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Message from the President

Karen Bove Bettis, R.T. (R)(MR)

The SMRT Annual Meeting will soon be upon us which means that my year as your President will be ending. It is hard to believe that this year has gone by so quickly. However, I leave the presidency in the capable hands of Cindy Comeau, President for 2006-2007. Cindy has been preparing for her term this past year and will certainly, in turn, mentor Carolyn Bonaceto, President Elect for 2007-2008.

The Program Committee, Chaired by Todd Frederick, with input from the Education Committee, put together a meeting program balancing MR safety, body, breast, cardiac and neuro imaging. The local organizing Committee, Vern Terry and Denise Echelard, assisted in these efforts. The SMRT is fortunate to have a roster of exceptional speakers for this meeting who are dedicated to providing quality education for the MRI community.

The SMRT/ISMRM Forum on Monday, 8 May, is meant to be an overview of technical and clinical aspects of imaging the expectant mother, fetus and newborn. Each presentation will address "How To" optimize factors for a successful exam. Thanks go to Bobbi Lewis, SMRT Executive member, and to Jeffrey Duerk from the ISMRM, for organizing this two-hour forum. I hope you will join us for this very interesting program!

Fifty-six abstracts from technologists and radiographers around the world were received in the SMRT central office for consideration. Chaired by Carolyn Bonaceto, members from the Education Committee read, review and score the blinded abstracts per the posted guidelines. Authors who have their proffered papers selected for oral presentations will have their paper titles posted on the Annual Meeting Program on the SMRT Web site. You may want to keep watching the SMRT Web site for updates to the Annual Meeting Program. Final scoring of abstracts accepted for poster presentations will not occur until later in March. All poster presentations accepted for the Annual Meeting will be available for viewing during Friday evening's Poster Walking Tour in Seattle. The authors will be available to discuss their work and selected award-winning posters will be presented to the assembly.

Global outreach is one of the goals of the ISMRM and the SMRT. Finding ways to assist our international members as they strive for recognition and the means of obtaining continuing education has not always been easy. Wendy Strugnell, one of our committed members from Brisbane, Australia, has taken a special project from idea to fruition. The Australian Institute of Radiography (AIR) has approved the SMRT *Educational Seminars* Home Study Program as a Continuing Professional Development (CPD) activity. CPD activity is now a compulsory requirement of membership with the AIR. The SMRT was granted Affiliate Status, which means that the AIR considers affiliation with the SMRT beneficial to the membership of the AIR. The AIR logo will be proudly displayed on future editions of the home study series. Congratulations go to Wendy and to the External Relations Committee, chaired by Julia Lowe, for their efforts as well



Message from the President continued

as a hearty thank you.

The mid-year Policy Board and Executive Committee Meeting was held in Chicago during the Radiological Society of North America (RSNA) meeting. Members unable to attend the conference were able to join the discussions by telephone conferencing. Policy Board and other SMRT members provided staffing for the booth in the Associated Sciences area, taking every opportunity available to spread the word about the SMRT and its various functions.

The President's Regional, scheduled for 18 March 2006, will be the SMRT's first attempt at video conferencing. This regional in Charlottesville, Virginia, USA, will be linked in "real-time" to our SMRT colleagues at the Montreal General Hospital Campus, in Montreal, Canada (5th floor, D5-231). We hope this will be a successful model for future conferences, allowing the SMRT to bring quality MR education to our members, whether they are located internationally or perhaps in rural areas of the United States. We thank the Central Virginia Chapter of the SMRT (Charles Stanley and John Christopher in particular) for hosting this regional seminar. An additional thank you goes to Laurian Rohoman and her crew in Montreal, for assisting in this groundbreaking event.

I would like to take a few moments to thank all of you for allowing me to serve as your President. I must also thank the Policy Board members for their patience this year and for their continued support. We, the SMRT, simply could not exist without their dedication and their volunteer time spent supporting the ongoing efforts. When you join us in Seattle, why not take a minute or two and thank the board and other members responsible for all of the SMRT offerings and the Program at this Annual Meeting.

Appreciation is also expressed to the staff at the ISMRM/SMRT central office in Berkeley, California, USA. Jennifer and Roberta have always been there to guide and support us. Sara, Amanda, Anne, Sally, Katie, Bob, and the rest of the staff...we could not continue without you!

See you all in Seattle! ●

SMRT Educational Seminars Home Study Program

Anne Marie Sawyer, B.S., R.T. (R)(MR), Editor



We are pleased to present the SMRT *Educational Seminars*, Volume 9, Number 1: "MRI of Breast Cancer: Update I." This is the thirty-first home study developed by the SMRT, exclusively for the SMRT members.

A very special thank you to our authors for contributing this comprehensive book chapter to our home study publication. We are extremely fortunate to have these two particular individuals participate given their on-going support of education and training for Technologists and Radiographers. Bruce L. Daniel, M.D. is an associate professor at the Stanford University School of Medicine, Department of Radiology, Stanford, California, USA. Dr. Daniel has been active in clinical and research MR imaging of the breast since his days as a post-doctoral fellow. Dr. Daniel also conducts research in interventional MR. Dr. Ikeda is an associate professor at the Stanford University School of Medicine. Dr. Ikeda conducts research in medical imaging of the breast and is the section head of Mammography in the Department of Radiology, Stanford, California, USA. Both teach as invited speakers worldwide and are well-known published authors of book chapters, peer-reviewed abstracts and articles. Both authors have previously participated as faculty speakers at SMRT regional educational seminars.

In addition, we would like to express our appreciation to Christine Harris from the Children's Hospital of Philadelphia, Pennsylvania, USA and Caron Murray from Sunnybrook and Women's College Health Sciences Centre of Toronto, Ontario, Canada for writing the questions that compose the quiz. Thank you to Robert J. Herfkens, M.D., Professor at Stanford University School of Medicine, Department of Radiology, in Stanford, California, USA, for participating as our expert reviewer.

Thanks also to Mark Spooner, SMRT Publications Chair, and in the

Berkeley, California, USA office of the ISMRM/SMRT, Jennifer Olson, Associate Executive Director, Sara Vasquez, Publications Coordinator, and the staff for their insight and long hours supporting these educational symposia.

Accreditation (USA) for all home study issues of the *Educational Seminars* is maintained annually by the SMRT. Previous issues may be obtained from the SMRT/ISMRM office located in Berkeley, California, USA for twenty dollars (USD) each. For a complete list of back issues, please see pages 11 and 12 of this issue or visit the SMRT Web site: <http://www.ismrn.org/smart>.

Finally, we would like to thank Tom Schubert, John Wilkie and all of the superb people at Invivo/MRI Devices Corporation who support our home studies program, SMRT *Educational Seminars*. Their continuing support of Technologist and Radiographer education brings quality continuing education to the SMRT membership worldwide. ●

The Editor of the SMRT Home Study program and the Publications Committee apologize for the reproduction quality of the figures and the extra pages in the most recent issue "Parallel Imaging." That issue will be reprinted and new copies will be mailed to all SMRT members. A copy of the home study will also be made available to SMRT members at the Web site <http://www.ismrn.org/smart/>.

**—Anne Marie Sawyer, B.S., R.T.(R)(MR)
Editor, SMRT Educational Seminars Home Study Program**

Editor's Letter

Julie Strandt-Peay, B.S.M., R.T. (R)(MR)



Greetings,

In this issue we read the concluding message from SMRT President **Karen Bove Bettis** as she rounds out her term and prepares to pass on the gavel. **Anne Marie Sawyer** presents the latest in the *Educational Seminars* home study series and explains a printing error from the past offering. Program Committee Chair **Todd Frederick** brings us up to date with the final planning stages of the 15th SMRT Annual Meeting Program. Education Committee Chair, **Carolyn Bonaceto** explains the procedure of submitting abstracts to be considered for presentation at the Annual Meeting. She also details the award process for oral papers and posters. **Bobbi Lewis** invites us to the joint forum with the ISMRM with the theme of Mother, Fetus and Newborn imaging. We are given a preview of the city of Seattle, Washington, U.S.A. by **Denise Echelard**. The updated Annual Meeting Program is listed on page 6 for your review.

