RADIOLOGY LETTER

A Radiologist's Approach to Imaging Vistas   *Stony Brook University*   *Fall 2002*

Breast MRI

By Paul R. Fisher, M.D.

Associate Professor of Clinical Radiology and Surgery

Chief of Breast Imaging

Dr. Paul Fisher

For the past decade, breast MRI has been proposed as a complimentary imaging modality at leading academic breast centers in the United States and Europe. Mammography remains the mainstay of breast diagnosis, since it allows the early diagnosis of breast cancer in 85% of cases. However, this is a "small comfort" to those women who fall in the 15% of cases on which mammography fails to identify at an early stage clinically significant lesions. For quite a while, it was known that contrast enhanced breast MRI, when done properly, has a very high sensitivity for detecting breast lesions. Studies in the literature indicate a sensitivity of 92 to 98 percent, which is significantly higher than mammography or breast ultrasound. Since breast MRI hardly ever misses significant breast cancer, a normal study is very reassuring and therefore useful.

However, breast MRI also has several Achilles Heels. The most significant to date has been a lack of specificity, i.e. MRI often identifies small benign lesions, and their appearance can mimic that of cancer. Thus, there will be more biopsies generated by breast MRI in general, due to the lack of specific findings in certain cases. Please keep in mind, however, that this is also true for mammography, where four to five biopsies are performed in order to find one cancer based on mammographic features.

Another problem is that ductal carcinoma in situ may be under estimated, or even missed by breast MRI. Reported sensitivity and specificity varies widely in the published literature. This field of research is further muddled by the presence of numerous custom designed breast coils, and custom designed imaging sequences. Therefore, it is difficult to evaluate and corroborate findings from center to center, since both the hardware and software generating the images are often proprietary to individual centers.

All these problems not withstanding, breast MRI has been a very useful tool and continues to improve over time. At the Carol Baldwin Breast Care Center, we recently have won a research grant from Carol Baldwin Research Foundation to continue our research in improving the specificity of breast MRI. In addition to more typical sequences, including T1 weighted imaging and T2 weighted sequences, we have added spectroscopy of suspicious regions and perfusion imaging. The research will examine if such additional sequences improve the specificity, without hurting the sensitivity, of the breast MRI procedure; thereby, increasing its usefulness. Any woman who is scheduled for a breast biopsy procedure, either by ultrasound or stereotactic core biopsy, or open surgical biopsy, is eligible to participate in this study. As participants, they will be given free MRI examinations (usually costing over $1,000 per breast).

Figure 1a and 1b demonstrates a pre and post contrast MRI performed for a 45 year-old woman who presented with enlarged axillary lymph nodes, which were biopsied, and proven to be adenocarcinoma without a known breast primary located. Mammography had failed to identify a lesion as had breast ultrasound. This MRI clearly shows a 1cm lesion in the upper breast, and subsequent review by both mammography and ultrasound was able to identify the lesion, once its location had been identified.
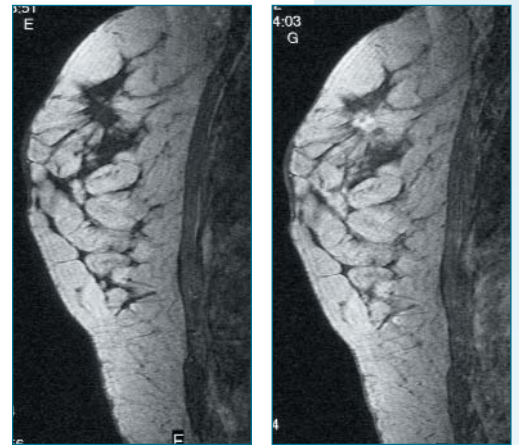
Figures 1A and 1B

A second example is shown in Figure 2. A woman has a breast cancer in the interior breast seen on mammography. Prior to surgery, an MRI was performed. A second small enhancing lesion was seen posterity in the same breast as shown in the figure. This was also needle localized and surgically excised, demonstrating a second small breast primary.

