NEW TECHNIQUE 98% ACCURATE IN BREAST CANCER DETECTION

A radiologic procedure shown to be over 98% accurate in spotting early, even unsuspected, breast cancer, has been developed by Robert L. Egan, assistant radiologist, section of diagnostic radiology, MDAH.

The mammogram technique, utilizing soft-tissue X-ray examination procedures, permits far more accurate differentiation between benign and malignant lesions than do conventional roentgenograms. Lesions as small as 8 mm. in diameter have been picked up by these low-energy beams.

The technique, according to Dr. Egan, is extremely simple and requires no special radiologic equipment. However, it calls for use of fine grain, Type M industrial X-ray film and relatively low-energy beams in the 26 to 28 kv range. This combination seems to sharpen the inherent contrast between various benign and malignant breast tissues.

The soft-tissue X-rays have been particularly advantageous in revealing small lesions in patients with pendulous breasts containing heavy layers of fat. Ordinarily, it is very difficult to detect small lesions in such cases.

Low-energy roentgenograms have been obtained in 2,600 examinations on patients referred for a variety of mammary or axillary symptoms. Follow up of the first 1,000 examinations on 634 patients, X-rayed between 1956 and 1959, has revealed 245 confirmed breast cancers—of which only two lesions were not demonstrated by this technique. These two were in the axillary and sternal areas which had not been designated for inclusion in the X-ray field. More important, 19 of the cancers found had not been clinically apparent and were unsuspected.

The second series of 1,000 examinations have not been fully evaluated at the present time, but appears to be yielding the same high diagnostic accuracy found in the first series.

Dr. Egan emphasized that the radiodiagnostican must be thoroughly familiar with the appearance of benign and malignant lesions in the low-energy roentgenograms in order to differentiate them. Diagnosis of malignancy rests primarily on characteristics of the X-ray shadow, fine calcifications, and changes in the fibrous septa.

The X-ray beam's low intensity has a minimal radiation hazard, particularly in older women, thus making the procedure suitable in screening for breast cancer.

CLINICAL SYMPOSIUM ANNOUNCED

The Management of Children with Cancer will be the subject of a Clinical Symposium to be held in Houston on November 11 and 12. Sponsors are The University of Texas Postgraduate School of Medicine and The University of Texas M. D. Anderson Hospital and Tumor Institute.

Guest lecturers at the Symposium will include G. J. D'Angio, Department of Radiology, The Children's Medical Center and Harvard Medical School, Boston; Sidney Farber, Children's Cancer Research Foundation and Harvard Medical School, Boston; Lee E. Farr, Medical Director, Brookhaven National Laboratory, Upton Long Island; W. Hardy Hendren, Department of Surgery, The Children's Medical Center and Harvard Medical School, Boston; and M. Lois Murphy, Sloan-Kettering Institute for Cancer Research and Memorial Hospital, New York City.

Aspects of chemotherapy, surgery, and radiotherapy in the management of various types of neoplastic disease in children will be included in the lectures and panel discussions.

Wataru W. Sutow, associate pediatrician, is instructor-in-charge of the Symposium.

For information, write the Office of the Dean, The University of Texas Postgraduate School of Medicine, 410 Jesse Jones Library Building, Texas Medical Center, Houston 25, Texas.

CLINICAL CONFERENCE PLANS SCHEDULED

The Fifth Annual Clinical Conference on Cancer of the Uterine Cervix, Endometrium and Ovary, is designed to provide practicing physicians of Texas and surrounding areas with the most current information on cancer diagnosis and treatment. The conference will be held October 21 and 22 under the sponsorship of MDAH.

World-renowned gynecologist, Dr. Hans-Ludwig Kottmeyer, Karolinska Sjukhuset Radiumhemmet, Stockholm, Sweden, will discuss the Fundamental Problems of Carcinoma of the Ovary, announced MDAH gynecologist, Felix N. Rutledge, Program Chairman.

