WELCOME TO
THE 35th ANNUAL MEETING OF THE
AMERICAN SOCIETY OF NEUROIMAGING

Marriott Biscayne Bay
Miami, FL
January 26-29, 2012

ASN Mission Statement

The American Society of Neuroimaging (ASN) is an international, professional organization representing neurologists, neurosurgeons, neuroradiologists, and other neuroscientists who are dedicated to the advancement of any technique used to image the nervous system. The ASN supports the right of qualified physicians to utilize neuroimaging modalities for the evaluation and management of their patients, and the rights of patients with neurological disorders to have access to appropriate neuroimaging modalities and to physicians qualified in their use and interpretation.

The goal of the ASN is to promote the highest standards of neuroimaging in clinical practice, thereby improving the quality of medical care for patients with diseases of the nervous system. This goal is accomplished through:

- Presenting scientific and educational programs at an annual meeting and through the promotion of fellowships, preceptorships, tutorials and seminars related to neuroimaging;
- Publishing a scientific journal;
- Formulating and promoting high standards of practice and setting training guidelines;
- Evaluation of physician competency through examinations.

Emphasis is placed on the correlation between clinical information and neuroimaging data to provide the cost effective and efficient use of imaging modalities for the diagnosis and evaluation of diseases of the nervous system.

The ASN will continue to develop training and practice guidelines related to neuroimaging for: 1) physicians in practice who currently use neuroimaging; 2) physicians in residency or fellowship training; 3) physicians in practice who wish to use neuroimaging; and 4) healthcare entities responsible for defining or allocating professional privileges and credentialing to individual physicians.

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PROGRAM AT A GLANCE

THURSDAY

8:00 am – 4:00 pm	ASN Committee and Board Meetings	
3:00 pm– 7:00 pm	Registration Open	Salon E Foyer
3:00 pm – 7:00 pm	Speaker Ready Room Open	Fisher Island
6:00 pm – 7:00 pm	Welcome/Poster Stand-by Reception	Salons F-K
7:00 pm – 9:00 pm	Symposium: Advances in Diagnosis and Management of Cerebral and Spinal Venous Disorders	Salons A-E

FRIDAY

6:30 am – 5:00 pm	Registration Open	Salon E Foyer
6:30 am – 6:00 pm	Speaker Ready Room Open	Fisher Island
7:00 am – 8:30 am	Breakfast Seminar: Perfusion Imaging	Salons A-E
7:00 am – 8:30 am	Breakfast Seminar: Ultrasound Physics	Watson Island Room
8:30 am – 4:00 pm	Exhibits and Posters	Salons F-K
8:30 am – 9:00 am	BREAK	Salons F-K
9:00 am – 6:00 pm	Current Topics in MR Imaging (Part I)	Salons A-E
9:00 am – 6:00 pm	Current Topics in Neurosonology (Part I and II)	Watson Island Room
10:30 am – 10:45 am	BREAK	Salons F-K
1:00 pm – 2:00 pm	LUNCH – Exhibit Area	Salons F-K
1:00 pm – 2:00 pm	Symposium: Cyberknife: Introduction to Neurologists	Salons A-E
3:30 pm – 3:45 pm	BREAK	Salons F-K
7:00 pm – 10:00 pm	Neurosonology Hands-On Workshop	Salons F-K
7:00 pm – 10:00 pm	MRI Hands-On Workshop	Bayview Ballroom

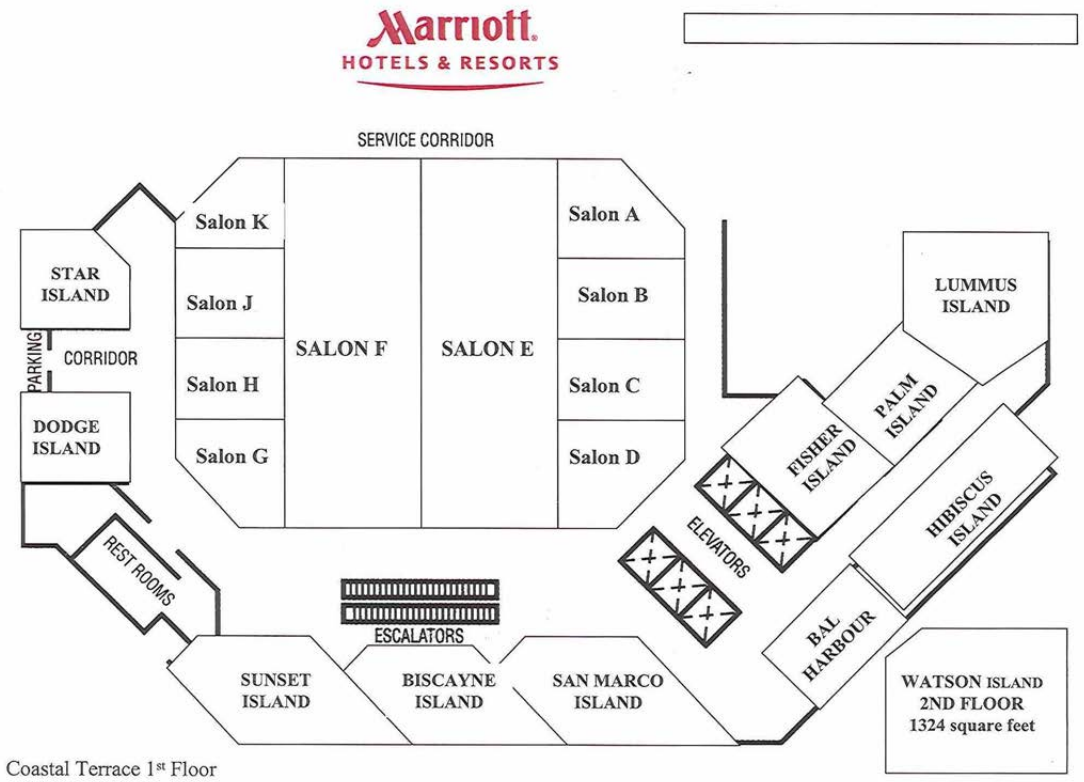
SATURDAY

6:30 am – 4:30 pm	Speaker Ready Room Open	Fisher Island
7:00 am – 4:00 pm	Registration Open	Salon E Foyer
7:00 am – 8:30 am	Breakfast Seminar: White matter disease on MRI: Cases, Pearls, and Differential Diagnosis	Salons A-E
7:00 am – 8:30 am	Breakfast Seminar: Cerebral venous system evaluation by Transcranial Color Coded Duplex and Magnetic Resonance Venography	Watson Island Room
8:30 am – 9:00 am	BREAK	Salon F Foyer
9:00 am – 1:00 pm	Current Topics in MR Imaging (Part II continued)	Salons A-E
9:00 am – 1:00 pm	Current Topics in Neurosonology (Part II continued)	Watson Island Room
10:45 am – 11:00 am	BREAK	Salon F Foyer
1:15 pm – 2:45 pm	Presidential Address and Awards Luncheon	Salons A-E
3:00 pm – 4:00 pm	Neuroimaging Jeopardy	Salon F
3:00 pm – 4:30 pm	Neuroimaging Self-assessment Examination	Lummus Island
4:00 pm – 6:00 pm	Symposium – Carotid Imaging Symposium	Salons A-E
7:30 pm – 10:30 pm	Saturday Night Social Event at MEKKA	

SUNDAY

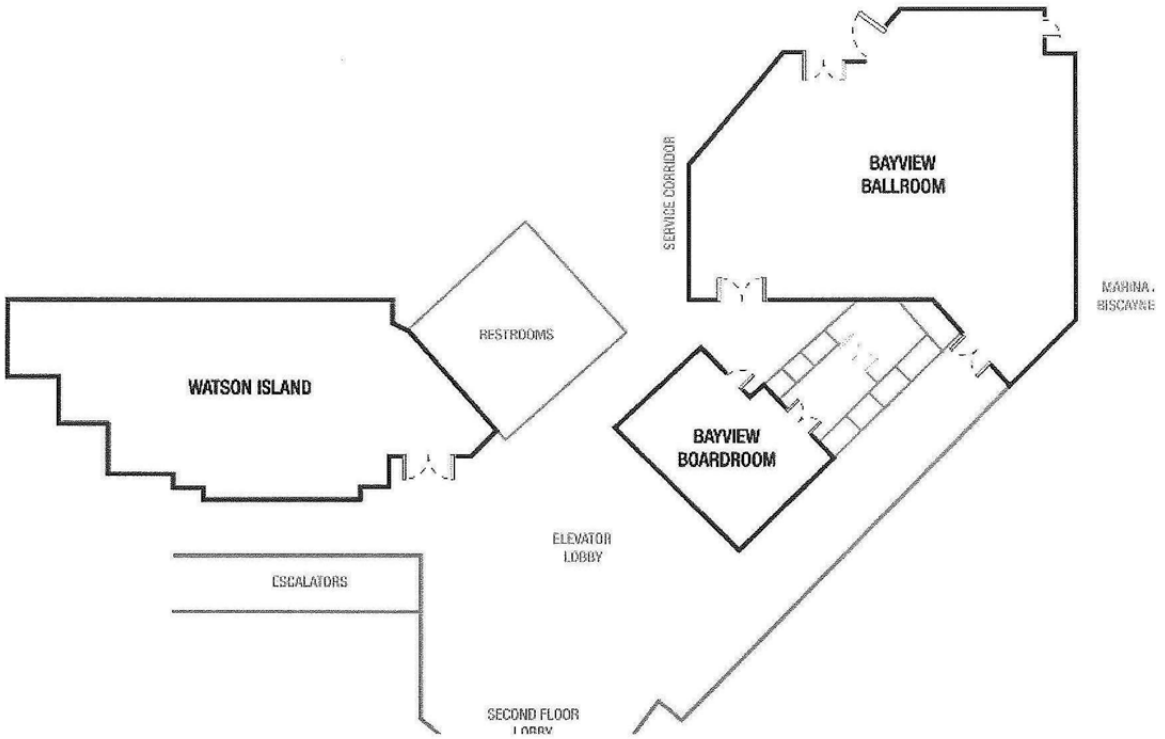
6:30 am – 9:00 am	Speaker Ready Room Open	Fisher Island
7:00 am – 11:00 am	Registration	Salon E Foyer
7:00 am – 8:30 am	Breakfast Seminar: Extracranial Vertebral Artery Disease	Salons A-E
7:00 am – 8:30 am	Breakfast Seminar: Pediatric Neuroimaging	Watson Island Room
8:30 am – 9:00 am	BREAK	Salon F Foyer
9:00 am – 11:30 am	Symposium – Neuroimaging of Cognitive and Behavioral Disorders	Salons A-E
9:30 am – 3:30 pm	Neurosonology Examination (offsite)	

3rd Floor



Coastal Terrace 1st Floor

2nd Floor



EVENTS

Thursday, January 26, 2012

Welcome Reception
6:00 pm - 7:00 pm
Salons F-K
Please join us for the Welcome and Poster Stand-By Reception. The Reception is complimentary for all registered attendees; guests are welcome with a $50.00 registration fee. Please visit the Registration Desk to register your guest prior to the reception.

Saturday, January 28, 2012

Presidential Address & Awards Luncheon
1:15 pm - 2:45 pm
Salons A-E
Please join us for the annual Presidential Address and Awards Luncheon, complimentary to all registered attendees. Important issues in the field of neuroimaging and ASN's position in creating change will be addressed. The Luncheon will also include a presentation of the 2012 awards.