Another example of the excellent sensitivity of breast MRI is demonstrated in Figure 3. The patient has silicone implants and a tiny nodule was seen adjacent to the implant. An MRI lesion was clearly identified and

STONY BROOK
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Chairman's Corner

by Donald P. Harrington, M.D.

Autumn is always an exciting and challenging time in a large academic radiology department. Besides many new residents throughout the hospital, the Department of Radiology is in motion with all of our new residents and fellows settling in as their new academic and clinical journey begins. As I look back at the statistics over the past fiscal year, I note a significant growth of business in the Department of Radiology. Our number of procedures from all sources and locations has topped the 200,000 examination mark. Within the hospital, we have sustained a 7 percent growth.

The Department welcomes Eddie Fiore, M.D. and Hong Meng, M.D. who have joined the faculty staff. As you can see by their profiles in this issue, both are familiar faces throughout the department and institution.

I am pleased to report that we have made significant strides during this year in regards to the turnaround time of reports. 98 percent of our reports are interpreted, dictated and faxed to the referring physician within 48 hours. In addition, approximately 98 percent of all of our reports are dictated utilizing a voice dictation system that prepares the report within seconds of dictation and is immediately available for signature by the attending radiologist. When the report is electronically signed, it is automatically distributed throughout the hospital information system, as well as faxed to the referring physician and a hard copy printed for mailing. The Department of Radiology is one of the frontrunners in utilizing the latest technology and equipment to provide our referring physicians with subspecialty diagnosis and interpretation as soon as possible with many reports being issued within an hour of the procedure. I want to commend both our faculty and residents for their dedication and making this automation a reality.

We can look ahead to a new PACS system within our radiology network that will make not only the images, but the reports available electronically to our referring physicians via the Internet. This coupled with new equipment, approved by the Hospital Administration, will bring the latest state-of-the-art imaging modalities to Stony Brook and our patients. In the future, I look forward to reporting additional information on this project.

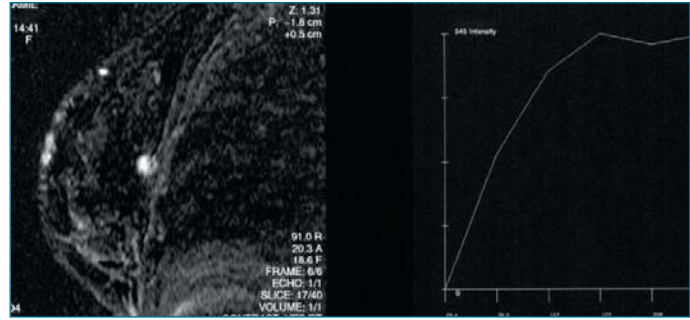*Donald P. Harrington MD*

Breast MRI

Figure 2

was suspicious, and later demonstrated to be a small invasive ductal cancer.

In summary, breast MRI offers us a new modality in the ongoing quest for accurate breast cancer diagnosis. In its present state of development, breast MRI is already very useful in the clinical setting and can only get better with continued improvements and research advances.
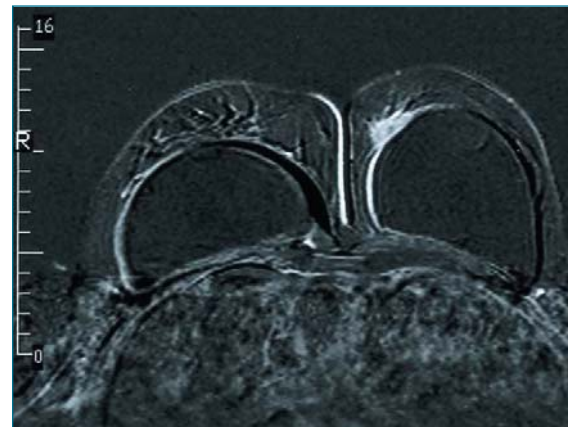