Do you like to work in MR? Consider entering your site into the Highlight Your Site web-page. **Mark Spooner**, Publication Committee Chair, explains how. **Cindy Hipps** Past-President and Chair of the Nominating and Awards Committee, announces the election results for Policy Board, President-Elect and the Cruess-Kressel Award. SMRT members, especially those outside of North America, are

challenged to host a Regional Seminar by **Denise Davis**. External Relations Chair, **Julie Lowe** has been busy with a variety of organizations and efforts on behalf of the SMRT and the MR community. Local Chapter Chair, **Cindy Hipps**, encourages the formation of a Chapter near you.

The SMRT's mission of MR education is demonstrated in Australia by the acceptance of *Educational Seminars* home study series for continuing education credit. A change in the ARRT continuing education process is explained for those SMRT members who are affected as well as the status of credits for each of the past *Educational Seminars* Home Study offerings.

From Toronto, Canada and London, England the second place award winning papers submitted to the 2005 Annual Meeting and accepted as poster presentations are included in this issue. These abstracts both provide you with useful information and exhibit the quality of work that is offered at the Annual Meeting. MR Safety expert, **Frank Sherlock**, discusses external fixation devices and announces the 2006 edition of the "Reference Manual for Magnetic Resonance Safety, Implants, and Devices." Be sure to check the upcoming SMRT events that are listed for your consideration.

Enjoy! ●

Annual Meeting Program Update

Todd Frederick, R.T. (R)(MR), Chair, Program Committee



The program for the 2006 SMRT Annual Meeting in Seattle is educational and exciting. There is much to look forward to with interesting topics presented from different perspectives by talented speakers.

The meeting will begin on Friday evening, 5 May with the Poster Exhibit and Walking Tour at 18:30. The abstracts have been submitted and are being reviewed by the Education Committee. The posters will be categorized into those with a research focus and those with a clinical focus. No matter where you work or what your area of focus is, you will find something of interest in these posters. The poster authors will be available during this time to answer questions and discuss their work. The Poster exhibit is a great introduction to the

Annual Meeting- a chance to meet new people and get re-acquainted with colleagues and friends in an open and casual environment.

For the didactic sessions we have attempted to offer a blend of Physicians, Scientists, and Technologists presentations. Each of these specialties bring a different view and expertise to our field, and the combination of the speakers will make a remarkable meeting. We have paired speakers to present similar topics from different view points when possible.

Please plan on participating in the Annual Business Meeting conducted at the lunch break on Saturday. This is a chance for you to be introduced to newly elected Policy Board members, witness the award winners and hear about what the Section is doing around the world on your behalf. The Annual

Meeting is a very important function of the Section, but there are many volunteer hours of work all year long that enhance our profession. This is your chance to listen, discuss, and perhaps vote on important issues facing MRI Technologists/Radiographers.

Due to the success in Miami, a Past President's Reception will be held again in Seattle. The exact location is being finalized, but it will be held on Saturday evening and all registered meeting attendees are invited to attend. This reception is possible because generous people and organizations have committed money specifically for providing the venue, food, and entertainment. Denise Echelard and Cindy Hipps have been instrumental in planning this reception.

Frank Sherlock has very graciously agreed to provide copies of

Continued on page 4 ➡

Annual Meeting Program Update continued

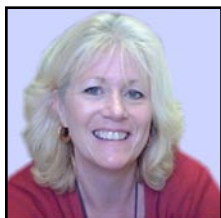
the "Reference Manual for Magnetic Resonance Safety, Implants, and Devices: 2006 Edition" to the first 300 attendees of the SMRT Annual Meeting. Dr. Shellock is always a faithful supporter of the field of MRI and the SMRT, so please thank him for the donation of these books.

Registration for the meeting is open now, and the early registration deadline for reduced program fee is 24 March 2006. You can register on-line and reserve your hotel at <http://www.ismrm.org/smrt/06/>. Make your plans now to be a part of this gathering of your MR professional colleagues! ●



Annual Meeting Abstract and Poster Submissions

Carolyn Bonaceto, B.S., R.T. (R) (MR),
Chair, Education Committee



Each year the SMRT offers MRI Technologists and Radiographers worldwide an opportunity to share their

knowledge by submitting an abstract for consideration of either an oral or poster presentation at the annual meeting. As you read this, abstracts have been submitted for 2006 and judging by members of the education committee is underway. Each submission is blinded in the Berkeley office so that the identity of the author and the institution is unknown to the judges.

Over the past several years

the number of abstracts submitted annually has grown steadily, reaching 67 submissions for the meeting held last year in Miami. The work submitted came from Technologists and Radiographers in 13 countries, demonstrating the SMRT is truly a worldwide organization. Of the 67 submissions last year, 56 were displayed as posters. The quality of the posters is the reason the Friday evening *Poster Exhibit and Walking Tour Reception* is a success and always so well attended. The organizers of this meeting are hopeful that the trend will continue, with even more submissions this year.

Reviewers and judges are members of the Education Committee. For some, this will not be a new experience and others will be judging for the first time. Some have submitted abstracts themselves in the past and will be doing so again this year and some have never done so but will surely be inspired by what they see and read. Because there is the opportunity for conflict, the panel will include alternates who can step in to review an abstract another judge may have authored.

Once the judging is complete the scores are tallied. The most outstanding abstract, determined by the highest overall score, receives the Presidents Award. The winner of the President's Award will present their work as an oral presentation and may also display the work as a poster. This individual also receives an educational stipend to attend the annual meeting.

In addition to the President's Award, there are 12 other awards to acknowledge authors who have submitted exceptional work. They are 1st, 2nd, 3rd for Oral Presentation, Research Focus; 1st, 2nd, 3rd; for Oral Presentation, Clinical Focus; 1st, 2nd, 3rd for Poster Presentation, Research Focus; and 1st, 2nd, 3rd for Poster Presentation, Clinical Focus.

The Program Committee has allowed time during the annual meeting for nine oral presentations. This is an honor for the authors and a great learning experience for the attendees.

In addition to the oral presentations, several of the authors

will be asked to offer their posters for presentation during the Friday evening reception. These presentations offer attendees the chance to ask questions and develop a better understanding of the authors' work. The *Poster Exhibit and Walking Tour Reception* is also an excellent time to acknowledge and thank all the authors for their efforts.

While the task of submitting an abstract might seem daunting, the experience will prove very rewarding. This year, in the call for papers, the Education Committee offered those who were interested in submitting an abstract but had never done so, the opportunity to have a mentor assigned who could help them through the procedure. The SMRT Web site also offers some very detailed and valuable instructions on how the process works.

Abstract submission is available and feasible for all MRI Technologists and Radiographers, regardless of the setting in which they currently practice. While it's true that individuals working in large academic medical centers may have the advantage of working with the most advanced equipment and being involved with cutting edge research, technologists working at sites scanning more standard protocols have just as much opportunity to share an idea that has made an improvement in workflow, patient care or any number of subjects. The day-to-day activities of the technologists working in clinical settings offer a wealth of subject matter that could translate into a first class abstract submission. Have you noticed that you are more successful with claustrophobic patients using a particular method than another? There's an abstract in there somewhere. SMRT accepts submissions for either the clinical or research category. Abstracts need to state a purpose, explain the method, demonstrate the results, and draw a conclusion.