Saturday, January 28, 2012

Saturday Night Social Event at MEKKA
7:30 pm - 10:30 pm
950 NE 2nd Ave, Miami, FL 33132 – Shuttle transportation will be provided.
Kick off your Saturday night with your colleagues on the dance floor at Mekka, one of Miami's premeire night clubs in the dowtown district. The night will begin with drinks and hors d'oevres as well as a latin dance act. Later in the evening we will spice things up with an entertaining drag show performance (rated PG).
Tickets are $75 and can be purchased online or onsite. We hope you will join us!
Please note: Mekka is an adults only venue.

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2012 ANNUAL MEETING PROGRAM

Thursday, January 26, 2012

Advances in Diagnosis and Management of Cerebral and Spinal Venous Disorders
7:00 - 9:00 pm ● Salons A-E ● CME: 2 Hours
Director: Adnan Qureshi, MD
Faculty: Adnan Qureshi, MD, Rakesh Khatri, MD and Qaisar Shah, MD

In the present decade, progress has been made in our understanding of cerebral venous sinus thrombosis (CVST) from individual studies and from the International Study on Cerebral Vein and Dural Sinus Thrombosis (ISCVT). The ISCVT is the largest multinational observational study to date on CVST. The study included 624 adult patients with symptomatic CVST who were diagnosed at 89 participating centers in 21 countries. The American Stroke Association released a new professional statement on diagnosis and management of CVST in 2010 based on all the recent advances in the field. Our understanding of collateral supply and recanalization suggests that the venous system is more dynamic than previously understood. New role of venous outflow resistance in multiple sclerosis and idiopathic intracranial hypertension has led to revascularization as a therapeutic approach in these diseases. Spinal vascular malformations including arteriovenous fistulas (AVFs) and arteriovenous malformations (AVMs) cause myelopathies due to venous congestion (Foix-Alajouanine syndrome). Due to potential endovascular therapies, a better understanding and timely diagnosis can be highly beneficial for patients with such syndromes. Congenital venous abnormalities such as vein of Galen aneurysms are an important cause of heart failure, hydrocephalus, and neurological impairment in neonates.

7:00 pm – 7:05 pm	Introduction	
7:05 pm - 7:30 pm	Update on management of cerebral venous sinus thrombosis and chronic venous outflow obstruction in the Endovascular Era	Adnan Qureshi, MD
7:30 pm – 7:55 pm	Spinal venous congestion and myelopathic syndromes - Foix-Alajouanine syndrome reconsidered	Qaisar Shah, MD
7:55 pm – 8:20 pm	Pediatric diseases: Vein of Galen aneurysms and beyond	Rakesh Khatri, MD
8:20 pm – 9:00 pm	Case Discussions	Faculty

On the completion of this activity, participants will be able to:

1) Describe natural history and management strategies for acute and chronic cerebral and spinal venous diseases and their effectiveness.
2) Review recent developments in diagnostic modalities for acute and chronic acute and chronic cerebral and spinal venous diseases.
3) Review recent developments in endovascular treatments of acute and chronic acute and chronic cerebral and spinal venous diseases.

Friday, January 27, 2012

Breakfast Seminar: Perfusion Imaging
7:00 – 8:30 am ● Salons A-E ● CME: 1.5 Hours
Director: David Liebeskind, MD
Faculty: David Liebeskind, MD and Tudor Jovin, MD

This seminar will introduce and explore the vast potential of perfusion imaging methods in current and future clinical practice scenarios ranging from stroke to neuro-oncology. The basic concepts of various perfusion modalities, including CT, MRI and angiography, will be described. The technical aspects and mathematics will be presented from the clinical perspective, exploring how these tools can be used to detail microvascular changes in the blood-brain barrier and complex hemodynamics. Practical applications in acute stroke and chronic neurovascular disorders will be outlined. The course is designed for all neuroimaging enthusiasts that encounter blood flow alterations in clinical practice.

7:00 am – 7:35 am	Principles and Potential of Perfusion Imaging: Realizing Cerebral Blood Flow from Hemodynamics to Permeability	David S Liebeskind, MD
7:35 am – 7:45 am	Discussion	
7:45 am – 8:20 am	Use of CT and MRI Perfusion from Acute to Chronic Ischemia	Tudor Jovin, MD
8:20 am – 8:30 am	Discussion	

Upon completion of this seminar, attendees will have a firm understanding of:

1) Basic concepts involved in imaging blood flow in the brain
2) Current and evolving perfusion imaging modalities
3) How the mathematics of perfusion imaging translate into specific hemodynamic measures
4) Applications from acute stroke to prevention of hemodynamic compromise

The course is intended for those individuals interested in first learning about perfusion imaging to those focused on specific aspects that impact clinical practice. Discussion of innovative approaches to perfusion imaging will underscore the mounting enthusiasm for these neuroimaging modalities.

This course is designed to procure the following desirable physician attributes: Enthusiasm to expand knowledge; interest in advancing care of the stroke patient; improve problem-solving, practice-based learning and patient care.

Breakfast Seminar: Applied Principles of Ultrasound Physics and Fluid Dynamics
7:00 – 8:30 am ● Watson Island Room ● CME: 1.5 Hours
Director and Faculty: Andrei Alexandrov, MD, RVT

This seminar is being offered to review ultrasound physics and fluid dynamics, demonstrate typical imaging artifacts and waveforms that interpreting physicians and sonographers need to identify and correct and to interact with the audience and answer questions about these typical findings. Course faculty will discuss applied principles of ultrasound physics and fluid dynamics using a set of approximately 50 typical images/waveforms. Discussion format includes brief case/symptom presentation and an ultrasound image. Faculty will ask the audience to interpret the image, and engage in discussion of differential diagnosis and common pitfalls that are linked to ultrasound physics and fluid dynamics.

Upon completion of this activity, participants will be able to:

1) Review most common ultrasound imaging artifacts and spectral waveforms.
2) Learn key principles of applied ultrasound physics and fluid dynamics that are responsible for these findings.
3) Learn how to differentiate, optimize and interpret typical ultrasound imaging artifacts and spectral waveforms.

Current Topics in MR Imaging (Part I)

9:00 am - 6:00 pm ● Salons A-E ● CME: 7.5 Hours

Directors: Bret Lindsay, MD and Neeraj Dubey, MD

Faculty: Rohit Bakshi, MD, Neeraj Dubey, MD, David Liebeskind, MD, Bret Lindsay, MD, Joshua Klein, MD, Laszlo Mechtler, MD, Gabriella Szatmary, MD, PhD, Mohammed Zafar, MD, and Robert Zivadinov, MD

Faculty will present MR imaging principles of MS, Susceptibility Imaging, disease states of the Thalamus, CNS infections, Vascular Anomalies, Epilepsy, Ischemic Infarction, Orbital pathology, Intracranial Neoplasm and interesting neuroimaging case studies.

9:00 am - 10:00 am	Ischemic Infarction	David Liebeskind, MD
10:00 am - 10:30 am	Thalamus	Mohammad Zafar, MD
10:30 am - 10:45 am	Break	Salons F-K
10:45 am - 11:45 am	Imaging of MS	Rohit Bakshi, MD
11:45 am - 12:15 pm	Susceptibility Imaging	Robert Zivadinov, MD
12:15 pm - 1:00pm	Vascular Anomalies	Joshua Klein, MD
1:00 pm - 2:00 pm	Lunch	Salons F-K
2:00 pm - 2:45 pm	Infectious Disease	Neeraj Dubey, MD
2:45 pm - 3:30 pm	Imaging of the Orbits	Gabriella Szatmary, MD
3:30 pm - 3:45 pm	Break	Salons F-K
3:45 pm - 4:30 pm	Epilepsy	Joshua Klein, MD
4:30 pm - 5:30 pm	Intracranial Neoplasm	Laszlo Mechtler, MD
5:30 pm -6:00pm	Interesting Case Studies	Bret Lindsay, MD

Upon completion of the course, physicians will:

1) Understand the MR imaging findings in intracranial hemorrhage.
2) Understand the MR imaging findings in various congenital anomalies of the CNS.
3) Understand the MR imaging findings of ischemic stroke.
4) Understand the MR imaging of demyelinating diseases.
5) Understand the typical MR imaging of CNS infections.
6) Understand the MR imaging of Epilepsy.
7) Understand the imaging of the Basal Ganglia in various disease states.
8) Understand the imaging appearance of various intracranial neoplasms.
9) Understand the MR imaging findings in vascular anomalies.
10) Review interesting neuroimaging findings in case study format.

This course is designed to procure the following desirable physician attributes: Work in interdisciplinary teams, Apply quality improvement, Practice-based learning and Interpersonal and communication skills

Current Topics in Neurosonology (Part I and II)
9:00 am - 6:00 pm ● Watson Island Room ● CME: 7.5 Hours
Director: Alexander Razumovsky, PhD, FAHA
Faculty: Andrei Alexandrov, MD, RVT, Zsolt Garami, MD, Alexander Razumovsky, PhD, FAHA, Tatjana Rundek, MD, PhD and Charles Tegeler, MD

This course is for individuals interested in performing and interpreting Neurosonology (carotid and transcranial Doppler (TCD) ultrasound) studies. The faculty will discuss carotid and TCD ultrasound physics and technique, interpretation and clinical application of both techniques. Ample time will be left for questions and discussion. Upon completion of this course, participants will be able to identify the physics, technique, interpretation and clinical applications of carotid and TCD ultrasound. The course material is designed for participants seeking basic knowledge of Neurosonology.

9:00 am – 10:00 am	Carotid Ultrasound Physics and Technique	Charles Tegeler, MD
10:00 am – 11:00 am	Carotid Ultrasound Interpretations and Clinical Applications	Charles Tegeler, MD
11:00 am – 12:00 pm	TCD Ultrasound Physics and Technique	Andrei Alexandrov, MD, RVT

Neurosonology Course Part II

This course is for individuals interested in performing and interpreting advanced carotid duplex studies for assessment of carotid intima-media thickness, carotid atherosclerosis and risk evaluation for cerebrovascular disease. transcranial doppler (tcd) ultrasound studies for specific applications, like for patients after ischemic stroke and cryptogenic stroke, role of sonothrombolysis, application and interpretation of TCD for patients after SAH due to the aneurysm rupture or due to the traumatic brain injury will be discussed. Ample time will be left for questions and discussion. Upon completion of this course, participants will be able to identify interpretation and clinical applications of abovementioned specific neurosonology applications. The course material is designed for participants seeking advanced knowledge of neurosonology and its clinical applications.