Figure 3

Managed Care Update

Aetna Healthcare
Aetna US Healthcare
American Health Plan
American Medical & Life
Anthem Health
APA Partners (formerly HHS)
Beech Street
BC/BS Managed Care Network
   (HealthChoice, Child Health
   Plus, Fed Emp, Empire
   Deluxe, Blue Choice Sr. Plan)
Blue Cross/Blue Shield
Cambridge
CIGNA
First Health
GHI
HealthFirst
Health Net POS (formerly PHS)
Heritage

HIP (Hip Access and Hip VIP)
Horizon
Island Group Administrators
J.J. Newman
Local 1199 National Benefits Fund
   (Members Choice)
Magna Care
MDNY
Medichoice
Members Choice
Metropolitan Empire
Multiplan
Oxford (Liberty and Freedom)
SelectPRO
Suffolk Health Plan
Tricare
United Healthcare
US Healthcare
Vytra Healthcare

New Faculty

Eddie Fiore, M.D. joined the faculty staff as an Assistant Professor of Clinical Radiology in the Division of Cross-sectional Imaging.

Dr. Fiore received his medical degree from the University of Bologna in Italy. He completed an Internal Medicine residency at Staten Island University Hospital, Staten Island, New York, and a Radiology residency at St. Vincent's Hospital of Richmond, Staten Island, New York. Dr. Fiore completed a Body Imaging fellowship at Stony Brook. Dr. Fiore is Board Certified in Internal Medicine and Radiology and is a member of the American College of Radiology, American Medical Association and New York Roentgen Ray Society.

Hong Meng, M.D. joined the faculty staff as an Assistant Professor of Clinical Radiology in the Division of Cross-sectional Imaging and Diagnostic Radiology.

Before joining the faculty staff, Dr. Meng began her four year Radiology residency at Stony Brook in 1997 and stayed on as a MRI fellow. Dr. Meng received her medical degree from the Beijing University School of Medicine in China, completed her residency in Medicine at Beijing Longfu Hospital, and later spent three years working on her Master of Medicine thesis (Ph.D. equivalent) related to studies of tumor angiogenesis and microcirculation. She continued this research track in the Department of Physiology at the Medical College of Virginia, then worked in the Department of Medicine and Dermatology at Stony Brook with Drs. Barry Gruber and Richard Clark. Her interest in research is an asset to the Department and enhances her teaching capabilities. Dr. Meng is Board Certified in Radiology and is a member of the American College of Radiology, Radiologic Society of North America and the New York State Radiological Society.

Early Lung Cancer Detection with Low Dose CAT Scan

The Department of Radiology at the University Hospital at Stony Brook participated in a research study on early lung detection, which was part of the New York Early Lung Cancer Action Project sponsored by the Academic Medicine Development Company (AMDEC). Volunteers underwent a Cat Scan, which is non-invasive and emanates a low dose of radiation. There was no charge for the scan, which takes less than 30 seconds. Subjects were asked to hold their breath for twenty seconds during the scanning process. Volunteers were required to be 60 years of age or older with a history of being a heavy smoker, i.e. one (1) pack per day for 10 years or two (2) packs per day for five years, no prior cancers of any type and in good health.

As quoted by the American Cancer Society, it is estimated there will be a total of 169,400 lung and bronchus cancer cases and 154,900 deaths in 2002. Early detection of lung cancer can increase the survival rate of the patient. Routine chest x-ray screening is often unable to detect lung cancers until the disease is of an advanced stage. Patients with positive or suspicious CT scans were referred to their physician or to contact a specialist.

Case 1: 61-year-old female with 88 pack-year smoking history. Low-dose screening CT found 1.3 x 0.7 cm module in right lower lobe, biopsy demonstrates adenocarcinoma.