If you didn't submit this year, please consider doing so for next year. Your administrator is far more likely to approve travel for education purposes when you can show that you have extended yourself in your craft. Next year's meeting is in Barcelona, Spain; it would be great to see you and your work there. ●

2006 SMRT and ISMRM Joint Forum

Bobbi Lewis, B.A., ARMRT, Co-Chair 2006 SMRT and ISMRM Joint Forum



You are invited to attend this year's SMRT/ISMRM Joint Forum, "Imaging of Mother, Fetus, and Newborn," to be held Monday, 8 May 2006 from 14:00 to 16:00. This topic was suggested after the popular response to last year's "Clinical Categorical: MRI in Mother, Fetus, and Newborn" in Miami Beach. I was pleased to work with Jeffrey Duerk, Ph.D., Vice President of the ISMRM, in organizing this forum. "Imaging of the Mother, Fetus, and Newborn," presents a new set of challenges to imaging professionals and this forum should address some of those issues.

We have an expert group of speakers who will take us from imaging the mother and fetus through the development of the neonate and pediatric patient. The invited participants are: Norman Farrar A.S., B.S. from Boston, Massachusetts, USA who will discuss "Technical Aspects of Scanning the Pregnant Mother: A Technologist's Overview and Perspective," Deborah Levine M.D., also from Boston will speak on "Fetal MR – Including the CNS" (general techniques and uses with some specific discussion of CNS pathology), Mary Rutherford, M.D. from London, England, UK will present "Imaging the Neonatal Brain: Specific Pathologies – Specific Imaging Protocols," and Pek-Lan Khong, M.D., FRCR from Hong Kong will offer "Imaging the

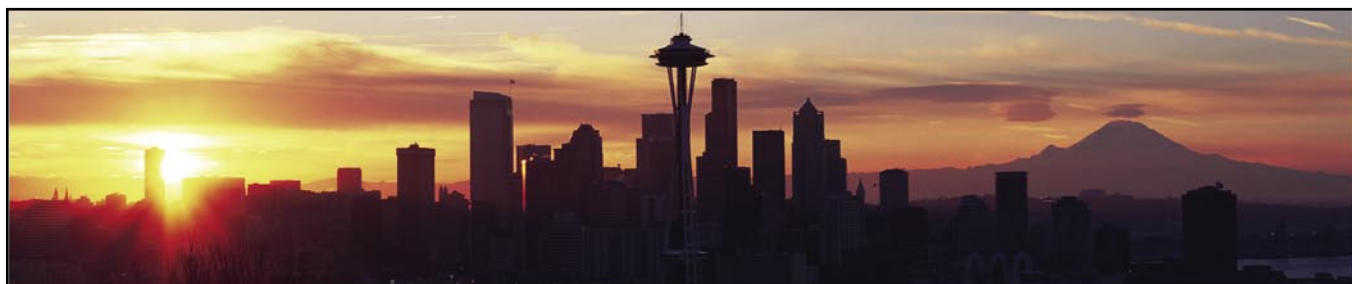
Pediatric Patient: Specific Pathologies – Specific Imaging Protocols."

This course will focus primarily on clinical and technical questions. Attendees will learn:

- to identify basic normal and abnormal fetal or neonatal anatomy;
- understand issues related to patient preparation, anesthesia, and patient handling in order to safely and efficiently expedite neonatal imaging studies;
- optimize pulse sequence parameters and effectively utilize hardware peripherals in order to perform mother/fetus/neonate MRI; and
- evaluate whether prenatal MRI can supplement or supplant another diagnostic examination.

The SMRT/ISMRM Joint Forum is another great educational opportunity for SMRT members. Admission to the Joint Forum is included with your registration for the weekend SMRT meeting. Be sure to stay through Monday afternoon to take in this novel and interesting topic and enjoy another day in Seattle!

We are grateful to Weili Lin, Petra Huppi, Caroline Reinhold, and Carolyn Bonaceto who were instrumental in developing topics and suggesting speakers for this forum. ●



Seattle Welcomes the SMRT

Denise Echelard, R.T. (R) (MR)



Welcome to Seattle, the Emerald City, home of Microsoft, Amazon.com, and the 15th Annual ISMRM Meeting. Sited on the Puget Sound with Lake Washington to the East, Seattle is surrounded by water and ringed by mountains.

In this exciting city there are a multitude of options awaiting you just a short walking distance from your hotel room. A beautiful May day is perfect for exploring the Pike Place Market, one of the nation's oldest farmers

markets. At the market opening rub the head of Rachel the bronze pig for good luck and then start exploring. Watch for flying fish from one of the fishmongers, take in the intoxicating array of fresh flowers and produce and discover local artisan's heady delicacies and funky shops. Take a break across the street at the original Starbucks and steep yourself in the "latte lore" of one of Seattle's most successful icons. The Market and the surrounding Post Alley are home to excellent restaurants and shops, including Sur La Table, the famous kitchen store.

If shopping and fine dining are

on your itinerary, then Downtown Seattle's retail core along 5th and 6th Avenue are your destination. You will find Kenneth Cole, Macy's, Nordstrom's flagship store, and upscale Pacific Place Mall housing Tiffany and Coach stores. For the fashionistas in the crowd, 1st Avenue showcases local and one of a kind designers.

Continuing down 1st Avenue will bring you to historic Pioneer Square, bounded on the south by Qwest Field, home of the Seattle Seahawks and Seattle Mariners Safeco Field. Stroll among the many art galleries featuring international northwest

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"Soaring to New Heights in MR Education"



SMRT 15TH ANNUAL MEETING PROGRAM SEATTLE, WASHINGTON, USA

Friday, 5 May 2006, 18:30-20:30

SMRT Poster Presentation and Walking Tour Reception

Saturday, 6 May 2006, 07:45-17:00

07:45-08:00 Welcome
Karen Bove Bettis, R.T. (R)(MR), SMRT President 2005-2006
Announcements
Todd Frederick, R.T. (R)(MR), 2006 Program Chair
Moderator Charles Stanley, R.T. (R)(CT)(MR)
08:00-09:20 Trends in Diffusion Imaging
Michael Moseley, Ph.D.
Speaker – To Be Announced
09:20-09:50 Proffered Papers
09:50-10:05 Break
10:05-10:55 Colorful Communication
Gina Greenwood, B.S., R.T. (R)(MR)
10:55-11:25 MRI Prostate Technique
Norman Farrar, R.T. (R)(MR)
11:25-11:55 Pulse Sequence Design and Testing
Gareth Barker, Ph.D.
11:55-13:15 SMRT Business Meeting & Awards Luncheon
Moderator Pamela Vincent, MPA, R.T. (R)(M)(CT)(MR)
13:15-15:15 3T Update Forum
13:15-13:45 Pediatric Imaging – 3T, Michael Ditchfield, M.D.
13:45-14:15 Cardiac Imaging – 3T, Paul Finn, M.D.
14:15-14:45 Neuro Imaging – 3T, David Stanley, B.S., R.T.(R)(MR)
14:45-15:15 Body Imaging – 3T, Neil Rofsky, M.D.
15:15-15:30 Break
15:30-16:00 Proffered Papers
16:00-17:00 The Current and Developing Approach to Body MRI:
How and Why We Do It
Diego Martin, M.D., Ph.D.