James W. Reagan, Institute of Pathology, Western Reserve University, Cleveland, Ohio, and staff members of MDAH are scheduled to speak during the Conference. Guest panel members Saul B. Gusberg, Columbia University College of Physicians and Surgeons, New York, New York, and W. G. Cosbie, Ontario Cancer Research and Treatment Foundation, Toronto, Ontario, Canada, together with MDAH panel members, gynecologists, radiologists, pathologists, internists and surgeons, will discuss pelvic lymphadenectomy, irradiation therapy, surgical treatment of recurrence, microscopic grading and radiosensitivity, urological complications of treatment, multiple foci of cervical carcinoma and interval biopsy during therapy.

Last year the Fourth Annual Conference on Tumors of the Head and Neck was attended by 200 conferences.

The Conference is co-sponsored by The University of Texas Postgraduate School of Medicine. The Public Health Service has given a Community Cancer Demonstration Project Grant in support of the Conference.

Members of the Academy of General Practice who desire credit may register in advance with the Postgraduate School of Medicine, Jesse Jones Library, Houston.
NEW DIRECT-READING SILICON PHOTOVOLTAIC DETECTOR

A direct-reading silicon photovoltaic detector for measurement of absorbed dose in body cavities during radiation therapy has been developed in the MDAH physics department. In the form of an intracavitary probe, the device is useful for measuring absorbed dose in the esophagus, bladder and rectum during rotational therapy with cobalt-60 beams.

Normally the calculation of dose received at a depth in a patient during radiation therapy is based on a calculated radiation distribution in an ideal medium, such as water. Muscle tissue is similar to water in the way it absorbs and scatters X-rays and gamma-rays. A patient may have other body components in the radiation beam, such as bone or a lung cavity, that interact quite differently from muscle tissue, and allowance by calculation for the alteration of radiation distribution by these components is complex. The photovoltaic detector can eliminate the calculation of estimated dose given a direct measurement of absorbed dose in the body cavities.

Further study of the probe is being made. In some cases, dosages measured by the probe show a disagreement with calculated doses, and the cause of the disagreement must be determined. The probe, developed by J. C. Calkins of the physics department has been used successfully in seven cases.

CLINIC VISITS AND HOSPITAL ADMISSIONS DURING YEAR

Clinic visits and hospital admissions for the fiscal year of September 1, 1959 through August 31, 1960, were:

- Total Clinic Visits: 124,264
- New Patients: 4,135
- Old Patients: 7,803
- Total Patients Seen: 11,938
- Total Patients Seen: 11,938
- Total Hospital Admissions: 5,216
- Total Hospital Patient Days: 80,941

NEW METHOD FOR LUNG CANCER DETECTION

A method for sputum cell concentration holds promise for detection of early lung cancer. The method—the Millipore Membrane Filter technique, was reported at the Intercytology Council meeting in Chicago, September 23, by Jeffrey P. Chang, M. Anken, and William O. Russell, of the department of pathology at MDAH.

Biggest advantage of the Millipore Membrane Filter technique is that more cells can be studied than was previously possible. To get the same number of cells from a 2 cc specimen by the standard smear technique would require approximately 120 slides. In the new method, only four are required. Another advantage of the technique is that cells are spread out uniformly. In the standard smear technique, the cells frequently overlap—the cell on the bottom could be the cancerous one.

The patient coughs into a jar, where his sputum is collected until a 2 cc. or more specimen is obtained. The specimen is collected in 10 per cent formalin, and as the specimen will keep for several days, it is possible for work on it to be done later.

To prepare the sputum specimen for study, it is washed overnight in saline solution to free it of the formalin fixative. After the washing procedure, the specimen is liquefied with enzyme trypsin. The cells are concentrated by centrifugation, the fluid discarded, and the sedimented cells resuspended in saline. The specimen is pipetted onto Millipore Membrane Filters. Four filters are required to spread out the cells from each 2 cc. specimen. The Papanicolaou staining procedure stains the cells, and the filters are mounted on microscopic slides for study.