Case 2: 75-year-old female with 40 pack-year smoking history. Low-dose screening CT found 4.0 x 3.7 cm mass in right lower lobe, biopsy demonstrates carcinoid tumor.
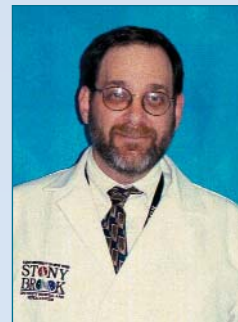
Dr. Cohen

Congratulations to Dr. Harris Cohen who was named as one of the best doctors in New York in Diagnostic Radiology.

Dr. Smith was recognized by the Department of Pediatrics for his "excellence in teaching".

Dr. Smith

Residency and Fellow Graduation Dinner

The Residency Graduation Dinner was held on June 20, 2002 at the Port Jefferson Country Club in Port Jefferson. The event was sponsored by Fuji Medical Systems U.S.A., Inc. Fuji Executives John Weber, Senior Vice President of Operations and James Frillici, Regional General Manager, Northeast were present. It was good to see former alumni Dr. Anca Kranz who graduated from the Residency Program last June.

Congratulations to Ramin Akhavan, M.D., Wei Du, M.D. Xia Lei, M.D. and Zengmin Yan, M.D. in completing their four year Radiology Residency Program and passing the oral boards in Radiology, Dr. Du was our Chief Resident during his last year.

Eddie Fiore, M.D. completed a Body Imaging

fellowship; Sousou Awad completed a Nuclear Medicine fellowship; Louis Amblard, M.D. completed a Special Procedures fellowship; Mindy Scheer, D.O. a Breast Imaging fellowship and Hong Meng an MRI Research fellowship. Dr. Fiore and Meng are now on board as full-time attendings.

Dr. Du presented the "Teacher of the Year Award" to Drs. Matthew Rifkin and Paul Fisher. The "Case of the Week" winner was Dr. Wei Du who received a textbook of his

Graduating Radiology residents Zengmin Yan, M.D., Xia Lei, M.D., Ramin Akhavan, M.D., and Wei Du, M.D. (left to right)

Terry Button, Ph.D. (left), Director of the Research MRI Center, announces Linlin Fu, M.D. is the recipient of the Roentgen Resident/Fellow Research Award

Teacher of the Year Award

Paul Fisher, M.D. (left) congratulates Mindy Scheer, D.O. (right) in completing her Breast Imaging fellowship.

Kathleen Finzel, M.D., Director of the Residency Program, surprises Jerri Christiano, Residency Coordinator, with a bouquet of flowers for her hard work and efforts

Dinko Franceschi, M.D. (right) congratulates Sousou Awad, M.D. completes her Nuclear Medicine fellowship

Matthew Rifkin, M.D. (left) congratulates Eddie Fiore, M.D. in completing his Body Imaging fellowship

Paul Fisher, M.D., Teacher of the Year Award recipient receives congratulations from Wei Du, M.D.

choice. Dr. Linlin Fu received the Roentgen Resident/Fellow Research Award (RSNA Research and Educational Fund) for her accomplishments in radiological investigation.

Many thanks to Dr. Kathleen Finzel, Director of the Residency Program, Jerri Christiano, Coordinator of the Residency Program, Chris Hubbard for organizing the event, the faculty/staff, support staff, nurses and technologists for their work and dedication.

Dr. Harrington, Chairman, (center) with Fuji Executives, James Frillici (left) and John Weber (right)

John Ferretti, M.D., (left) congratulates Louis Amblard, M.D. in completing his Special Procedures and Interventional fellowship

Wei Du, M.D. congratulates Matthew Rifkin, M.D, Teacher of the Year Award Recipient

Twenty-Third Annual Radiology Research Seminar

The Seminar, in conjunction with Winthrop University Hospital in Mineola, was held on Wednesday, May 23, 2002 in the Harold Atkins Learning Center. The third and fourth year residents gave the following presentations:

Adam M. Gittleman, M.D.

