest radiography lead off the section and provide a good model for future investigations. Other applications in this section include MR evaluation of lung parenchyma, complications of newer therapies (e.g., bone marrow and lung transplantation), and new surgical tools.

Utilization review was probably my major theme in the 1992 YEAR BOOK. There is a smaller section on this subject in 1993. It is no less im-

portant than it was previously, and there is again some nice work on the proper role of chest radiography in diverse conditions such as acute asthma, febrile neutropenic patients, and breast cancer. Next year I hope to find good articles that discuss the appropriate use of chest CT.

The final section in this chapter is a potpourri of general topics. There is no overriding theme. Several articles (1 on meningioma and 1 on thymolipoma) question what is generally regarded as common knowledge. Other articles (e.g., the article on searching for lung nodules) are nice treatments of subjects that don't comfortably reside in other sections. As usual, my special favorites are 2 very cute case reports. I hope you get as much pleasure from their images as I did.

Barry H. Gross, M.D.

Breast Cancer and Breast Imaging

Nonpalpable Breast Lesions: Findings of Stereotaxic Needle-Core Biopsy and Fine-Needle Aspiration Cytology

Dowlatshahi K, Yaremko ML, Kluskens LF, Jokich PM (Rush-Presbyterian-St Luke's Med Ctr, Chicago)

Radiology 181:745-750, 1991

1-1

Background.—Although there have been advances in the technique of mammography, it is still difficult to predict accurately the benign or malignant nature of mammographically detected breast lesions. The findings of stereotaxic needle-core biopsy and fine-needle aspiration (FNA) cytology in cases of nonpalpable breast lesions were reviewed.

Methods.—A total of 250 mammographically detected nonpalpable lesions suspicious for malignancy were localized stereotaxically. These lesions were found in women undergoing routine screening mammography. In each case, FNA cytologic specimens and needle-core biopsy specimens were obtained before open biopsy.

Findings.—Of the lesions, 76 (30.4%) were malignant and 83% were 1 cm long or smaller. Needle-core biopsy alone conclusively diagnosed 41% of these cancers. Fine-needle aspiration cytologic study alone was diagnostic in 32%. There were no false positive results in either test. The same diagnosis was reached in 54% when the results of both tests were combined. When the 2 needle tests were applied to 125 mammographically defined low-suspicion lesions, 68% were found to be benign by either 1 or both needle tests. There was 1 lobular carcinoma *in situ*. When the algorithm was applied, 34% of patients with abnormal mammograms, or one third of those recommended for open biopsy, may have avoided surgery.

Conclusion.—It appears that stereotaxic needle biopsy of nonpalpable breast lesions will play an important role in the future diagnosis and management of breast cancer. It will decrease the number of unnecessary breast biopsies and the associated cost, and more women will be

encouraged to participate in screening mammographic surveillance for early detection of breast cancer.

► With the increased use of the stereotactic localization device, the accuracy of FNA cytology has improved, and stereotactic-guided needle-core biopsy has also started to assume importance in the management of nonpalpable breast lesions. The authors note a sensitivity rate of 86% for FNA cytology vs. 71% for fine-needle core biopsy. Specificity for fine-needle core biopsy was 96%, greater than the 72% for FNA cytology.

Both techniques can help to minimize unnecessary surgery for benign lesions, and they can potentially allow 1-stage diagnosis and staging for malignant lesions. It is important to note the poorest results with FNA cytology and fine-needle core biopsy occurred with calcifications. A biopsy of these lesions is still needed if they are mammographically suspicious, despite a negative cytology result. A good cytologist and pathologist are required for both procedures. Optimal needle size and what procedure (FNA cytology or fine-needle core biopsy) is best for a specific type of lesion still may need to be determined with additional comparative studies.—Murray Rebner, M.D.

Nonpalpable Breast Lesions: Stereotactic Automated Large-Core Biopsies

Parker SH, Lovin JD, Jobe WE, Burke BJ, Hopper KD, Yakes WF (Radiology Imaging Assoc, Englewood, Colo; Fitzsimons Army Med Ctr, Aurora, Colo; Pennsylvania State Univ, Hershey, Pa)

Radiology 180:403-407, 1991

1-2

Objective.—If needle biopsy of the breast could be made accurate and dependable, it would probably replace surgical excisional biopsy. Surgical excisional biopsy of the breast was compared with automated stereotactic gun biopsy (using 14-gauge cutting needles exclusively) in 102 patients with mammographically suspicious nonpalpable lesions.

Observations.—The results of gun biopsy and surgical excisional biopsy agreed histologically in 98 cases, including 22 of 23 carcinomas. Two cases that were missed at surgical biopsy were correctly diagnosed with gun biopsy. Two cases missed by gun biopsy were correctly diagnosed by surgical biopsy.

Conclusion.—Stereotactic gun biopsy can be an acceptable alternative to surgical biopsy in women with mammographically suspicious lesions, particularly if a 14-gauge needle is used.

► This paper is one of the first to describe stereotactic-guided large-core biopsy of nonpalpable breast lesions. The authors demonstrated that the technique, when correctly applied, has a high degree of accuracy (96% agreement with histologic diagnosis). The procedure offers an alternative to