Preliminary screening of the slides for cells that might indicate lung cancer is done by specially trained technicians. Suspicious slides are referred to the pathologist for diagnosis.

A small amount of special equipment is required. Aside from the Millipore Membrane Filters, and a special filter holder designed at MDAH, the only materials required are the enzyme trypsin, a centrifuge, and the staining solutions used in the Papanicolaou procedure.

Research on the Millipore Membrane Filter technique has been supported by a grant from the National Institutes of Health, U. S. Public Health Service.

GRANTS ANNOUNCED

Eighteen grants, totaling $281,017, have been awarded to support research and education at MDAH. Included are grants from the U. S. Public Health Service, the National Cancer Institute, the National Institute of Arthritis and Metabolic Diseases, and the American Cancer Society.

Among the grants announced were:

1) $38,100 to Jeffrey P. Chang, associate biologist, for chemical and histochemical studies of carcinogenesis.
2) $18,354 to C. C. Shullenberger, associate internist, for investigational clinical chemotherapy in chronic myelocytic leukemia, acute leukemia of adults, and polycythemia vera.
3) $30,627 to D. E. Bergsagel, associate internist, for study of chemotherapy of chronic lymphocytic leukemia and myeloma.
4) $21,157 to H. G. Taylor, pediatrician, and W. W. Sutow, associate pediatrician, for a cooperative study of clinical chemotherapy in children with acute leukemia and other malignant neoplasms.
5) $30,000 to C. C. Shullenberger, associate internist, for an institutional research grant.
6) $36,650 to H. G. Taylor, pediatrician, for group headquarters, Southwest Cancer Chemotherapy Study Group.

William S. MacComb, chief of the section of head and neck surgery at MDAH, receives the Janeway Medal from Gilbert H. Fletcher, treasurer of the American Radium Society. The award is presented annually by the Society to a lecturer chosen for his outstanding scientific contributions. Dr. MacComb presented the Janeway Lecture, "Treatment of Head and Neck Cancer," at the 1960 annual meeting of the Society, in San Juan, Puerto Rico.
RETIRING EMPLOYEES HONORED

A program was held in the auditorium at MDAH on August 23, honoring those employees who retired from full-time hospital employment on August 31. This was the first such program ever held at the hospital. During the ceremony, service plaques were awarded to the six retiring employees. Those honored were Miss Anna M. Hanselman, supervisor, patient transfer section; Dr. Roy C. Heflebower, consultant on research projects; Mrs. Dovie Heflebower, annex matron; Mrs. Elizabeth Rawls, annex matron; Mrs. Elizabeth K. Huyett, information clerk, appointments and admissions department; and Dr. Charles Phillips, pathologist, department of pathology.

FIFTEENTH ANNUAL SYMPOSIUM

Cell Physiology of Neoplasia, the third volume in the series of MDAH symposium monographs, is in press. The book is a collection of the papers presented at the Fourteenth Annual Symposium, and will be available late in November 1960.

Previous volumes in the series of symposium monographs are Genetics and Cancer, and Radiation Biology and Cancer. Both books are currently available from the University of Texas Press at Austin; order forms are enclosed.

GUEST SPEAKERS AT MDAH

Peter Fitzpatrick, M.D., Department of Radiology, Royal Marsden Hospital, London, England, addressed the General Monthly Staff Meeting on September 14. His topics were “Organization of Radiotherapy in England” and “Electron Beam Therapy.” On October 5, the staff heard a lecture entitled “The Action of Ionizing Radiations on Molecules in Cells,” delivered by Dr. Franklin Hutchinson from the Biophysics Department, The Josiah Willard Gibbs Research Laboratories, Yale University.

Dr. Harry Rappaport, Department of Biophysics, Yale University, was guest lecturer on September 20 at the Research Seminar on Molecular Biology. He spoke on “Recent Results with Small Enzymes in Bacterial Transformation Systems.”

STAFF ACTIVITIES

Daniel Billen, associate biologist, spoke on “Modification of the Capacity of Bacteria to Synthesize Nucleic Acids following X-Irradiation. An In Vitro-In Vivo Study,” at the Tenth International Congress of Cell Biology held in Paris, France, September 5 to 7.