Distribution of Deep Venous Thrombosis on Combined CT Venography and Pulmonary Angiography with Emphasis on the Deep Femoral Vein

Indications for Computed Tomography in Anticoagulated Patients Following Head Trauma
Winthrop University Hospital, Mineola, NY

Sandhaya Singh, M.D.

Dynamic Infrared Imaging (DIRI) for the Detection Of Malignancy Generated Nitric Oxide and Assessment of Local Perfusion
University Hospital and Medical Center, Stony Brook, NY

Linlin Fu, M.D.

Preparation for Clinical fMRI
University Hospital and Medical Center, Stony Brook, NY

Maha Barazanji, M.D.

Concordance of MRCP to ERCP in the Diagnosis of Various Obstructive and Nonobstructive Pancreaticobiliary Disease
University Hospital and Medical Center, Stony Brook, NY

Wen Young, M.D.

Iodixanol versus Iohexol for Multislice CT Pulmonary Angiography: A Qualitative and Quantitative Comparison
Winthrop University Hospital, Mineola, NY

*Photo 5
Maha Barazanji, M.D., Sandhaya Singh, M.D., Linlin Fu, M.D., Terry Button, Ph.D. (left to right, front row) Donald P. Harrington, M.D., Wen Young, M.D. and Douglas Katz, M.D., (left to right, rear row) (Adam M. Gittleman, M.D. not shown)*

Laboratory for Imaging Research and Informatics (IRIS)

Tainfang Li, Ph.D. is a graduate student in the Physics Department at Stony Brook. He received a Student Fellowship Award (a check of $3,000 and certification) from the Society of Nuclear Medicine for his thesis work, supervised by Professor Jerome Liang of Radiology, on *"Analytical Approaches to Quantitative Brain SPECT (single photon emission computed tomography)"*. Former awardees of this Fellowship Award include Dr. Jui-Hsi Cheng of the Electrical Engineering Department and Dr. Guoping Han of Physics Department. All have finished their thesis work in Professor Liang's research lab (for detailed information, please visit the lab web site at www.mipl.rad.sunysb.edu/micl).

Lihong Li, Ph.D. is a graduate student in the Electrical Engineering Department at Stony Brook. She has received a student travel support award from the International Society of Magnetic Resonance in Medicine to present her research paper entitled *"A Novel Mixture-Based Segmentation Algorithm for Quantitative Analysis of Multiple Sclerosis Using Multi-Spectral MR Images"* at the Society Annual Meeting. Drs. Li and Jui-His Cheng, Ph.D., former award recipient of this Travel Award, both worked in the Research Laboratory with Professor Liang.

Jerome Z. Liang, Ph.D., Professor in the Departments of Radiology and Computer Science, was invited to serve as a panelist on 3-D CAD (Computer Aided Diagnosis) at the CARS (Computer Assisted Radiology and Surgery) 2002 Conference, which was held in Paris, France from June 26 to June 29, 2002. All the members in the panel are shown in the photo. In addition to the panel role, Professor Liang presented a paper entitled *"Feature-based Approach toward Computer Aided Detection and Diagnosis"*. For more information about the lab research activities, please visit the web site at www.mipl.rad.sunysb.edu/micl

Left to right: Aron Fenster, PhD, Univ. of Western Ontario; Ronald Summers, MD, PhD, NIH; Ken Hoffmann, PhD, SUNY-Buffalo; Jerome Liang, PhD, SUNY-SB; Michael Zalis, MD, MGH; Jianzhong Qian, PhD, Siemens; Hidefumi Kobatake, PhD, Tokyo Univ. of Agriculture & Technology

New Fellows

Mark De Santis, D.O. is a fellow in the Body Cross-sectional Imaging Section. He received his medical degree at Kirksville College of Osteopaethic Medicine in Missouri and completed his Radiology residency at Harlem Hospital Center/Columbia Presbyterian Medical Center, New York, New York.