12:00 pm – 1:00 pm	TCD Interpretations and Clinical Applications	Alexander Razumovsky, PhD, FAHA
1:00 pm – 2:00 pm	Lunch	Salons F-K
2:00 pm – 3:00 pm	Carotid Duplex Studies Interpretation	Charles Tegeler, MD
3:00 pm – 4:00 pm	TCD Studies Interpretation for Patients with Acute Stroke	Andrei Alexandrov, MD, RVT
4:00 pm – 5:00 pm	TCD Studies Interpretation for Patients with SAH	Alexander Razumovsky, PhD, FAHA
5:00 pm – 6:00 pm	TCD studies interpretation based on cases monitored in OR (CEA, carotid stenting, cardiac surgeries)	Zsolt Garami, MD

Upon completion of the course, physicians will:
1) Identify proper techniques and protocols for performing advanced TCD studies
2) Relate normal and abnormal blood flow patterns to clinical presentation
3) Understand clinical usefulness and limitations of the advanced TCD ultrasound evaluations and learn how to write preliminary and final reports

This course is designed to procure the following desirable physician attributes: Patient-centered care, Quality Improvement and Evidence based practice

Cyberknife: Introduction to Neurologists
1:00 - 2:00 pm ● Salons A-E ● CME: 1 Hour
Director and Faculty: Rakesh Khatri, MD

The CyberKnife® Robotic Radiosurgery System was cleared by the U.S. Food and Drug Administration in 1999 to treat tumors in the head and base of the skull. CyberKnife System delivers high doses of radiation directly to brain tumors. The CyberKnife System also can treat benign, or non-cancerous, tumors and other conditions, such as trigeminal neuralgia and arterial venous malformations (AVMs). Usually the team consists of Radiation Oncologists, Neurosurgeon, Medical Physicist, Radiation therapist. Neurologists have historically not been involved with cyber knife surgery. As the field of cyber knife evolves, neurologists need to take an active interest. There is dearth of knowledge in Cyberknife applications among neurologists. There could be tremendous potential for neurologists in this field if we take active role.

Course Objectives:
1) Provide an overview of Cyberknife and emphasise on the indications of Cyberknife in general for brain and spine including AVMs.
2) Learn how neurologists can get trained in Cyber knife.
3) learn how interventional neurologists can take advantage of cyber knife to make AVM treatment centers.

This course is designed to procure the following desirable physician attributes: Enhance medical knowledge and improve patient care

MRI Hands-On Workshop
7:00 – 10:00 pm ● Bayview Ballroom ● CME: 3 Hours
Director: Geoffrey Hartwig, MD
Faculty: John Bertelson, MD, Jennifer McVige, MD, Bhagwan Moorjani, MD, Gabriella Szatmary, MD, PhD and Eugene Wang, MD

Workshop participants will rotate among reading stations supervised by the course faculty. After a brief review of the expert's approach to interpreting brain and spine MRI studies, the students will read a selection of scans brought in by the faculty. Course participants will be expected to present mock dictations of the MRI studies and will be critiqued by their peers and professors. Controversial cases will be discussed among the entire group of participating faculty and students. This workshop is designed for participants with some practical experience in interpreting brain and spine MRI scans. Those with less experience may wish to participate, although they may find the workshop to be exceptionally challenging.

Upon completion of the workshop attendees will:
1) Have been exposed to a representative cross-section of neurological MRI studies encountered by MRI neuroimagers in a typical work environment;
2) Have observed the experienced MRI expert's approach to scan interpretation;
3) Have acquired personal experience interpreting neurological MRI studies; and
4) Have been supervised and directed in improving their reading skills at their own workplaces.

This course is designed to procure the following desirable physician attributes: Medical knowledge.

Neurosonology Hands-On Workshop
7:00 – 10:00 pm ● Salons F-K ● CME: 3 Hours
Director: Andrei Alexandrov, MD, RVT
Faculty: Andrei Alexandrov, MD, RVT, Eva Bartels, MD, Zsolt Garami, MD, Alexander Razumovsky, PhD, FAHA, Charles Tegeler, MD and Tatjana Rundek, MD, PhD

This workshop will provide structured hands-on and question and answer sessions in carotid/vertebral duplex and specific transcranial Doppler techniques complete testing, emboli detection, right-to-left shunt detection and assessment of vasomotor reactivity. Both the beginner and experienced users are encouraged to attend. The workshop will also provide an opportunity to try the latest equipment, to meet experts and to discuss various aspects of neurosonology in small groups. The workshop is designed to meet the need for basic and advanced knowledge of insonation techniques, technological advances, and practical aspects of cerebrovascular testing.

Upon completion of the workshop attendees will:
1) Review complete scanning protocols for diagnostic carotid/vertebral duplex and TCD examinations, vasomotor reactivity, emboli detection, right-to-left shunt testing, and monitoring procedures (thrombolysis, head-turning, peri-operative testing), and IMT measurements.
2) Review equipment and expertise requirements in performing selected tasks with faculty using hands-on, instructional video or real time case recordings.

Breakfast Seminar: White Matter Disease on MRI: Cases, Pearls, and Differential Diagnosis

7:00 - 8:30 am ● Salons A-E ● CME: 1.5 Hours

Director: Robert Bermel, MD

Faculty: Robert Bermel, MD and Robert Fox, MD

This course will be a two-hour case-based discussion of diseases which affect the cerebral white matter and the differentiation of these conditions based on their imaging features. An overview of this differential diagnosis will be initially discussed as an introduction. Multiple sclerosis will be discussed as the prototype of white matter disease, with substantial content devoted to other diseases which may mimic the appearance of demyelinating disease. Pertinent “red flags” will be discussed that should raise suspicion for diagnoses other than MS. Diseases with potentially similar imaging appearances will be presented side-by-side and differentiating characteristics will be highlighted. Other classes of disease presented will include metabolic disease/leukodystrophies, rheumatologic and infectious diseases, as well as vascular disease and migraine.

7:00 am - 7:40 am	Overview, Cases and Differential Diagnosis	Robert Bermel, MD
7:40 am - 8:20 am	Cases and Differential Diagnosis 2	Robert Fox, MD
8:20 am - 8:30 am	Questions and Answers	Faculty

Course Objectives:

1) Understand the differential diagnosis of cerebral white matter lesions on imaging
2) Discuss imaging features which aid in the differentiation of these diseases
3) Recognize the most common mimics of multiple sclerosis on MRI, and "red flags" that suggest them.

This course is designed to procure the following desirable physician attributes: Patient-centered care and cognitive expertise.

Breakfast Seminar: Cerebral Venous System Evaluation by Transcranial Color Coded Duplex and Magnetic Resonance Venography

7:00 – 8:30 am ● Watson Island Room ● CME: 1.5 Hours

Director: Zsolt Garami, MD

Faculty: Zsolt Garami, MD and Laszlo Mechtler, MD

TCCD has advantages over TCD by showing the images of the intracranial anatomy and arteries by duplex B-mode, while still measuring velocities with Doppler. Cerebral venous sinus thrombosis represents clot formation in the superficial and deep venous sinus with or without extension into the cortical veins. The superior sagittal sinus, transverse sinus and vein of Galen are usually involved. MRV provides great tools to evaluate these segments. We will showcase fusion imaging of TCCD and MRI imaging in the clinical practice.

7:00 am – 7:35 am	Transcranial Color Coded Duplex	Zsolt Garami, MD
7:35 am – 7:45 am	Questions and Answers	Faculty
7:45 am – 8:20 am	Magnetic Resonance Venography	Laszlo Mechtler, MD
8:20 am – 8:30 am	Questions and Answers	Faculty

Course Objectives:

1) TCCD and MRV is a commonly used method in Europe and may be underutilized in the United States. This combined imaging seminar will explore the advantages and disadvantages for each imaging modality.
2) Learn more about the cerebral venous system and provide an objective review of the protocols and interesting cases.
3) Conference participants will find tips for imaging correlation between imaging modalities for everyday clinical utility useful.

This course is designed to procure the following desirable physician attributes: Patient Care, Medical Knowledge and Practice-based Learning and Improvement

Current Topics in MR Imaging (Part II)
9:00 am - 1:00 pm ● Salons A-E ● CME: 3.75 Hours
Directors: Bret Lindsay, MD and Neeraj Dubey, MD
Faculty: John Bertelson, MD, Joseph Fritz, PhD, Dara Jamieson, MD and Mircea Morariu, MD

Faculty will present the MR principles and imaging findings in MR physics, degenerative spine disease, headache, and interesting case studies.

9:00 am - 10:00 am	MR Physics	Joseph Fritz, PhD
10:00 am - 10:45 am	Degenerative Spine	Mircea Morariu, MD
10:45 am - 11:00 am	Break	Salon F Foyer
11:00 am -12:00 pm	Imaging of Headache	Dara Jamison, MD
12:00 pm - 1:00 pm	Interactive Case Studies	John Bertelson, MD

Upon completion of the course, physicians will:
1) Understand the basic principles of MR Physics.
2) Understand the MR imaging principles and specific imaging findings in degenerative disease of the spine.
3) Understand MR imaging typical of various Headache syndromes.
4) Review specific MR imaging findings in case-study format.

This course is designed to procure the following desirable physician attributes: Work in interdisciplinary teams, Apply quality improvement, Practice-based learning and Interpersonal and communication skills

Current Topics in Neurosonology Part II continued
9:00 am - 1:00 pm ● Watson Island Room ● CME: 3.75 Hours
Director: Alexander Razumovsky, PhD, FAHA
Faculty: Andrei Alexandrov, MD, RVT, Eva Bartels, MD, Alexander Razumovsky, PhD, FAHA, Tatjana Rundek, MD, PhD and Charles Tegeler, MD

9:00 am – 9:45 am	Coexistent Extra- and Intracranial Stenosis, Cervical Atherosclerosis, and Abnormal Ankle Brachial Index in Acute Ischemic Stroke	Charles Tegeler, MD
9:45 am – 10:30 am	Update On Specific TCD Application for Patients with Stroke: Neurosonology Value in Acute Stroke Therapy	Andrei Alexandrov, MD, RVT
10:30 am – 10:45 am	Break	Salon F Foyer
10:45 am – 11:15 am	Carotid Atherosclerosis and Risk Assessment	Tatjana Rundek, MD, PhD
11:15 am – 11:45 am	Transcranial Color Coded Doppler and Venous Imaging	Eva Bartels, MD
11:45 am – 12:30 pm	Update on specific TCD applications: neurosonology value in Neuro-ICU	Alexander Razumovsky, PhD, FAHA
12:30 pm – 1:00 pm	Q & A	Faculty

Upon completion of the course, physicians will:
1) Identify proper techniques and protocols for performing advanced TCD studies
2) Relate normal and abnormal blood flow patterns to clinical presentation
3) Understand clinical usefulness and limitations of the advanced TCD ultrasound evaluations and learn how to write preliminary and final reports

This course is designed to procure the following desirable physician attributes: Patient-centered care, Quality Improvement and Evidence based practice

Neuroimaging Jeopardy
3:00 - 4:00 pm ● Watson Island Room ● CME: 1Hour
Director and Faculty: Paul Maertens, MD

Experts who perform and interpret various neuroimaging modalities will be asked to interact and test their knowledge on a wide array of neurologic disorders affecting adults and children. On the basis of clinical history, findings on clinical examination and neuroimaging features, the audience will be asked to participate and create their own interpretation for selected cases as each case will follow the jeopardy template. Real cases will be presented and the final diagnosis may not always be known.

Upon completion of this course, attendees will:

1) Be able to develop a strategy in diagnosing various neurologic conditions using neuroimaging
2) Become familiar with neuroimaging tools that improve diagnostic precision
3) Become familiar with clinical applications of diverse neuroimaging modalities

This activity is intended for neurologists, physicians, psychiatrists, nurses, technicians and other healthcare professionals involved in the care of children and adults presenting acutely, sub-acutely or chronically with mental changes, ataxia, weakness, involuntary movements, migraine or seizures.