Sunday, 7 May 2006, 07:45-17:00

07:45-08:00 Welcome
Cindy Comeau, B.S., R.T. (R)(MR), President 2006-2007
Announcements
Todd Frederick R.T. (R)(MR), 2006 Program Chair
Moderator Steve Shannon, R.T., (R)(MR)
08:00-09:30 Breast Forum
08:00-08:45 MR Breast
Constance Lehman, M.D.
08:45-09:30 MR Breast Technique
Michael Coles, R.T.
09:30-10:00 Proffered Papers
10:00-10:15 Break
10:15-11:45 MR Safety Forum
10:15-11:00 MR Safety Update – 2006
Frank Shellock, Ph.D.
11:00-11:45 MRI Facility Safety: How The Design Of Your MRI
Suite Impacts Patient Safety
Tobias Gilk, Ph.D.
11:45-13:00 Lunch
Moderator Vera Miller, B.S.,R.T. (R)(MR)
13:00-13:30 Economics, Design & Marketing Considerations of
Your MRI Center
James Stuppino, B.S., R.T. (R)(MR)
13:30-14:00 MRI Planning for Gamma Knife Radiotherapy
James Stuppino, B.S., R.T. (R)(MR)
14:00-14:30 Imaging for Clinical Trials
Maureen Ainslie, M.S., R.T. (R)(MR)
14:30-14:45 Break
14:45-15:15 Recent Advances in fMRI
Rasmus Birn, Ph.D.
15:15-17:00 MRI Education and Certification Forum
Technologists/Radiographers From Around the World
U.S. – Carolyn Roth, R.T. (R)(MR) (CT)(M)(CV)
Canada – Caron Murray, M. R.T. (R) A.C. (MR)
Australia – Wendy Strugnell, BSc.
Asia – TBA
Europe – Muriel Cockburn, R.T.
Adjourn
17:00

Seattle Sites

- www.seattleattractions.com
- <http://seattle.citysearch.com/section/restaurants>

Downtown Seattle

- www.pikeplacemarket.org
- www.pacificplace.com
- www.internationaldistrict.org
- <http://seattle.mariner.mlb.com/NASApp/mlb/sea/ballpark/index.jsp>
- www.wsdot.wa.gov/ferries/schedules/current
- www.argosycruises.com
- www.10best.com/Seattle/Tours/tours.html
- www.spl.wa.us (look under the Central Branch)

Seattle Center

- www.seattlecenter.com
- www.emplive.org

Outside Areas

- www.wineyakimavalley.org
- www.sanjuanweb.com
- www.mount.rainier.national-park.com
- www.undergroundtour.com
- www.seattleaquarium.org

talents surrounding the pedestrian friendly Occidental Park. Take in an Underground Tour where informative guides will show you a level of Seattle not seen from the street. It's easy to know when you've wandered East into the International District by the imposing dragons curling around the lampposts. The Pan-Asian community is anchored by the exotic Uwajimaya Market and boasts attractions like the Wing Luke Museum and attention-grabbing restaurants.

Catch a colorful trolley to the Waterfront and wander among the shops and restaurants along the docks and piers. Take in the Seattle Aquarium and feed sea gulls outside of Ivar's House of Clams. For a different perspective on Seattle history, book a cruise on Argosy Tours of the cities waterways or an entertaining tour on

Duck Tours amphibious tour buses. Or you can simply hop a 35 minute ferry ride to Bainbridge Island to glimpse the glittering skyline while the sun sets over the Olympic Mountains.

No visit to Seattle would be complete without a trip to the Seattle Center and the 605-ft. Space Needle, the site of the 1962 World's Fair. From the observation deck, you have eagle-eye views of Mount Rainier to the South, the Cascade Mountains to the East, Mount Baker, to the North, and the Olympic Mountains to the West.

The 74-acre grounds of the Seattle Center host numerous international festivals and are home to a sports arena, three nationally-noted theatres, a world class opera house and Paul Allen's wildly inventive structure, Experience Music Project.

Seattle is well-known for its rainy climate and as such provides a wide range of indoor distractions in the form of art-house cinemas, eclectic museums, and live music venues. Because we are known as a book loving city, take the time to take a tour of the new Seattle Central Library. The one of a kind structure, designed by Rem Koolhaas, is mind expanding and memorable.

If you are planning to extend your stay in the Northwest, there is adventure to be found in any direction you head. East of the Cascades, the Yakima Wine region is wowing at wine competitions and a fun way to spend a weekend. To the West is the rugged coastline of Washington with windswept beaches and spectacular scenery. North of Seattle is the Skagit Valley and Whidbey Island, jumping off spots for the emphyreal San Juan Islands accessed by ferry or float plane. Further north is the cosmopolitan city of Vancouver, British Columbia.

Todd Frederick, Carolyn Bonaceto, and the planning committee have put together a cutting-edge program. We are very excited to have the chance to host this meeting and share the bounty of the Northwest. We certainly hope that you plan on spending some time with us to experience all there is to offer. ●

Highlight Your Site: What Makes Your Workplace Unique?

Mark Spooner, B.P.S., R.T. (R) (MR) (CT), Chair, Publications Committee



Would you like to showcase your MRI facility to the world? The SMRT has a feature on its Web site that will allow you to "highlight" your site and describe what makes it unique.

The SMRT makes the process very simple. Just write a few paragraphs describing what makes your facility distinctive and a good place to work. Take a few digital photos of your staff and facility to represent the work being done. Then click on the link to fill out and submit the online form. E-mail the photos in .jpg or .gif format to highlight@ismrm.org. The SMRT office will do the rest to create a professional Web page. To see the Highlight Your Site Web page, go to www.ismrm.org/smrt and click on the Highlight Your Site link.

Please consider spending a few minutes to promote your facility, and the SMRT through the Web site. Your employer will appreciate your ambition and creativity! It would be great to see a cross section of the members of MRI facilities from around the world. ●

SMRT Members

**Highlight Your Site!
Visit...**

**[http://www.ismrm.org/
smrt](http://www.ismrm.org/smrt)**

**and click on the
Highlight Your Site link.**

2006 Election Results

Cindy T. Hipps, B.H.S., RT(R)(MR), Chair, Nominations and Awards Committees



candidates for their willingness to serve the SMRT.

It gives me great pleasure to present to you the new SMRT Policy Board Members as elected by you, the members! You chose the following individuals and they will serve on the Policy Board for a three year term starting at the SMRT Annual Meeting in Seattle, Washington in May. These individuals are: **Randy Earnest** from Utah, **David Stanley** from Minnesota, **Anna Kirilova**, **Caron Murray** and **Nancy Talbot** from Ontario. I hope you will join me in congratulating them to their new positions within the SMRT.

It is also a pleasure to announce the newly elected President Elect of the SMRT, **Carolyn Bonaceto** from Boston, Massachusetts. Carolyn will be installed as President in 2007 at the SMRT Annual Meeting in

Election results are in for the 2006 SMRT Ballot that was mailed to you in October. All of the nominees in this election were highly qualified and any one of them would have served the SMRT in a grand fashion. Only five individuals are elected each year as new SMRT Policy Board members. The nominations committee would like to thank each of the

Barcelona, Spain. Until then, she will be preparing for her duties as she mentors with **Cindy Comeau**, SMRT President 2006-2007.

I am delighted to congratulate the recipient of this year's Crues-Kressel Award, **Maureen Hood!** This award, which began in 1991, is in honor of **Dr. John Crues** and **Dr. Herb Kressel** for their contributions to Technologist education and their support of the SMRT from its beginning. This award is given to an individual who has made "outstanding contributions to the education of magnetic resonance technologists". I think we all agree that Maureen has done that over the years and truly deserves this high honor. Please congratulate Maureen on her contributions to Technologist education as well as her professional contributions to the SMRT. ●



2006 Crues-Kressel Award Winner, Maureen N. Hood, M.S., R.N., R.T. (R)(MR), has been involved in the SMRT since 1992 and received the President's Award in 1998. She has contributed to SMRT publications, chaired the External Relations Committee, and continues to serve on the Education and the RCEEM Committees. She is working full time in MR Research and pursuing a Ph.D.