Paul Vitulli, D.O. is a fellow in the Angiography and Interventional Division. He received his medical degree at New York College of Osteopathic Medicine, Old Westbury, New York completed his Radiology residency at St. Barnabas Hospital in the Bronx, New York.

Xia Lei, M.D. completed a four year Radiology residency at SUNY Stony Brook in July and has stayed on as a Research MRI fellow.

Zengmin Yan, M.D. completed a four year Radiology residency at SUNY Stony Brook in July and has stayed on as a Neuroradiology fellow.

New Residents

Douglas Dougherty, M.D., Ph.D. received his medical degree at SUNY Stony Brook, completed a one year Medical internship at SUNY, Stony Brook and is a first year Radiology resident at the University Medical Center at Stony Brook, New York.

Jamal Naqvi, M.D. received his medical degree at Sind Medical College in Pakistan, completed a one year Surgical internship at Harlem Hospital Center and is a second year Nuclear Medicine resident at the University Medical Center at Stony Brook, New York.

Rosemarie Olivieri-Fitt, M.D. received her medical degree at SUNY Stony Brook, completed a one year Pediatric internship at SUNY, Stony Brook and is a first year Radiology resident at the University Medical Center at Stony Brook, New York.

Nadia Shah, M.D. received her medical degree at the University of Texas, Galveston, Texas, completed a one year Medical internship at Winthrop University Hospital, Mineola, New York.

Sejal Shah, M.D. received her medical degree at the Northwestern University, Chicago, Illinois, completed a one year Medical internship at Evanston Hospital, Evanston, Illinois.
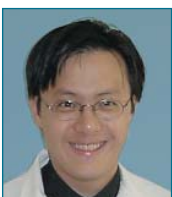
Ben Young, M.D. received his medical degree at the Northwestern University, Chicago, Illinois, completed a one year Surgery internship at the Mayo Clinic, Florida.

William Zucconi, D.O. received his medical degree from NYCOM, Westbury, completed one year Medical internship at New York Hospital, Queens, New York.

Grand Rounds

Joseph Frank, M.D. presented a Grand Rounds on April 10, 2002 on "Cellular Imaging: In Vivo Detection of magnetically Labeled Stem Cell and Mammalian Cells by MRI". Dr. Frank is Chief, Experimental Neuroimaging Section Laboratory of Diagnostic Radiology Research Clinical Center, National Institutes of Health in Bethesda, Maryland.

Glen Krinsky, M.D. presented a Grand Rounds on April 9, 2002 on "Imaging of the Liver". Dr. Krinsky is an Associate Professor of Radiology, Section Chief Abdominal Imaging at New York University in New York, New York.

Michelle Ginsberg, M.D. presented a Grand Rounds on May 14, 2002 on "Unusual Radiologic Presentations of Primary and Metastatic Non-small Cell Lung Cancer". Dr. Ginsberg is Associate Professor of Radiology at Memorial Sloan-Kettering Cancer Center, New York, New York.

Mark Frank, M.D. presented a Grand Rounds on September 19, 2002 on "Digital Teaching Software". Dr. Frank is an Associate Professor of Radiology and Director of Education Technology Development at the Indiana University in Indianapolis, Indiana.

Michael Vannier, M.D. presented a Grand Rounds on September 23, 2002 on "Magnetic Surgery". Dr. Vannier is Professor of Radiology at the University of Iowa and Special Assistant to the Director of the Biomedical Imaging Program at the National Institute of Health in Rockville, Maryland

Lectures

Jian-Zhong Qian, Ph.D. presented a lecture on July 18, 2002 on "Information Fusion for Automatic Lesion Detection in Diagnostic Image Analysis". Dr. Qian is an R&D Program Manager at Siemens Corporate Research, Inc. in Princeton, New Jersey.

Jiang Hsieh, Ph.D. presented a lecture on "Recent Advances in X-ray Multi-slice and Volume Computed Tomography". Dr. Hsieh is a Chief Scientist at the Applied Science Laboratory at GE Medical Systems.

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