This course is designed to procure the following desirable physician attributes: Medical knowledge, leadership

Neuroimaging Self-Assessment Evaluation
3:00 - 4:30 pm ● Lummus Island Room ● CME: 1.5 Hours
Director: Eric Lindzen, MD, PhD
Faculty: Eric Lindzen, MD, PhD, Dara Jamieson, MD, and Patrick Capone, MD, PhD

The Neuroimaging Self-Assessment Examination (SAE) is intended to be a Neuroimaging self-assessment tool, providing participants a structured opportunity to gain insight into their own personal strengths and weaknesses relative to their peers in the provision and clinical evaluation of Neuroimaging studies. Knowledge and skills to be assessed in this setting will include identification of normal anatomical structures, accuracy in the identification of specific pathologies on MRI and CT studies, formulation of Neuroimaging differential diagnoses, basic MRI and CT physics knowledge, and the ability to correlate imaging findings with clinical history. Subject matter covered by the SAE will include diagnostic neuroimaging of common neurological disorders such as cerebrovascular disease, multiple sclerosis, CNS trauma, tumors and cysts, infections, toxic/metabolic disorders and diseases of the spinal cord and surrounding tissues. Knowledge of basic MRI and CT physics principles essential for protocol design, safety, recognition of artifact and differentiation of tissue types based upon CT density and MRI signal characteristics will also be assessed.

The target audience includes residents, fellows and attending physicians in the fields of neurology, neurosurgery and radiology who wish to address potential gaps between their own performance levels and commonly accepted standards of care in the provision of Neuroimaging interpretations.

The SAE will be presented in a multiple choice Powerpoint format projected on a screen to the audience with 1.5 minutes allotted per question. The subject matter will span 30 clinical Neuroimaging cases and 20 imaging physics and technology related questions. Each question will consist of a short text passage describing a clinical vignette or specific imaging related parameters, accompanied by images or diagrams, followed by six multiple choice answer options. Attendees will mark the single best answer to each question on a provided answer sheet, which will be passed in for grading at the end of the 90 minute course period. Clinical cases will incorporate detailed, high resolution MRI and CT images of the brain and spine (including MR and CT angiography).

Individual exam scores will be anonymous to all participants except for each individual examinee, who will have results provided in an emailed score report within 21 days of the exam. Anonymous scores will be statistically analyzed by the course directors for validation and exam improvement purposes. None of the material to be used in this self-assessment exercise shall have been previously copyrighted.

Continued on next page…

Upon completion of the course, attendees will:

1) Become more familiar with personal strengths and weaknesses in the identification of normal versus abnormal imaging findings.
2) Become more familiar with personal strengths and weaknesses in formulating a differential diagnosis pertaining to specific imaging presentations.
3) Achieve greater levels of confidence in acquiring and interpreting MRI and CT studies in common neurological disorders such as MS, stroke, tumor and trauma.
4) Be able to identify areas of future study to increase levels of competence in the interpretation of diagnostic Neuroimaging cases.
5) Be able to identify areas of future study to increase levels of competence in MRI and CT physics.

This course is a self-assessment exercise and not a board review.

This course is designed to procure the following desirable physician attributes: Quality Improvement, Medical Knowledge, Cognitive Expertise, and Commitment to Lifelong Learning

Carotid Imaging Symposium: Stenting Versus Surgery Versus Medical Therapy
4:00 - 6:00 pm ● Salons A-E ● CME: 2 Hours
Director: Zsolt Garami, MD
Faculty: Zsolt Garami, MD, Dara Jamieson, MD, Alan Lumsden, MD and Adnan Qureshi, MD

Since 2004, when carotid artery stenting (CAS) was approved for clinical use in the US, it has become an acceptable alternative to carotid endarterectomy (CEA) in selected patients. More than 150,000 carotid interventions are performed each year. Management of carotid disease represents an ever increasing component of cerebrovascular care with important developments in the management and the introduction of new and brain saving technologies. After CREST results are determined timely decisions need to be made.

This symposium will provide provocative, up-to-date, evidence-based information coupled with cases of open and endovascular simulators so that the attendee can image and understand all imaging modalities and determine the appropriate therapy for their patients.

4:00 pm – 4:25 pm	Neurosonology	Zsolt Garami, MD
4:25 pm – 4:50 pm	Carotid Endarterectomy	Alan Lumsden, MD
4:50 pm – 5:15 pm	Carotid Artery Stenting	Adnan Qureshi, MD
5:15 pm – 5: 40 pm	Medical Therapy	Dara Jamieson, MD
5:40 pm – 6:00 pm	Discussion	Faculty

Course Objectives:
1) Review: Stroke risk estimation, timing of intervention, patient selection,
2) Learn about: medical or surgical/interventional therapy – evidance based medicine after CREST results
3) Learn about: imaging for plaque characterization and post procedure imaging

This course is designed to procure the following desirable physician attributes: Patient Care, Medical Knowledge and Practice-based Learning and Improvement

Breakfast Seminar: Extracranial Vertebral Artery Disease
7:00 - 8:30 am ● Salons A-E ● CME: 1.5 Hours
Director: Sebastian Koch, MD
Faculty: Sebastian Koch, MD and Jose Romano, MD

The course will review the role of extracranial vertebral disease in posterior circulation stroke. This will include a discussion of the prevalence of vertebral artery origin stenosis in symptomatic and non-stroke populations. Stroke mechanisms of vertebral artery origin stenosis will be reviewed. The course will examine the non-invasive diagnosis of proximal vertebral artery disease with a focus on ultrasonographic diagnosis and diagnostic criteria.

7:00 am – 7:05 am	Welcome and Introduction	Sebastian Koch, MD
7:05 am – 7:25 am	Vertebral Artery Origin Stenosis and Stroke	Sebastian Koch, MD
7:25 am – 7:45 am	Diagnostic Techniques to Detect Vertebral Artery Origin Stenosis	Jose Romano, MD
7:45 am – 8:05 am	Ultrasonographic Diagnosis of Vertebral Origin Stenosis	Sebastian Koch, MD
8:05 am – 8:20 am	Case Studies of Vertebral Stenosis with Focus On Diagnosis and Management	Faculty
8:20 am – 8:30 am	Questions and Discussion	Faculty

Course Objectives:
1) Discuss the role of extracranial vertebral disease in posterior circulation stroke.
2) Understand diagnostic modalities to identify extracranial proximal vertebral stenosis.
3) Describe the use of ultrasonography to identify extracranial proximal vertebral stenosis.

This course is designed to procure the following desirable physician attributes: Practice based learning and Increase knowledge base.

Breakfast Seminar: Pediatric Neuroimaging
7:00 - 8:30 am ● Watson Island Room ● CME: 1.5 Hours
Director: Bhagwan Moorjani, MD
Faculty: Bhagwan Moorjani, MD and Jennifer McVige, MD

The faculty will review common pediatric neuroimaging abnormalities such as, metabolic and degenerative disorders, developmental anomalies, neurocutaneous syndromes, abnormalities associated with epilepsy (migrational anomalies), and posterior fossa abnormalities. The course is intended for neurologist, neurology residents and fellows, neurosurgeons, radiologist and pediatricians.

7:00 am – 7:40 am	Developmental, migrational, metabolic and degenerative disorders	Bhagwan Moorjani, MD
7:40 am – 7:45 am	Questions	Faculty
7:45 am – 8:25 am	Neurocutaneous and posterior fossa conditions	Jennifer McVige, MD
8:25 am – 8:30 am	Questions	Faculty

Upon completion of the course physicians will be able to:
1) Identify developmental and migrational abnormalities.
2) Identify common neuroimaging findings associated with neurocutaneous syndromes.
3) Identify common findings associated with metabolic and degenerative disorders.
4) Understand the differences between common abnormalities seen in the posterior fossa in children.

This course is designed to procure the following desirable physician attributes: provide patient centered care, integrating multidisciplinary teams, provide practice based learning and improvement and improve medical knowledge

Symposium: Neuroimaging of Cognitive and Behavioral Disorders
9:00 - 11:30 am ● Salons A-E ● CME: 2.5 Hours
Director: Joseph Masdeu, MD, PhD
Faculty: Joseph Masdeu, MD, PhD and Eduardo Gonzalez-Toledo, MD, PhD

This course will review the neuroimaging findings in psychiatric disorders and dementia and other cognitive disorders. In particular, the availability in the clinical setting of amyloid imaging will make an impact in the usefulness of neuroimaging in dementia prognosis in the short term and may help accelerate the discovery of new therapies. In this course, after two lectures, several cases will be discussed with the audience. This course is intended for neurologists, radiologists, fellows and residents interested in brain imaging.

9:00 am – 9:50 am	Neuroimaging of Psychiatric Disorders	Eduardo Gonzalez-Toledo, MD, PhD
9:50 am – 10:40 am	Neuroimaging of Dementia	Joseph C. Masdeu, MD, PhD
10:40 am – 11:30 am	Neuroimaging Cases of Cognitive and Behavioral Disorders	Faculty

Upon completion of this seminar, attendees should be able to:
1) List the imaging modalities most helpful for the evaluation of patients with cognitive disturbances or dementia.
2) Indicate the role of amyloid imaging in the evaluation of dementia.
3) Describe the most common findings in the neuroimaging evaluation of cognitive impairment.

This course is designed to procure the following desirable physician attributes: Medical Knowledge, Evidence-based Practice and Cognitive Expertise

2012 FACULTY AND PROGRAM COMMITTEE DISCLOSURES

In accordance with the guidelines of the Accreditation Council for Continuing Medical Education (ACCME), ASN requires disclosure of any interests or affiliations with corporate organizations of Faculty (indicated below with F), Program Committee Members (indicated below with PC), and ASN staff members (indicated below with S).