2006 SMRT President-Elect, Carolyn Bonaceto, B.S., R.T. (R)(MR), is employed as an MRI Manager and an adjunct instructor in Boston, Massachusetts, U.S.A. She has hosted Regional Seminars and is serving as Chair of the Education Committee. Her commitment is to ensure the SMRT meets its goal of education for the worldwide community of MR Technologists and Radiographers.



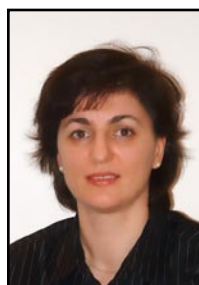
SMRT Policy Board Elect, Caron Murray, M.R.T. (R) A.C. (CT)(MR), is hoping to complete both a Master's degree and an Advanced Certification in MRI in 2006. She hosted a Regional, serves on the Education Committee, and has offered presentations at SMRT meetings. Her position is Senior MRI Research Technologist Toronto, Canada and shes holds other part time jobs to maintain her clinical skills.



SMRT Policy Board Elect, Randall Earnest, B.S., R.T. (R)(MR), is presently the Director for GlobalRad, an organization that provides teaching files for physicians throughout the world. He has served on several committees and appreciates what the SMRT has offered to the MR profession. His goal is to present an extensive and varied experience to promote the work of the SMRT.



SMRT Policy Board Elect, David W. Stanley, B.S., R.T. (R)(MR), currently works for GE Healthcare Technologies, Milwaukee, Wisconsin, U.S.A. He has been an invited speaker and has presented papers and posters at several meetings. He hopes to apply his years of educational and technical development experience to further advance the goals and objectives of the SMRT.



SMRT Policy Board Elect, Anna Kirilova, BSC, M.R.T. (R)(MR), received her initial training in Bulgaria and after several moves accepted a position in Toronto, Canada. She established the first MRI system in Canada designated for research and follow-up of treatment response in cancer patients. Her unique international experience will be an asset to the SMRT.



SMRT Policy Board Elect, Nancy Talbot, M.R.T. (R)(MR), assumed the role of Charge Technologist for two hospitals supervising four MRI scanners, in 2005. In addition, she teaches for the Michener Institute. She is involved with the Ontario Wait Time strategy MRI/CT advisory committee and is working with the CAMRT on revising the MRI Competency Profile.

Regional Seminars: A Challenge for International Members

Denise Davis, B.S., R.T. (R) (MR), Chair, SMRT Regional Seminars



Since its inception, the SMRT has been committed to promoting education and communicating information within the field of magnetic resonance, worldwide, through multiple forums. The annual meeting, held in conjunction with the International Society for Magnetic Resonance in Medicine (ISMRM), is one such forum. The regional seminars hosted by SMRT members, are important alternatives to those who may not be able to attend the annual meeting or for those seeking additional educational opportunities. This past fiscal year, a record eight seminars were offered throughout the continental United States:

- Boston, Massachusetts, USA, 2 October 2004
- Charleston, South Carolina, USA, 9 October 2004
- Stanford, California, USA, 6-7 November 2004
- Seattle, Washington, USA, 27 February 2005
- Syracuse, New York, USA, 9 July 2005
- Pittsburgh, Pennsylvania, USA, 6 August 2005
- Atlanta, Georgia, USA, 17 September 2005
- Toronto, Canada, 24 September 2005

The new fiscal year, beginning 1 October 2005, has started with a bang! The SMRT Northeast Regional was held in New York on Saturday, 15 October and chaired by Carol Finn and Cindy Comeau; the second Northeast Regional was held in Boston on Saturday, 22 October and chaired by Patricia Devine, John Shirosky, Paul Wilson, and Carolyn Bonaceto, and the West Regional, which took place over two days, Saturday and Sunday, 12-13 November, was chaired by Anne Sawyer and Maureen Ainslie. Regional seminars already planned for the remainder of this fiscal year include:

- Charlottesville, Virginia, USA, 18 March 2006 – President's Regional

- Pittsburgh, Pennsylvania, 23 September 2006
- Toronto, Canada, Date to be announced

Considering the international nature of our organization, the SMRT continues to look for opportunities to offer regional seminars outside of North America. We are calling on you, our international members, to accept this challenge and host a regional seminar in 2006. Information is available on the SMRT Web site and we are ready and eager to assist you! ●

External Relations Committee Report

Julie Lowe, B.S., R.T. (R) (MR), Chair, External Relations Committee



The meeting of the Radiological Society of North America (RSNA) 2005 has come and gone. The Associated Sciences Consortium (ASC) planned a successful program for RSNA 2005 which was evident by the increased attendance at the ASC refresher courses and symposium. For example, the "Development of the Radiologic Assistant" and the "PET/CT and SPECT/CT" courses were both well attended and very informational. The ASC tried a new strategy this year by consolidating the courses into tracks to be presented on Monday, Tuesday, and Wednesday. The attendance numbers and comments have been reviewed at the RSNA ASC Planning meeting in Chicago on 23 January 2006.

SMRT External Relations Committee (ERC) Chair, Julie Lowe and Past-President, Cindy Hipps met with Elaine Dever, Director of Education, Canadian Association of Medical Radiation Technologists (CAMRT) during RSNA at the Associated Sciences display area. The CAMRT serves as a certifying body, advocates and supports the Canadian

MR technologists and is also a RCEEM. The SMRT and CAMRT are members of the Associated Sciences Consortium. This meeting served as an opportunity to compare and discuss our goals for MR education, MR competency, and the non-R.T. pathway to the MRI registry. Look for the new link to the CAMRT Web site on the SMRT Web site, "Links of interest".

The SMRT continues to support the Consumer Assurance of Radiologic Excellence (CARE) Bill by attending and actively participating in the Alliance for Quality Medical Imaging & Radiation Therapy Meeting held in Washington D.C., USA, 27-28 February. Several groups from the Alliance meet in Washington to continue the revision of the Health and Human Services Regulations for the CARE bill. The ERC revised the "Standards for Accreditation of Educational Programs for Magnetic Resonance Technologists," which is a section of the regulations. This revision was presented to the SMRT Policy Board and Executive Committee members during the RSNA meeting in Chicago. A motion was made to vote on accepting the revision and the motion was passed. The revision will be sent to Christine Lung, Director of Government Relations, American Society of Radiologic Technologists (ASRT) in preparation for the Alliance Meeting.

The Allied Health Reinvestment Act is proposed legislation spearheaded by the Association of Schools of Allied Health Professionals (ASAHP). It is a bill to amend the Public Health Service Act to promote and improve the allied health professions. Congress has found that there is an increased demand for healthcare services which are confounded by workforce shortages and declining enrollments in allied health education programs. The purpose of the Allied Health Reinvestment Act is to provide incentives for individuals to seek and complete high quality allied health education and training. Additionally, the bill provides funding to ensure that such education and

Continued on page 10 ➡

training can be provided to allied health students so that the United States healthcare industry will have a supply of professionals needed to support the healthcare system in this decade and beyond. Of particular concern to SMRT members is the fact that the act does not list MR imaging as an allied health profession (Section 799C. Definitions, Allied Health Professionals). MR imaging is also not recognized by other divisions of the federal government such as the Bureau of Labor and Statistics. In collaboration with the Health Professions Network, the SMRT will work to gain representation for magnetic resonance imaging in this bill and with the Bureau of Labor and Statistics. Look for an update on this effort in upcoming ERC reports.