Jeffrey P. Chang, associate biologist, presided at the session on “Preparatory Histochemistry” during the First International Congress of Histochemistry and Cytochemistry held in Paris, France, August 29 to September 3. He also presented two papers: “The Section Freeze-Substitution Technique. II. Application to Localization of Enzymes and Other Chemicals,” co-authored by Samuel H. Hori, department of pathology, and “Histochemical Studies of Early Changes in Rat Liver During Azo-Dye Carcinogenesis.”

R. Lee Clark, Jr., Director and Surgeon-in-Chief, delivered a paper on “Intraglandular Dissemination of Thyroid Cancer” and participated in a panel on “Cancer of the Head and Neck” at the Fourth National Cancer Conference in Minneapolis, Minnesota, September 13 to 15. From October 10 to 14, he attended the 46th Annual Clinical Congress of the American College of Surgeons in San Francisco, California, where he was moderator of a panel on “Palliative Chemotherapy for the Treatment of the Cancer Patient.” He conducted meetings of the College’s Committee on Cancer, of which he is Chairman, and presented an analysis and proposal concerning the cancer program to the Board of Regents of the College.

Murray M. Copeland, assistant director for education, and Renilda Hil kemeyer, director of nursing, participated in a cancer nursing institute sponsored by the Texas Division of the American Cancer Society, and the Corpus Christi Area League for Nursing, District 17, of the Texas Graduate Nurses’ Association, on September 21. Dr. Copeland spoke on “The Total Research Program,” Miss Hil kemeyer’s subject was “The Nurse’s Role in Education and Care of Cancer Patients.”

William S. Derrick, anesthesiologist, has been appointed chairman of the Standing Committee on Research and reappointed for the third term as chairman of the Reference Committee on Standing Committee Reports for the American Society of Anesthesiologists.

Gilbert H. Fletcher, radiotherapist, presented a paper on “Preliminary Evaluation of High Dose Total Pelvis (Staff Activities, continued on page 4)
PRESIDENTIAL ADDRESS TO ALUMNI

Ethics and Medical Research Topic

"As members of a highly specialized group concerned with human life, physicians encounter highly specialized problems," said R. Lee Clark, Jr., Director and Surgeon-in-Chief, in his Presidential Address before the Alumni Association of the Mayo Foundation for Medical Education and Research during their 36th annual meeting in Rochester, Minnesota. There are over 3,000 members of the group.

"The Ethics of Medical Research and Its Human Application" was the topic chosen by Dr. Clark for his address. "Although additions to the laws of medicine have been made throughout the centuries, the moral responsibility of the physician, as stated in the Hippocratic Oath, remains the statement of the ideals of the profession," he said. Recently the American Medical Association formulated a revised code, which closely resembles the Hippocratic Oath.

The evaluation of ethics in medical research is one of the more difficult situations the physician in research must face. "In order to understand man and to solve his health problems, investigations must be carried out on man himself," Dr. Clark, however, emphatically insisted "that all possible preliminary studies must be done in the laboratory, and extensive experimental work must be performed upon laboratory animals before trying to apply the study to a human being."

"It is in this aspect that physicians encounter most difficulty—in knowing how to interpret their responsibility to the patient in order to achieve the utmost benefit for the patient."

Dr. Clark emphasized that there are laws governing new forms of treatment. "The physician should make sure that the treatment method does not vary too much from accepted medical standards. He should explain to the patient and those legally responsible for him all that is known about the method or the material and its mode of action, the fact that there may be reactions not heretofore experienced with it, the risks involved and the consequences that are possible, and the physician must obtain the patient's consent."

"There is a distinguishing factor that separates standard medical practice and medical research," said Dr. Clark. "That factor is a difference in purpose. The purpose of the practicing physician is to aid his patient directly. The purpose of the researcher is to expand knowledge and to apply such knowledge to further research, and in this way aid the patient indirectly."