Andrei Alexandrov, MD, RVT	(PC, F) No relationships
Rohit Bakshi, MD, MA	(F) Honorarium/Consultant: Biogen Idec, Sanofi-Aventis, Questcor, Teva Neuroscience; Research Support/Research: Biogen Idec, EMD Serono, Teva Neuroscience
Eva Bartels, MD	(F) No relationships
Robert Bermel, MD	(PC, F) Speaker and Consultant; Honorarium: Biogen Idec, Teva Neuroscience, Novartis
John Bertelson, MD	(F) No relationships
Allan Burke, MD	(PC) No relationships
Patrick Capone, MD, PhD	(F) No relationships
Neeraj Dubey, MD	(PC, F) No relationships
Robert Fox, MD	(F) Consultant/Honorarium: Biogen Idec, Avanair, Novartis, Questcor
Joe Fritz, PhD	(F) Advisory Board Meeting/Honorarium: Merz; Advisory Board Meeting/Honorarium: Ipsen
Zsolt Garami, MD	(F) Consultant/Training, Core Lab: WL Gore
Eduardo Gonzalez-Toledo MD,PhD	(F) No relationships
Ryan Hakimi, DO	(PC) No relationships
Geoffrey Hartwig, MD	(F) No relationships
Dara Jamieson, MD	(PC, F) Speaker/Honorarium: Boehringer Ingelheim Pharmaceuticals; Consultant/Fee: Bayer
Tudor Jovin, MD	(F) Consultant and Advisory Board/Honorarium: Concentric Medical Inc, Co-Axia Inc, eV3, Mircus Inc; Ownership Interest: NIT; Associate Editor Fees: Journal of Neuroimaging
Tisha Kehn	(S) No relationships
Rakesh Khatri, MD	(F) No relationships
Joshua Klein, MD	(F) No relationships
Sebastian Koch, MD	(F) no relationships
David Liebeskind, MD	(PC, F) Consulting/Travel Reimbursement: CoAxia; Consulting/Fee: Concentric Medical
Bret Lindsay, MD	(PC, F) Speaker/Honorarium: Biogen, Teva
Eric Lindzen, MD, PhD	(F) No relationships
Alan Lumsden, MD	(F) Grants/Research Support/Participating/Investigator: Nycomed, Hansen, W.L. Gore, Harvest Technology, Boston Scientific Corporation, Lomard Medical, Bolton Medical, Consultant: Boston Scientific Corporation, VNUS Medical, WL Gore, Abbott, Maquet, Siemens, Medtronic, Ethicon, Cook Medical, EV3 Covidien Stock Shareholder:Hatch Medical, Northpoint Domain, Embrella ,Advanced Clinical Visualization Speakers Bureau/Honorarium: BSCI, WL Gore, Medtronic Other: Medtronic (Spouse employee)
Paul Maertens, MD	(PC, F) No relationships
MarcMalkoff, MD	(PC) No relationships
Joseph Masdeu, MD, PhD	(F) No relationships
Jennifer McVige, MD	(F) No relationships
Laszlo Mechtler, MD	(PC, F) Speaker/Honorarium: Merck, GSK, Zogenix
Bhagwan Moorjani, MD	(F) No relationships
Mircea Morariu, MD	(PC, F) No relationships
Leslie Orvedahl	(S) No relationships
Erasmo Passaro, MD	(PC) Speaker/Honorarium: Glaxo Smith Kline, UCB, Forrest
Leon Prockop, MD	(PC) No relationships
Adnan Qureshi, MD	(PC, F) No relationships
Alexander Razumovsky, PhD, FAHA	(PC, F) Salary/FTE: Sentient NeuroCare Services, Inc.
Jose Romano, MD	(F) Scientific Advisory Board Member/Honoraria: Nova Vision
Tatjana Rundek, MD, PhD	(F) No relationships
Qaisar Shah, MD	(F) No relationships
Gabriella Szatmary, MD, PhD	(F) No relationships
Charles Tegeler, MD	(PC, F) No relationships
Eugene Wang, MD	(F) No relationships
LawrenceWechsler, MD	(PC) Consultant/Fee: Abbott Vascular, Ferrer, Lundbeck; DSMB - Dias 3 /4; SAPPHIRE WW Steering Committees - ACT 1; CLOSURE Ownership Interest - Neuro Interventional Therapeutic Stock
Shannon Wild	(S) No relationships
Mohammed Zafar, MD, FAAN	(F) Consultant/Fee: Merz Pharmaceuticals, Biogen Idec; Speaker/Honorarium: Teva Neuroscience
Robert Zivadinov, MD	(F) Speaker and Principle Investigator/Honorarium and Research Grant: Biogen Idec; Principal Investigator/Research Grant: Teva Neuroscience, EMD Serono, Wilson Greatbatch

AMERICAN SOCIETY OF NEUROIMAGING CME MISSION STATEMENT

The American Society of Neuroimaging (ASN) is an international professional organization representing neurologists, neurosurgeons, neuroradiologists, and other neuroscientists who are dedicated to the advancement of any technique used to image the nervous system. Its purpose is to promote the highest standards of neuroimaging in clinical practice, thereby furthering ongoing improvement in the delivery of medical care. ASN's Annual Meeting educational activities are planned to meet the educational needs of physicians in practice and training in regard to the study of the nervous system with techniques including x-ray angiography and computed tomography, Magnetic Resonance Imaging, ultrasound, positron emission tomography and single photon emission computed tomography and near infra-red spectroscopy. Emphasis is placed on the correlation of the clinical data with information derived from the various methods used to image the nervous system and related structures (integrated neuroimaging) and on the updating of algorithms leading to a cost effective and efficient use of imaging modalities for the different disorders of the nervous system. The Society further supports and promotes Fellowships, Preceptorships, Tutorials, and Seminars related to neuroimaging held throughout the country. The courses address advances in the role of MRI, CT, and Neurosonology in Neurology and are designed to help practitioners and trainees improve their interpretation skills.

TARGET AUDIENCE

The material presented at the 35th Annual Meeting is appropriate for neurologists, radiologists, and other physicians and health care professionals involved in the diagnosis and treatment of patients with neurologic disease.

ACCREDITATION

The American Society of Neuroimaging is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

CREDIT DESIGNATION

The American Society of Neuroimaging designates this live activity for a maximum of 27.25 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

CME CERTIFICATES AND EVALUATIONS

CME certificates will be issued after the conclusion of the 2012 Annual Meeting. In order to receive your CME certificate you will need to submit an evaluation form for each course attended. In an ongoing effort to move to paperless format, evaluations will only be available online. All meeting attendees will receive an email after the meeting with a link to the evaluation.

Please note: You will only receive CME credits for the courses for which you have registered.

AMERICAN SOCIETY OF NEUROIMAGING

PRESIDENTIAL ADDRESS & AWARDS LUNCHEON
ASN Business Meeting AGENDA ■ Marriott Biscayne Bay – Miami, FL
Saturday, January 28, 2012 ■ 1:15-2:45 pm

1. Call to Order

2. Approval of Minutes – January 22, 2011, Business Meeting

3. Recognition of Service – *Dara Jamieson, MD*
   a) Recognition of Dr. Dubey's service as Board Member
   b) Recognition of Dr. Greenberg's service as Board Member
   c) Recognition of Dr. Preston's service as Board Member
   d) Recognition of Dr. Sloan's service as Board Member
   e) Recognition of Dr. Feldmann's service as Treasurer

4. Slate of Candidates – *Dara Jamieson, MD*
   - Patrick Capone, MD – Board Position
   - Zsolt Garami, MD – Board Position
   - Vernon Rowe, MD, FAAN – Board Position
   - Gabriella Szatmary, MD – Board Position
   - Michael Hutchinson, MD, PhD – Board Position Second Term
   - William Preston, MD, FAAN – Treasurer

5. President's Report – *Dara Jamieson, MD*

6. Practice Issues Committee Report –*Michael Hutchinson, MD, PhD*

7. Program Committee Report – *Laszlo Mechtler, MD*
   2013 Annual Meeting: Caesar's Palace, Las Vegas, NV - January 17-20, 2013

8. Treasurer's Report – *Edward Feldmann, MD*

9. *Journal of Neuroimaging* Report – *Joseph Masdeu, MD, PhD*

10. Fellowship/Training Committee Report – *Lazlo Mechtler, MD*

11. John and Sophie Prockop Memorial Lectureship - *Leon Prockop, MD*
    Presented to: Sheena Xin Liu, MD, PhD
    Employing Symmetry Features for Automatic Misalignment Correction in Neuroimages

12. Presentation of the Qureshi Award – *Adnan Qureshi, MD*

Presented to: Rakesh Khatri, MD
Frequency and Factors Associated with Unsuccessful Lead (First) Coil Placement in Patients Undergoing Coil Embolization of Intracranial Aneurysms

13. Presentation of Oldendorf Award – *Dara Jamieson, MD*
Presented to: Eugene Wang, MD
Cross-Sectional Comparison of White Matter Tracts in Early and Later Multiple Sclerosis Using Tract-Based Spatial Statistics

14. Presentation of McKinney Award – *Dara Jamieson, MD*
Presented to: Deepak Gupta, MD
A clinical, angiography and transcranial doppler score for predicting the long term clinical outcome in aneurysmal subarachnoid hemorrhage

15. Presentation of Trainee Travel Awards – *Dara Jamieson, MD*
Presented to: *Gloria Varela, MD, and Julio Andino, MD*

16. New Business

17. Adjourn

AMERICAN SOCIETY OF NEUROIMAGING

PRESIDENTIAL ADDRESS & AWARDS LUNCHEON
ASN Business Meeting
Sanibel Harbour Resort & Spa – Fort Myers, FL
Saturday, January 22, 2011 ■ 1:15-2:45 pm
MINUTES

The meeting was called to order by Dr. Lawrence Wechsler, President.

On motion seconded and carried, the minutes from the January 2010 Business Meeting were approved as submitted.

PRESIDENT'S REPORT

Dr. Wechsler presented the history of neuroimaging and stressed the importance of ensuring future opportunities for neurologists to perform neuroimaging. Dr. Wechsler explained that the training guidelines task force is currently working on updating the training guidelines with the goal being to train residents to create independent reports. There is a need for more UCNS approved fellowships. UCNS previously required fellowships have a 2:1 faculty to fellow ratio, but this has since been reduced to 1:1. The fellowship director is required to be UCNS certified. The practice track for certification eligibility will remain in place until 2015. Dr. Wechsler also noted that it is important to maintain practice opportunities in neuroimaging, oppose limiting the scope of neuroimagers, and incorporate neuroimagers into academic neuroimaging.

Dr. Wechsler provided a summary of the 2011 Strategic Planning Meeting, during which the committee worked through an mission statement update, and identified the three most strategic opportunities for ASN. The identified opportunities are to increase membership, increase revenue for ASN, and enhance the role of neuroimaging in neurology.

Dr. Wechsler updated the membership on the recent AAN/ASN Summit which was attended by ASN leadership and current AAN President, Dr. Griggs and incoming AAN President, Dr. Sigsbee. Primary discussion points were how to best coordinate activities between the ASN and AAN, how to receive AAN support for neuroimaging activities, and assistance in Neuroimaging advocacy efforts.

Dr.Wechsler thanked Drs. Achari, Lindsay and Qureshi for their service on the Board of Directors and announced the new slate of candidates. He also thanked Dr. Jamieson for her work on the Program Committee and L&L for their administrative management of ASN.

On motion, seconded and carried, the membership approved the appointment of Drs. John Choi, Eric Lindzen and Erasmo Passaro to the Board of Directors. The membership approved Dr. Jamieson as the 2011-2013 ASN President and Dr. Mechtler as the 2011-2013 Vice-President and Program Chair.

PROGRAM COMMITTEE REPORT

Dr. Jamieson gave a brief over view of ASN meeting history. She reported there were 155 people registered for the 2011 meeting. The 2011 Program incorporated new educational components, Neuroimaging Jeopardy and a Neuroimaging Self-Assessment Examination. The 2012 Annual Meeting will be held in Miami, Florida, and the 2013 Annual Meeting will be held in Las Vegas, Nevada.

TREASURER'S REPORT

Dr. Jamieson reported for Dr. Feldmann. ASN currently has one year of expenses in reserve. At the end of the 2010 fiscal year, ASN had a deficit of $80,000. The projected 2011 budget will result in a $42,000 deficit. Dr. Jamieson outlined the reduction in the *Journal of Neuroimaging* revenue. The manner in which revenue is received has changed, with half of

the earned revenue deferred to the following year. In an effort to offset the deficit, the advocacy expense for Ed Eichorn has been eliminated, general expenses have been limited, and Dr. Jamieson will decline the President's Stipend.

***JOURNAL OF NEUROIMAGING* (JON) REPORT**

Dr. Masdeu reported that the *JON* continues to do well. There has been growth in online viewing of articles and an increase in submissions. The Journal has a 35% acceptance rate and its impact factor remains steady at 1.7. Dr. Masdeu explained that due to the limited number of printed pages, there is a backlog of articles to be published. There are two ways to remedy this: one would be to have all case reports be available online only and the other would be to ask authors to shorten the length of their articles. Dr. Masdeu asked the membership for their opinion on which solution they prefer and the membership indicated that they prefer the second approach, or possibly a combination of both.