The Australian Institute of Radiography (AIR) has recently implemented a Continuing Professional Development (CPD) program for Australian radiographers and MR technologists. Wendy Strugnell, former Queensland State representative of the AIR and current Policy Board member of the SMRT, is responsible for the recent approval by the AIR to recognize the SMRT *Educational Seminars Home Study* series as eligible CPD credit. Now, an AIR member who is also a member of the SMRT can complete the home study quiz and be awarded credits by the SMRT. Those credits will be recognized by the AIR in fulfilling that technologist's CPD. Wendy has worked very hard at this for months and deserves recognition and many thanks! We look forward to providing an update on this issue at the 2006 SMRT Annual Meeting in Seattle.

The ERC accomplished many goals in 2005 and is now ready for the challenges that 2006 may bring. The SMRT represents a strong group of professionals with the mutual goal of promoting our profession by maintaining high educational standards. As the standards of continuing professional development become compulsory in nations around the world, the SMRT will continue to grow into a strong and more global society. ●

Australian SMRT Members: Earn Credits through SMRT Educational Seminars Home Study Exams & Reading

The SMRT *Educational Seminars Home Study* Program is now a recognized Continuing Professional Development (CPD) activity of the Australian Institute of Radiography (AIR). Quote the appropriate appellation number when you log your credits.

The number of credits allocated by the SMRT for the Home Study is printed on the first page of the Quiz Form. You can only claim credits for Appellation 389.2 if you complete the quiz, pass and receive a certificate from the SMRT. The number of credits allocated is also printed on the certificate.

If you read the Home Study and do not complete the quiz you can use Appellation 389.1 and claim one credit per Home Study.

For more information on the CPD program of the AIR visit www.a-i-r.com.au/cpd/index.html.

AIR Approved CPD Activity

HOME STUDY READING/EXAM CERTIFICATE
credit as per SMRT
Appellation 389.2

AIR Approved
HOME STUDY READING
1 credit per article
Appellation 389.1 Valid to 10 July 2006

Look for these AIR approved symbols inside your SMRT Educational Seminars Home Study!

SMRT Local Chapters: Are You Ready?

Cindy T. Hippias, B.H.S., RT(R)(MR), Chair, Local Chapters Committee



Are you interested in starting a local SMRT Chapter in your area? Join the ranks of other Technologists and Radiographers who want to see the SMRT in their area by completing an application and planning your first meeting. Recently, the SMRT has been contacted by Susie Sullivan from Oklahoma, Sharon Greer from San Diego and Melonee Elrod and Wendy Porter from South

Carolina who want to start new SMRT Local Chapters in their areas. The local chapter's packet is being revised and these individuals are helping me by making sure the packet contains everything they need to get started. Do you need a packet? If so, contact me at cthipps@charter.net or Jennifer Olson at jennifer@ismrm.org for more information. Don't you think it is time to get involved? You can promote the SMRT mission by hosting quality education opportunities in your own back yard! ●

IMPORTANT NOTICE SMRT *EDUCATIONAL SEMINARS* HOME STUDY PROGRAM - CONTINUING EDUCATION UPDATE



As of 1 January 2006 the American Registry of Radiologic Technologists (ARRT) has made a change in CE approval regarding directed readings, post-tests and Category A CE credit.

Self-learning activities such as directed readings and home studies that are approved after 1 January 2006 will continue to be evaluated on the content (depth, scope, and relevancy). CE credits will be awarded based on the time spent to complete the learning portion of the activity. Since the primary purpose of the post-tests for ARRT is verification of participation, they are not considered a learning activity. Time spent completing post-tests will no longer be awarded CE credit.

The credits awarded to previously approved CE activities being **renewed** after 1 January 2006, must be adjusted to meet the new 2006 ARRT requirements. The SMRT RCEEM Committee is working toward compliance with the new ARRT CE requirements by reviewing all past issues of the home studies to update the amount of CE credits awarded.

All of the SMRT *Educational Seminars* Home Studies are listed with their current Category A CE credit amounts and their annual renewal dates. SMRT members will have up until the current annual renewal date as listed below to earn CE credits by completing the post test quiz and sending it to the SMRT office prior to the annual renewal date. Please check the SMRT Web site for updates on the new 2006 CE credit renewal amounts. All past issues of the home studies will be renewed for two years for Category A CE credit.

Volume Number	Renewal Date	Current CE Credits	SMRT <i>Educational Seminars</i> Title
Vol. 1, 1	01 April 2006	5.0	Functional MRI: Capabilities and Limitations.
Vol. 1, 2	01 December 2006	5.0	Concepts in MR Physics.
Vol. 2, 1	01 February 2008	3.5	Considerations in Low Field MRI.
Vol. 2, 2	01 June 2006	4.5	Directions in Basic Cardiac Imaging.
Vol. 2, 3	01 October 2006	4.5	Directions in Advanced Cardiac Imaging.
Vol. 2, 4	01 December 2006	3.0	The Basics of Magnetic Resonance Angiography.
Vol. 3, 1	01 April 2006	4.0	Introduction to Spectroscopy.
Vol. 3, 2	01 July 2006	3.0	Renal MR Imaging.
Vol. 3, 3	01 October 2006	4.5	A Primer on MR Pulse Sequences.
Vol. 3, 4	01 January 2008	2.5	Artifacts Encountered in Abdominal MRI.
Vol. 4, 1	01 March 2008	3.0	Safety Aspects in MRI.
Vol. 4, 2	01 September 2006	5.0	Directions in MRI of the Liver.
Vol. 4, 3	01 September 2006	3.5	MR Techniques in the Evaluation of the Uterus.
Vol. 4, 4	01 December 2006	4.5	Fundamental Principles for MR Imaging of the Brain.

Continued on page 12 ➡

The image shows the cover of a seminar booklet titled "SMRT Educational Seminar". The main title is "MRI of Breast Cancer: Update I". Below this, it says "SECTION FOR MAGNETIC RESONANCE TECHNOLOGISTS". The booklet is edited by "VOLUME 6 • NUMBER 2". The authors listed are: "Authors: David G. Glick, M.D., David H. Smith, M.D., John H. Garra, M.D., and Robert E. Hendrick, M.D." The publisher is "American Society of Magnetic Resonance Technologists, Inc., P.O. Box 2000, Rockville, MD 20850". The booklet is described as "The Bulletin for Magnetic Resonance Technologists, designed to disseminate knowledge to personnel involved in the SMRT Educational Seminar". There is a small logo at the bottom right that says "SMRT" with a stylized figure inside a circle.

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2005 2nd Place Poster Presentation, Clinical Focus–

The Use of Magnetic Resonance Direct Thrombus Imaging in Identifying Patients with High Risk Complicated Plaque

Susan Crisp¹, M. Forbes¹, G. Leung^{1,2}, R. Bitar^{1,3}, A. Moody^{1,3}

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Susan Crisp, RT(NM)(MR)

Purpose: Cerebrovascular disease or stroke is the third leading cause of death in developed countries (1). Clinical management of those who are at risk for stroke, has typically relied on the detection of carotid stenosis >70% (2). However, it has been shown that the presence of complicated plaque in an artery increases the risk of stroke independent of the degree of stenosis (3). Complicated plaque is characterized primarily by the presence of intraplaque hemorrhage, thrombus and surface disruption (4). It poses the highest risk as it is prone to rupture without warning, allowing the plaque contents to spill out in the vessel forming potentially fatal thromboemboli (4). We utilize a non-invasive technique, as previously demonstrated (3), but adapted for a 1.5 Tesla GE Twin Speed- Excite II scanner (GE Medical Systems, USA). This method is focused on the identification of complicated plaque in the carotid arteries based on exploiting the presence of methemoglobin within the intraplaque hemorrhage and thrombus. Methemoglobin exerts a T1 shortening effect (3), which will give rise to abnormally increased signal seen within the arterial wall. Early identification of complicated plaque in patients is beneficial as it may provide an opportunity to intervene and stabilize the plaque.