Dr. Masdeu encouraged the membership to submit items to the Section on News, advocate for institutional subscriptions and sponsor Journal supplements. He noted that it is $30,000 to sponsor a supplement. Dr. Masdeu also reported that a new feature will be added to the ASN website which will contain educational material for residents and fellows.

FELLOWSHIP COMMITTEE REPORT

Dr. Mechtler was pleased to report that DENT's fellowship program is now approved by UCNS. ASN now has three UCNS approved neuroimaging fellowships. Dr. Mechtler encouraged the membership to cultivate additional fellowships and apply for UCNS certification.

PRACTICE ISSUES COMMITTEE REPORT

Dr. Hutchinson provided a brief overview of ASN advocacy efforts. He reported in the past, neurologists have been excluded from the National Quality Forum (NQF), though Dr. Mechtler has recently been named a voting member. There was a recent issue with CareCore as they were restricting trade on scans. Dr. Hutchinson invited the membership to stay for the Advocacy Seminar directly after the business meeting for further updates on ASN advocacy.

AWARDS

Dr. Prockop presented the John and Sophie Prockop Memorial Lectureship to Marc Ribo, MD, and Dr. Qureshi presented the Qureshi Award to Ameer Hassan, DO. Dr. Wechsler announced the Oldendorf Award recipient as Chun-Yi Wen, PhD, and the McKinney Award recipient as Arvind Sharma, MD. Dr. Wechsler presented the Trainee Travel Awards to Chun Huang, MD, Carey Taute, MD, and Ashkan Mowla, MD.

PASSING OF THE GAVEL

Dr. Jamison thanked Dr. Wechsler and recognized his service as ASN President. She then reviewed the current challenges facing ASN in 2011. She encouraged the ASN membership to consider sponsoring residents and fellows as junior ASN members and to reach out to clinician neuroimagers to collaborate on education and advocacy issues. She would also like to explore ways to make the ASN Annual Meeting more attractive to international attendees and expand meeting attendance. She reiterated the importance of ensuring resident neuroimagers reach a certain level of competence, which is the goal of the Training Guidelines Task Force.

There being no new business, the meeting was adjourned.

Respectfully submitted,

Shannon Wild
Associate Executive Director

SLW:lao

2012 AWARD WINNERS

Awards will be presented Saturday, January 28, 2012 during the Presidential Address and Awards Luncheon.

John and Sophie Prockop Memorial Lectureship
The John and Sophie Memorial Lectureship was established to enhance the scholarly and educational missions of the Society by honoring outstanding contributions made to the Society's peer-reviewed journal, the *Journal of Neuroimaging.* The recipient of the Lectureship is the first author of a manuscript published in the journal that has been judged to have outstanding value to the development and success of the journal, or the highest quality manuscript published in the prior year as judged by the American Society of Neuroimaging Education Foundation Board of Directors.

2012 John and Sophie Prockop Memorial Lectureship Recipient
Sheena Xin Liu, MD, PhD
Philips Research North America
Braircliff Manor, NY
Employing Symmetry Features for Automatic Misalignment Correction in Neuroimages
(Volume 21 Issue 2 Pages 15-33, April 2011)

Qureshi Award
The Qureshi Award is for the best manuscript based on research in diagnostic angiography or endovascular procedures.

2012 Qureshi Award Recipient
Rakesh Khatri, MD
University of Minnesota
Minneapolis, MN
Frequency and Factors Associated with Unsuccessful Lead
(First) Coil Placement in Patients Undergoing Coil Embolization of Intracranial Aneurysms

Oldendorf Award
The Oldendorf Award is for the best manuscript based on research in CT, MRI, SPECT or PET.

2012 Oldendorf Award Recipient
Eugene Wang, MD
DENT Neurologic Institute
Buffalo, NY
Cross-Sectional Comparison of White Matter Tracts in Early and Later Multiple Sclerosis Using Tract-Based Spatial Statistics

McKinney Award
The McKinney Award is for the best manuscript based on research in neurosonology.

2012 McKinney Award Recipient
Deepak Gupta, MD
University of Alberta, Edmonton
Alberta, Canada
A clinical, angiography and transcranial doppler score for predicting the long term
clinical outcome in aneurysmal subarachnoid hemorrhage

2012 AWARD WINNERS

Trainee Travel Awards
The Trainee Travel awards are presented to the three top-ranked abstracts submitted by a resident/fellow for poster presentations.

2012 Resident Travel Award Recipients

Gloria Varela, MD
University of South Alabama
Mobile, AL
Poster #51
Incidence of Congenital Vascular Malformations in Neonates: a Power Doppler Imaging prospective study

Julio Andino, MD
University of Texas Health Science Center at San Antonio
San Antonio, TX
Poster #9
Reperfusion is most associated with outcome in our intra-arterial thrombectomy cohort

2012 ASN Abstracts

1. Diffuse Cerebral Vasospasm Post-tumor Resection

Mohamad Chmayssani, Yousef Hannawi, Santosh Murthy
Baylor College of Medicine, Houston, TX, USA

Background: Diffuse cerebral vasospasm is a frequently observed complication following aneurysmal subarachnoid hemorrhage or after severe traumatic head injury. However, symptomatic cerebral vasospasm following intracranial tumor resection is an under diagnosed entity.
Patient and Methods: 55-year-old female with a petroclival meningioma, presented for resection of the mass due to intractable seizures and decreased right hand dexterity. She underwent an eleven-hour craniotomy and was discharged home on POD#7 with mild slurred speech. Patient was readmitted on POD#11 for evaluation of a four-day history of slurred speech and lethargy.
Results: MRI showed patchy acute infarcts in the left posterior frontal, parietal and occipital lobes, perisylvian region, corpus callosum splenium, mesial temporal lobe, hypothalamus, and bilateral pontomesencephalic junctions. MRA was significant for diffuse vasospasm, including: 1) severe stenosis of terminal ICA bilaterally, 2) significant stenosis in the proximal ACA A1, MCA M1, and ACA A2 segments bilaterally 3) moderate-severe stenosis in both vertebral arteries and severe stenosis in mid basilar artery and proximal PCA. Four-vessel angiogram confirmed the aforementioned findings. Patient was subsequently treated with angioplasty and intrarterial nicardipine.
Conclusions: Unexplained, fluctuating neurologic deficits after extensive skull base operations should raise the concern for possible cerebral vasospasm. Although rare, as this case illustrates, it can occur in vascular distributions far removed from the surgical site. Aggressive treatment, including both hemodynamic augmentation and endovascular methods should be pursued in the setting of postoperative vasospasm. Early recognition and prompt treatment can improve the morbidity in these complex patients.

2. Use of the Penumbra System 054 Plus Chemical Thrombolysis for Multifocal Venous Sinus Thrombosis

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Introduction: Multifocal cerebral venous sinus thrombosis (CVST) has a high mortality rate (38–53%). Medical anticoagulation raises concerns about the associated risk of intracerebral hemorrhage. Most of the mechanical thrombectomy devices have technical limitations. We report a case of CVST in which new-generation Penumbra-054 was used along with local tPA infusion. The large lumen design of Penumbra-054 provides compatibility with other microcatheters if additional therapies are required.
Patients (or Materials) and Methods: Case report
Results: A 54-year-old lady with diabetes and hypertension presented with 3 days history of headache followed by unconsciousness. Head CT revealed extensive CVST involving multiple venous sinuses and left frontal lobe ischemic infarction. On examination, patient was comatose with extensor posturing to painful stimuli. A heparin drip was started. The patient underwent cerebral angiography, showing thrombosis in the superior sagittal sinus, right transverse and sigmoid sinuses and straight sinus. In a two day procedure, venous sinuses were catheterized using the Penumbra-054 device in conjunction with local catheter delivered overnight tPA administration. Multiple mechanical clot aspirations were performed using Penumbra. Repeat angiogram showed marked improvement of the overall patency of the superficial and deep sinuses. Patient gradually regained consciousness on hospital day 5. She was discharged on warfarin. At discharge, she was oriented to name, follow commands and had residual right hemiparesis.
Conclusion: This is the first reported use of Penumbra system-054 in conjunction with tPA infusion. New devices such as the Penumbra system may offer additional therapeutic options in the treatment of multifocal CVST.

3. Value of Other Endovascular Techniques among Patients with MERCI Device Failure during the Treatment of Acute Ischemic Stroke: What to do When MERCI Fails?

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Introduction: The MERCI Retrieval was the first FDA approved device for thrombectomy in patients with acute ischemic stroke. It remains one of the most commonly used devices today despite its failure to restore blood flow in approximately 50% of the occlusions after technically successful deployment and retrieval. It remains unclear whether additional endovascular techniques or continued MERCI use can achieve recanalization post-MERCI failure.
Methods: Pre- and post- treatment cerebral angiogram was classified using the Qureshi Grading Scale (QGS). Recanalization was defined by a reduction in $\geq$1 grade between pre- and post- treatment cerebral angiogram in the QGS. We compared the angiographic and clinical results with continued use of MERCI retriever and other endovascular techniques in patients with MERCI failure.
Results: 40 patients (53% men) had MERCI retrieval with mean age ($\pm$standard deviation) of 66.8 years $\pm$16 and mean admission NIHSS score of 16.8 $\pm$6.7. Of the 40 patients treated with MERCI retrieval, there were 26 patients with MERCI failure. In group 1, there were 11 patients who underwent continued MERCI use and group 2 15 patients who had an alternate endovascular technique. There was no significant difference in age or risk factors between the groups. The rate of recanalization (82% versus 80%, $p = 1.0$), asymptomatic intracerebral hemorrhage (18% versus 13%, $p = 0.77$) and favorable outcome at discharge (27% versus 20%, $p = 0.66$) were similar.
Conclusion: In cases where the MERCI device is unsuccessful, additional mechanical thrombectomy can result in recanalization and provide comparable rates of favourable outcomes.

4. A Case Series of CT Perfusion Imaging in Seizure

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Background and Purpose: Differentiating between nonconvulsive status epilepticus (NCSE) and a post-ictal state can be challenging without the availability of emergent EEG. CT perfusion (CTP) is used to quickly assess perfusion deficits in cerebral ischemia, and may be useful to differentiate NCSE from post-ictal states. We performed a retrospective analysis to test the hypothesis that perfusion CT may help identify patients with NCSE.
Methods: Retrospective analysis was performed on nineteen patients (age range 44–90) presenting after a clinical seizure or with focal neurologic deficits and subsequent abnormal EEG that underwent CTP in the emergency room. Visual analysis of perfusion maps was performed assessing for patterns of perfusion abnormalities. Results were correlated with clinical and electrographic findings.
Results: Eighteen patients exhibited asymmetry on two or more CTP parameters. Eleven had increased regional perfusion by cerebral blood flow (CBF) measurement. Seven of the 8 (87.5%) patients with electrographic seizures on initial EEG had increased regional perfusion on CTP. Seven patients presenting after a clinical seizure had decreased regional perfusion, and none of those patients had seizures captured on initial EEG.
Conclusions: Patients with seizures may have increased or decreased perfusion, likely correlating with ictal and post-ictal states, respectively. Most patients with ongoing electrographic seizures had increased regional perfusion on CTP. This supports prior studies suggesting that hyperperfusion on CTP may aid in the diagnosis of NCSE. Further studies are needed to validate the specificity of these findings.

5. Stunningly Extensive Intracerebral, Symmetric Calcifications: A Case of Fahr's Syndrome

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Introduction: Fahr's disease is a rare condition comprising idiopathic basal ganglia calcification. Neurological symptoms are protean- the commonest being movement disorders including tremors and parkinsonism, seizures, headache, vertigo, paresis as well as cognitive and psychiatric symptoms. Fahr's syndrome connotes a broader diagnostic entity in which similar dystrophic calcium deposition, clinical and neuroimaging findings occur secondary to another medical condition. The most common comorbidity presumed to have an etiological role in Fahr's syndrome is pseudohypoparathyroidism.
Patients (or Materials) and Methods: We describe a 42 year old man who had mild tremors in his teenage years just prior to having several hospitalizations for symptomatic, severe hypocalcemia. Given normal PTH levels, pseudohypoparathyroidism was suspected. The patient was seen by psychiatry for putative diagnoses of anxiety disorder, Attention Deficit Disorder and bipolar disorder. He was evaluated by the neurology service for worsening tremor and cognitive deficits and was found on examination to have parkinsonian features: hypomimia, bradykinesia, prominent rest tremor, symmetric rigidity and hyperreflexia.
Results: An extensive workup was negative for Wilson's disease. A brain CT was obtained and it showed extensive bilateral and symmetric intraparenchymal calcifications, worse in the basal ganglia, thalamus, cerebellar hemispheres and periventricular matter. Given the clinical context, these findings were reported as consistent with Fahr's syndrome.
Conclusion: It is important to be mindful of the diagnosis of Fahr's syndrome in a patient with pertinent neurological symptoms, a history of calcium dysregulation and extensive intraparenchymal calcifications especially those extending beyond the globus pallidus.

6. Intracerebral Hemorrhage Secondary to Autonomic Dysfunction in a Patient with Guillain-Barré Syndrome

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Background and Purpose: There have been no reports on hemorrhagic stroke as an acute sequelae of Guillain-Barré Syndrome (GBS) related dysautonomia. We present a case where a patient with normal neuroimaging at baseline developed intracerebral hemorrhage (ICH) following dysautonomia-related severe hypertension secondary to GBS.
Methods: Case report with neuroimaging
Results: 70 year old female presented for bilateral facial diplegia, acute dysarthria and left leg weakness and was diagnosed with GBS by clinical exam and lumbar puncture (WBC 1, protein 197). She was started on IVIG for a 5 day course with improvement noted. The patient's blood pressure, however, remained very erratic. Her systolic blood pressure would range from 80s to 180s. Propranolol 80mg every 8 hours was started however no further adjustments were made as treating the hypertension more aggressively would risk significant hypotension. The patient was transferred to the ICU for closer monitoring of blood pressure.
Two days after completing the IVIG course, patient had an acute neurological deterioration with sudden onset of left face, arm and leg weakness and forced eye deviation to the right. A stat CT scan of the head was done and showed a large right MCA hematoma in the basal ganglia affecting an area without previous abnormality on neuroimaging.
Conclusions: This is the first reported case to our knowledge of dysautonomia secondary to Guillain Barre Syndrome leading to hypertensive intracerebral

hemorrhage. Treatment of hypertension in the setting of autonomic dysfunction is controversial and there are no guidelines to guide physicians.

7. Burden of Leukoaraiosis in Acute Intracerebral Hemorrhage is Not Associated with Hemorrhage Expansion and Clinical Deterioration

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Background: Leukoaraiosis (LA) is a frequent finding in patients presenting with intracerebral hemorrhage (ICH) may represent a distinct phenotype with higher rates of hemorrhage expansion and/or clinical deterioration.
Methods: Consecutive subjects with ICH participating in FAST-MAG clinical trial had baseline and follow-up imaging analyzed by 2 neurologists for hemorrhage location, presence of IVH, and leukoaraiosis (Fazkas scale for periventricular and deep white matter changes, 0–3 for each). ICH volume was assessed using the ABC/2 method, expansion defined as volume increased by >33% and/or 12.5 ml. Clinical deterioration was defined as a ≥2 point decrease in Glasgow Coma Scale (GCS) between paramedic and ER evaluations.
Results: There were 127 baseline (mean 100[SD35] minutes after onset) and 105 follow-up (median 21[IQR 5,42] hours after baseline) images analyzed. ICH was in the lentiform nucleus (42%), thalamus (40%), and cortex (4%); IVH in 45 (35%) cases. Moderate to severe (Fazekas grades 2–3) leukoaraiosis was common in the periventricular (58%) and deep regions (35%). Patients were aged 66(SD14) years, 34% women, and evaluated by paramedics 31(SD 23) minutes after onset with a median (IQR) GCS of 15 (15–15). Initial volume was 17.3(SD17)ml, follow-up 28.7(SD36)ml, with an absolute increase of 11.4(SD27)ml. Expansion occurred in 37/105 (35%) cases. Early neurologic deterioration occurred in 37/127 (29%) patients. Overall combined leukoaraiosis score, and individual deep/periventricular scores were no associated with hematoma size, hematoma expansion, and clinical deterioration. There was no association which reached the threshold of $p < 0.10$ to trigger multivariable analysis.
Conclusions: High burden of leukoaraiosis in acute ICH was not associated with rates of hemorrhage expansion and clinical deterioration.

8. Superior Sagittal Sinus Thrombosis Caused by Dehydration Presenting with Ataxia and Fluctuating Leg Weakness. Case Report

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Introduction: Cerebral venous sinus thrombosis (CVT) is uncommon cause of stroke and potentially fatal. Common causes include dehydration, malignancies, hypercoagulable diseases, infections, pregnancy, and oral contraceptives. We report a case of superior sagittal sinus thrombosis caused by severe dehydration that presented with bilateral lower extremity (BLE) weakness.
Patients (or Materials) and Methods: A 63 year-old man presented with BLE weakness, unsteady gait/ataxia and recurrent falls gradually progressed over 2 weeks. One week prior these symptoms he required hospital admission and aggressive intravenous hydration for severe dehydration. Patient had been attempting to lose weight by not using air-conditioning while at home causing him to excessively sweat. Examination showed normal mental status and cranial nerves, mild proximal BLE weakness, wide-based gait.
Results: An extensive work-up was conducted. Serum studies which were unrevealing. Electromyography/nerve conduction study showed mild lumbar radiculopathy. Initial CT head was negative however follow-up CT head obtained on second admission revealed evolving hypodensities within the high convexity brain parenchyma central and bilateral. CT venography (CTV) head was completed and confirmed patency of all major dural venous sinuses. Given recanalization of superior sagittal sinus with rehydration alone, patient was placed on aspirin, received strength and balance therapy with improvement in his symptoms.
Conclusion: CVT is a rare cause of stroke that historically associated with a high mortality rate. The common presentation of superior sagittal sinus thrombosis includes the combination of motor deficits, headache, seizures and coma. In our patient the only etiological factor for thrombus formation was dehydration which increases blood viscosity. Aggressive rehydration led to recanalization of the sinus confirmed on CTV. Severe dehydration in isolation can cause CVT with unusual presentation including ataxia and fluctuating BLE weakness.

9. Reperfusion is Most Associated with Outcome in Our Intra-Arterial Thrombectomy Cohort

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Introduction: Acute stroke patients with more distal middle cerebral artery (MCA) occlusions often present with lower NIHSS scores and have better outcomes. Therefore, these patients may not qualify for IA thrombectomy due to a less favorable risk-benefit ratio. We hypothesized that patients in our IA thrombectomy cohort with distal MCA occlusions on baseline CTA would have better outcomes than those with proximal occlusions.
Patients (or Materials) and Methods: We did a retrospective review from January 2009 to June 2011. Site of occlusion was classified as supraclinoid ICA, M1 segment, and M2 segment. Degree of reperfusion was based on TICI flow: none, minimal, partial, and complete. Good and poor outcomes were defined as discharge to home or acute rehab facility and to a nursing facility, hospice, or death, respectively.
Results: 39 subjects (mean age 68 years ± 16; 51% women; 56% White, 36% Hispanic, 5% Black) were included. 19 (49%) received IV tPA. 6 (16%) had ICA, 20 (51%) had M1, and 13 (33%) had M2 occlusions. Reperfusion rates were as follows: 5 (13%) none, 7 (18%) minimal, 18 (46%) partial, and 9 (23%) complete. 22 subjects (56%) had poor outcomes. In multiple regression, degree of reperfusion was associated with good outcome ($p < .05$).
Conclusion: In multiple regression analysis, degree of reperfusion, rather than site of occlusion, was significant and most predictive of outcome. Therefore, qualifying stroke patients should not be denied IA therapy based on site of occlusion alone. Our results suggest a favorable risk-benefit ratio for patients with distal occlusions who undergo IA thrombectomies.

10. Neuroimaging in Amyotrophic Lateral Sclerosis

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Introduction: Amyotrophic Lateral Sclerosis (ALS) is a degenerative disease associated with a high mortality and morbidity. EMG is the gold standard for its diagnosis, but MRI may be able to demonstrate such degenerative changes. We describe the neuroimaging findings in an MRI of a patient with known cervical spondylosis and an undiagnosed ALS at the time of the study.
Patients (or Materials) and Methods: Case Report
Results: A 50-year-old woman presented with 4 limb weakness and speech dysfunction for 6 months. On examination, she had prominent pseudobulbar affect, severe dysarthria, and spastic quadriparesis with a brisk jaw jerk. MRI of the cervical spine showed advanced degenerative changes with focal cord impingement between C4-C5. MRI brain showed T2 and FLAIR hyperintensities along the motor tracts (*figure on poster*) suggestive of a motor neuron disease. ALS was confirmed by electromyography (EMG) (*Table on poster*).
Conclusion: The diagnosis of ALS must be suspected in patients with mixed upper and lower motor neuron signs. Cervical spine disease does not cause pseudobulbar affect, brisk jaw jerk or gag reflex. In ALS, post-mortem analysis reveals atrophy of the precentral gyrus and upper motor neuron tracts. MRI may reveal these changes as subtle hyperintensities, which can aid the diagnosis.

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11. Radiological Manifestations of Adverse Drug Reactions in the Central Nervous System

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Introduction: Magnetic resonance imaging (MRI) may be used to help identify the diagnosis and/or predict clinical outcome of adverse drug reactions (ADRs)/drug toxicity involving the central nervous system (CNS).
Patients and Methods: Patients with adverse drug reactions involving the CNS secondary to pharmacologic therapy with positive MRI are presented in this series. Among these are cases of a reversible lesion in the splenium of the corpus callosum that has been reported with antiepileptic medications, a case of cerebral white matter toxicity secondary to methotrexate use, a case of posterior reversible encephalopathy syndrome associated with cyclosporine, and a case of progressive multifocal leukoencephalopathy occurring with natalizumab in a multiple sclerosis patient.
Results: Many pharmacologic therapies have adverse side effects involving clinical manifestations attributed to drug effects on the CNS. This identification can be difficult as most clinical CNS manifestations have a large differential diagnosis particularly when it involves patients with complex medical histories or patients on multiple pharmacologic agents. MRI may demonstrate radiologic findings that help distinguish drug effects from alternative diagnoses as well as helping to predict clinical course and outcomes. These cases highlight the utility of MR imaging in identifying ADRs or drug toxicity in the CNS related to pharmacologic therapy.
Conclusion: Familiarization with MRI appearance of ADRs is crucial in establishing a correct diagnosis. MRI may be useful in identifying ADRs involving the CNS from other possible etiologies as well as in predicting clinical course and outcome.