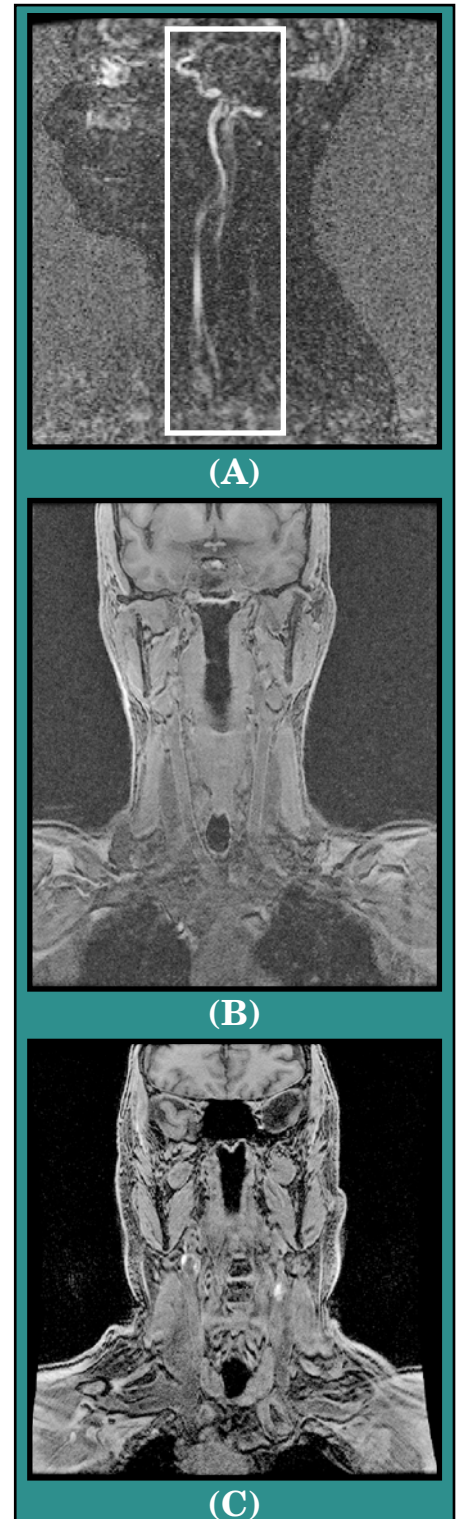
Methods: Imaging was performed on a 1.5 Tesla GE Twin Speed- Excite II scanner (GE Medical Systems, USA) using an eight channel neurovascular phased array coil (USA Instruments, USA) with coil configuration set to 8NVarray_all. A phase contrast 3D sagittal localizer was acquired initially to give a high contrast image of the head and neck vessels. Image parameters were TR/TE/θ/BW/NEX 33/6/20°/15/3; with a matrix of 256X192, FOV size of 30 cm, and slice thickness of 70mm, 0 gap. The MRDTI sequence, acquired in 4.5 minutes, used a T1 weighted 3D fast spoiled gradient echo sequence acquired with a 30cm FOV in the coronal plane. Image parameters were TR/TE/θ/TI/BW/NEX 7.0/2.1/15°/23/31.25/3 with a matrix of 320X320, slice thickness of 2mm, and 40 locs/slab. Fat suppression was achieved using the SPECIAL (Spectral Inversion At Lipids) GE proprietary technique. A large coronal volume was used in the sequence for saturation of flow from the heart and great vessels.

Results: The phase contrast localizer (Figure A) allows visualization of the carotid arteries. The graphic prescription (rectangle) that is used to obtain the coronal MRDTI sequence is centered over the carotid bifurcation. A normal MRDTI scan (Figure B) shows no increased signal in the carotid arteries. However, abnormally high signal is seen bilaterally at the level of the carotid bifurcation (arrows) indicating the presence of complicated plaque (Figure C).

Conclusion: MRDTI is a non-invasive technique that can be applied to an in vivo study of carotid complicated plaque. This technique can be adapted on other commercially available scanners and coils. The 3D application allows for reconstruction and multi-planar visualization of vessel walls. The ease of use and implementation make the MRDTI sequence ideal not only for the diagnosis and identification of complicated plaque, but also to monitor the effectiveness of drug and surgical interventions on a regular basis in the clinical setting.

References:

1. World Health Organization. The Atlas of Heart Disease and Stroke. 2004
2. Nederkkoorn PJ et al. Stroke 2002;33:2003.
3. Moody AR et al. Circulation 2003;107:3047.
4. Stary HC et al. Circulation 1995;92:1355-1374.



Evaluation of Synovitis Using Dynamic Contrast-Enhanced Magnetic Resonance Imaging in Comparison to the RAMRIS Scoring System



John Totman,
DCR(R)/MSc.

John Totman¹, J Berry¹, D, Svasti-Salee¹, DA Elias¹, CJ Wilkins¹, Z Stubbs¹, J Poole¹, K Satchithananda¹, L Pollard², E Choy²,
¹Department of Clinical Imaging, King's College Hospital, London, UK, ²Department of Rheumatology, King's College Hospital, London, UK

Purpose.

Rheumatoid arthritis (RA) is a systemic, immune based, progressive inflammatory disease affecting 1% of the population.

In the articular component of the disease, inflamed synovium causes swelling, pannus formation and bone erosions. Current therapies suppress inflammation and thus reduce the destructive sequelae. Imaging is pivotal in diagnosis, assessment of disease extent, and monitoring of therapeutic response. Conventional radiography is the standard method for imaging of rheumatoid arthritis but is insensitive for early disease or minor changes in activity. Magnetic Resonance Imaging (MRI) has a 2–3 fold greater sensitivity for bone abnormalities than conventional radiography¹. The presence of subchondral marrow oedema carries a 6.5 fold increased risk of developing a radiographically detected erosion at that site within 1 year². The rheumatoid arthritis magnetic resonance image scoring system (RAMRIS) is being developed by an international collaboration seeking to unify outcome measures in RA³. This includes assessment of synovitis and bone changes on MRI. The synovial volume and the rate of enhancement on dynamic MRI following intravenous gadolinium contrast administration (CEMRI) correlates with the histological severity of synovial inflammation as well as clinical markers of disease activity and we wish to look at this as an adjunct to RAMRIS⁴⁻⁶.

Methods. At pre-treatment evaluation, the most clinically active hand or wrist is identified for imaging. From amongst the 2nd to 5th metacarpo-phalangeal and wrist joints (the wrist being counted as a single joint), the most clinically active joint is designated the 'index' joint. MR examinations are performed using a 1T Harmony system (Siemens, Erlangen, Germany). Patients are examined supine, arms by the side and the selected

wrist pronated in a small flex coil, immobilised in a plastic mould support. A 20G venous cannula is placed in the contralateral antecubital fossa. Coronal and axial MR sequences are prescribed to include the distal radio-ulnar joint up to the MCP joints. Axial sequences are each performed in 2 separate blocks through the wrist and MCP joints respectively. Sequences are performed in the following order: Coronal and Axial STIR, Coronal and Axial SE T1

Intravenous gadolinium (0.2ml/kg Gadovist, Schering AG, Germany)⁷ is then administered at 4ml/s using an automated pump immediately followed by a 20ml saline flush. This followed by Coronal dynamic VIBE T1 (TR 9.0, TE 1.6, FOV 120x120, 11 scans each 30sec duration; injection commenced at start of second scan) an Axial and Coronal SE T1.

Except where movement is excessive, pre contrast axial T1 weighted images are subtracted from corresponding post contrast images. Image analysis is performed as follows measuring each parameter at each of the 2nd to 5th MCP joints and at the wrist: Bone Erosions, Oedema and Synovitis measured according to the RAMRIS definitions³:

Erosion – sharply marginated bone lesion with correct juxtaarticular localisation and typical signal characteristics (high signal on STIR images, low signal on T1W images), visible in two planes with a cortical break seen in at least one plane. Each bone (carpal bones, distal radius, distal ulna, metacarpal bases, metacarpal heads, phalangeal bases) is scored separately. The scale is 0 – 10 based on the proportion of eroded bone, compared to the 'assessed bone volume' judged on all the available images: 0: no erosion; 1: 1-10% bone eroded etc... For long bones 'assessed bone volume' is from articular surface to a depth of 1 cm. For carpal bones 'assessed bone volume' is the volume of the whole bone.

Bone oedema – Lesion within the trabecular bone with ill defined margins and signal characteristics consistent with increased water content. Scoring

system by volume of involved bone as per erosion score above.

Synovitis – is scored for the 2nd to 5th MCP joints and the wrists: Score 0-3: where 0 is normal; 1-3 are thirds of the presumed maximum volume of enhancing tissue in the synovial compartment. The maximum thickness of enhancing tissue is measured perpendicular to the cortical surface of bone. Additionally, on each post contrast axial T1w image through the index joint, a ROI is drawn around synovial tissue. The pre contrast T1w axial sequence and the subtraction images are used to guide placement of the ROIs. The areas of the ROIs are summed and multiplied by the slice interval to obtain a synovial volume.

The dynamic VIBE sequence is transferred to a Leonardo workstation (Siemens Medical Systems, Erlangen, Germany) and an ROI is drawn over the largest area of enhancing synovium in the index joint. An enhancement curve is created and from this, the maximal slope of the curve is measured as the maximal enhancement rate. The ratio of peak synovial signal to baseline signal is recorded as peak enhancement ratio.

Results. Preliminary results have identified changes in enhancement rates, synovial volumes and RAMRIS scores pre and post treatment correlation between the techniques is awaited.

Conclusion. We have found dynamic contrast-enhanced MRI examination to be useful techniques in evaluating bone and synovial inflammatory changes in the hand and wrist of patients with rheumatoid arthritis and may prove a useful adjunct to RAMRIS.

References: 1) Klarlund M et al. Acta Radiologica 1999; 40:400-409. 2) McQueen FM et al. Ann Rheum Dis 1999; 58:156-163. 3) Østergaard M et al. J Rheumatol 2003; 30:1385-1386. 4) Tamai K et al. Arthritis Rheum 1994; 37:1151-1157. 5) Huang J et al. Rheumatology 2000; 39:407-416. 6) Szkudlarek M et al. Arthritis Rheum 2004; 50:2103-2112. 7) Oliver C et al. Clin Radiol 1996; 51:487-493.

External Fixation Devices and MRI Safety

Frank G. Shellock, Ph.D., FACC, FACSM

This article represents the views of its authors only and does not reflect those of the International Society for Magnetic Resonance in Medicine and are not made with its authority or approval.



Most orthopedic implants and materials do not pose problems for patients undergoing MRI procedures. However, because of the length of the implant or the formation of a conductive loop, MRI may be hazardous for certain orthopedic implants, namely external fixation systems.

External fixation systems comprise specially designed frames, clamps, rods, rod-to-rod couplings, pins, posts, fasteners, wire fixations, fixation bolts, washers, nuts, hinges, sockets, connecting bars, screws, and other components used in orthopedic and reconstructive surgery. Indications for external fixation systems are varied and include the following treatment applications:

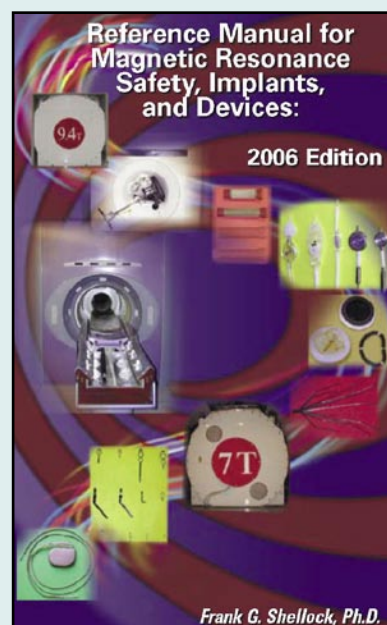
- Open and closed fracture fixation;
- Pseudoarthroses of long bones (both congenital and acquired);
- Limb lengthening by metaphyseal or epiphyseal distraction;
- Correction of bony or soft tissue defects; and
- Correction of bony or soft tissue deformities.

The assessment of MRI safety issues for external fixation systems is especially challenging because of the myriad of possible components (many of which are made from conductive materials) and configurations used for these devices. The primary concern is MRI-related heating which is dependent on the particular aspects of the external fixation system. Importantly, the specific MRI conditions (strength of the static magnetic field, RF frequency, type of RF transmit coil, pulse sequence, body part imaged, etc.) directly impact the safety aspects of scanning patients with external fixation systems.

In order to ensure patient safety, guidelines must be applied on a case-by-case basis. Therefore, MR users are referred to product labeling approved by the Food and Drug Administration for a given external fixation system.

Reference

Shellock FG. Reference Manual for Magnetic Resonance Safety, Implants, and Devices: 2006 Edition.



The Reference Manual for Magnetic Resonance Safety, Implants and Devices: 2006 Edition is an indispensable textbook for radiologists, MRI technologists, and facility managers. This annually revised, internationally acclaimed textbook series is a comprehensive resource that includes up-to-date guidelines and recommendations for MRI safety based on the latest peer-reviewed publications. This manual provides information for implants and devices tested for safety in the MRI environment. "The List" now contains tabulated information for more than 1,400 implants and devices, including data for over 400 objects tested at 3.0-Tesla or higher.

New features include patient screening forms in English and Spanish, guidelines for scanning patients with current generation cardiac pacemakers, and other electronically activated devices as well as information for MRI contrast agents.

Biomedical Research Publishing Group, Los Angeles, CA
ISBN 0-9746410-2-2

\$62.00 plus \$8.00 shipping and handling (standard delivery, U.S. only)

To order, download an order form from www.MRIsafety.com or contact Magmedix (www.Magmedix.com), telephone (866) 646-3349

ISMRM/SMRT CALENDAR

ISMRM Workshop on Real-Time MRI: Dynamic Interactive Imaging and Its Applications **23-24 February 2006**

Doubletree Guest Suites
Santa Monica, California, USA

SMRT President's Regional Seminar **18 March 2006**

University of Virginia, Charlottesville, Virginia, USA
(Video conference at Montreal General Hospital Campus
Montreal, Canada)

SMRT 15th Annual Meeting **5-7 May 2006**

Washington State Convention & Trade Center
Seattle, Washington, USA

ISMRM 14th Scientific Meeting & Exhibition **6-12 May 2006**

Washington State Convention & Trade Center
Seattle, Washington, USA

ISMRM Workshop on Flow and Motion: Imaging Assessment of Cardiovascular and Tissue Mechanics **13-16 July 2006**

NYU Medical Center
New York, New York, USA

SMRT Northeast Regional Educational Seminar **23 September 2006**

University of Pittsburgh Medical Center
Pittsburgh, Pennsylvania, USA

ISMRM Workshop on MR of Cancer: Frontiers in Metabolic, Molecular and Clinical Imaging **13-16 October 2006**

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in MR Education"*



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