12. Variability in Diagnosing Creutzfeldt-Jakob Disease (CJD) Using Standard and Proposed Diagnostic Criteria

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Introduction: CJD is a rapidly progressive dementia with a median survival of 2–14 months. The diagnosis can only be made accurately by biopsy/autopsy. However, this is not always feasible or desirable. Thus, diagnostic criteria have been proposed by UCSF, European MRI-CJD Consortium, and WHO. We aim to compare these criteria.
Patients and Methods: Retrospective study of 31 patients (average age of 69.2 years) by ICD9 codes 046.1, 046.11, and 046.19 between 2003 to 2010.
Results: All patients presented with rapidly progressive dementia (mean duration of 4.25 months). Pyramidal and extrapyramidal findings, myoclonus, cerebellar changes, akinetic mutism, and visual disturbances were observed in 6.5–48.4%. Five had periodic pattern on EEG. CSF biomarker 14-3-3 was positive in 11. Tau was positive in six. Neuron specific enolase (NSE) was positive in nine. By consensus (kappa = 0.62), MRI was "typical" of CJD in 23 with cortical ribboning (n = 16), basal ganglia hyperintensity (n = 15), or combination (n = 8). By WHO criteria, which does not include neuroimaging, CJD was diagnosed in ten, but 14 if any CSF biomarker was used (p = NS). The UCSF criteria, which does not include CSF biomarkers, diagnosed 18 cases, and the European MRI-CJD Consortium, which includes neuroimaging and CSF biomarkers but with less neurological signs, diagnosed 23 cases ($p < 0.05$ and $p < 0.001$, respectively). CJD-mimics included urosepsis, neurosarcoidosis, idiopathic left

temporal lobe epilepsy, alcohol intoxication, CNS vasculitis, viral encephalitis, and non-Hodgkins lymphoma.
Conclusion: This study illustrates the variability in diagnosing CJD and emphasizes the diagnostic utility of neuroimaging. It also highlights false-positives that may occur with neuroimaging.

13. Neuronal Activity of Spinal Cord in Cervical Spondylotic Myelopathy – A preliminary BOLD fMRI Study

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Introduction: The blood oxygen level-dependent (BOLD) functional magnetic resonance imaging (fMRI) is a promising neuroimaging tool to evaluate the neuronal function in central nerve system. This study aimed to investigate the neuronal activity of spinal cord in cervical spondylotic myelopathy patients using BOLD fMRI.
Patients (or Materials) and Methods: A total of 18 volunteers were recruited in this study with informed consent including 15 healthy subjects (33 ± 13 yrs) and 3 CSM patients (61 ± 9yrs). Spinal BOLD fMRI was performed under interleave unilateral finger tapping tasks. The BOLD signals were collected using the single-shot gradient-echo echo planar imaging (GE-EPI) sequence with a 3-T MRI system. A total of thirteen slices were obtained from C1 to C8 to cover the whole length of cervical spinal cord. The activation volume and intensity of BOLD signal changes were measured for comparison.
Results: The BOLD signals could be consistently detected in healthy cord. The intensity of BOLD signals was relatively higher at the lower cervical spinal cord (C5∼C8,) than the upper part (C1∼C4). As compared with the healthy, the activation volume significantly dropped in myelopathic spinal cord, particularly at C5∼C8. Yet the intensity of each activation voxel at C1∼C4, became relatively higher in CSM than the healthy.
Conclusion: This study firstly demonstrated the feasibility of BOLD fMRI in detection of neuronal activities in CSM. The drop in activation volume of myelopathic spinal cord indicated its neuronal dysfunction; and the relatively higher intensity of each activated voxel might reflect the potential compensatory mechanism in myelopathic spinal cord.

14. Commonly Carried Folate Gene, *MTHFR*, Promotes Brain Deficits in the Cognitively Impaired Elderly

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Introduction: A gene-variant carried by over 35% of US population in the *MTHFR*-folate-gene is known to cause higher plasma homocysteine levels. Homocysteine is damaging to neurons and the vasculature and is a known promoter of brain atrophy. Cognitively impaired elderly including Alzheimer's disease are known to have higher levels of homocysteine and also have significant brain atrophy. So here we set out to test if *MTHFR* gene promotes detectable differences in brain structure in cognitively impaired elderly people carrying the C677T-risk-conferring-variant.
Patients (or Materials) and Methods: 529 cognitively impaired elderly Caucasian subjects (173 Alzheimer's Disease, 356 Mild Cognitive Impairment; mean age: 75·3+/−6·8 years) were scanned with brain MRI and genotyped as part of ADNI study. Using tensor-based-morphometry, we generated 3D maps of regional brain volume differences across the cohort and measured changes with respect to a mean template. At each voxel in the brain, we tested to see where regional volumetric differences were associated with carrying of one or more *MTHFR*-risk-allele. We corrected for multiple comparisons using a False Discovery Rate of 5%.
Results: Carriers of *MTHFR*-risk-variant showed significant brain volume deficits bilaterally in the fronto-parietal white matter regions, up to 7·7% per each risk allele after controlling for age, sex, education and vitaminB12 status. These very regions are also previously implicated with homocysteine-mediated-atrophy.
Conclusion: This highly prevalent C677T-risk-conferring-variant in the *MTHFR* gene influenced brain structural deficits in similar brain regions as homocysteine, which it also affects. This novel finding elucidates one pathway to brain atrophy in the cognitively impaired elderly.

15. Treatment Resistant Rapidly Progressive Amyloid Beta-related Angiitis: A Case Report

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Introduction: CNS vasculitis is often suspected when there are multiple areas of restricted diffusion on MRI along with vessel narrowing on angiography. Amyloid beta-related angiitis (ABRA) is a rare form of CNS vasculitis that has a poorer prognosis when compared to other CNS vasculitides. However, this cause of vasculitis has been shown to be quite responsive to steroids and immuno-modulating agents like cyclophosphamide. We present a case of amyloid angiitis who failed immunosuppression.
Patients (or Materials) and Methods: Case review
Results: We report a case of a 76-year-old woman with no significant past medical history except for asthma, hyperlipidemia, and hypothyroidism who experienced an isolated seizure in April 2010 followed by episodes of aphasia, headaches, and right sided weakness over one month. MRI brain initially did not show an acute process but repeat MRI fifteen days later showed an increase in acute bihemispheric infarcts correlating with the patient's clinical decline. A brain biopsy during this time showed granulomatous angiitis with amyloid deposition. Autoimmune workup was negative. She never improved clinically despite treatment with steroids and cyclophosphamide.
Conclusion: This case highlights failure of beta amyloid-related angiitis to immunosupression which has not been the outcome in previous reported cases of this rare vasculitis. It is presumed our patient did not respond either secondary to her rapid disease progression and/or older age at symptom onset which may have led to an overall poorer prognosis than that seen in other patients with ABRA who typically improve within 2–3 weeks of initiating treatment.

16. The MCP Sign: A Peculiar Peduncle for the Pedigree

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Introduction: Middle Cerebellar Peduncule (MCP) T2/FLAIR hyperintensity combined with clinical features increases suspicion for Fragile X-Associated Tremor/Ataxia Syndrome (FXTAS) and should prompt Fragile X mental retardation 1 (FMR1) gene analysis.
Patients (or Materials) and Methods: A 66 year-old right-handed male with a family history of Down's Syndrome presented with a two year history of tremor and gait instability. Examination demonstrated a 3–5 Hz low amplitude tremor of bilateral upper extremities at full extension and when writing. His gait was narrow-based and occasionally unsteady; cognition was normal. Brain MRI revealed diffuse bilateral subcortical, deep white matter and MCP T2/FLAIR hyper-intensity with generalized atrophy. FMR1 gene analysis demonstrated a CGG trinucleotide premutation which confirmed FXTAS. Genetic counseling recommended his family undergo FMR1 gene testing due to their risk of Premature Ovarian Failure and Fragile X Syndrome.
Results: FXTAS is a common late-onset neurodegenerative disorder caused by CGG trinucleotide expansion in the FMR1 gene in males. Clinical features can include dementia, parkinsonism, dysautonomia, peripheral neuropathy and psychiatric features. However only mild intention tremor and gait instability in combination with MCP sign on T2/FLAIR MRI sequences precipitated appropriate genetic testing in this patient. Although it has been reported in other conditions, MCP sign is relatively specific for FXTAS when combined with white matter abnormalities and generalized brain atrophy.
Conclusion: MCP T2/FLAIR hyperintensity in a male with tremor and a family history of mental retardation should precipitate FMR1 gene analysis to exclude FXTAS. While treatment is supportive, the correct diagnosis is important for family counselling.

17. Withdrawn

18. Large Vessel Occlusion is Associated with Penumbra in Patients with Acute Ischemic Stroke

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Introduction: Penumbral reperfusion is the main target of thrombolysis in acute ischemic stroke. By identifying penumbra, it may be possible to avoid unnecessary therapy and complication, and improve clinic outcome. To predict the presence of penumbra accurately and rapidly in clinical practice remains challenging. We sought to identify factors that could be associated with penumbra in ischemic stroke.
Patients and Methods: Stroke database from January 2008 to January 2010 were reviewed. Inclusion criteria include patients with ischemic stroke presented with NIHSS ≥5 or aphasia, within 0–12 hours from symptom onset, and had MRI studies. The presence of penumbra was determined by MR Perfusion-Diffusion mismatch (DDM) or Clinical-Diffusion mismatch.
Results: A total of 72 patients met the inclusion criteria (age 66, male 53%, median NIHSS 15.5). The average time from symptom onset to first MRI image was 318 ± 151 min. Sixty three (71%) patients were evaluated by PDM. Penumbra was found in 35 (48.6%) patients. Large artery occlusion was a strong predictor for the presence of penumbra with OR of 150 (95% CI: 9.2 to 2432). The sensitivity and specificity were 91.4% and 81.1%, respectively. However, penumbra was less common in patients with age > 77, history of congestive heart failure (EF < 45%) and hyperlipidemia (serum total cholesterol > 200mg/ml). These patients had significant large DWI lesions.
Conclusion: Large artery occlusion is associated with penumbra in majority of the patients with acute ischemic stroke within 12 hours from symptom onset.

19. Brain Activations Due to Cue Induced Craving as Abstinence-Based Treatment Outcome Predictor among Heroin Dependents

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Introduction: Heroin craving, which is processed in a network of brain regions including areas involved in reward, motivation and attention, has a determining role in relapses and treatment failure. The role of each part of this brain network in treatment outcomes and activity pattern changes in this network after a period of abstinence is not well understood.
Patients (or Materials) and Methods: 17 male heroin-dependents prior to undergoing to the treatment (PreTx phase) and after 4 weeks abstinence in a residential program (PostTx phase) underwent fMRI sessions during which they viewed heroin-related and control cues. 9 (52%) subjects remained abstinent for 3 month after treatment initiation (successful subjects).
Results: There were significant right-sided activations in PreTx phase over PostTx in Hippocampus, Thalamus, Posterior Cingulate Cortex, Culmen and Occipital Cortex. After a period of one month abstinence, Left Anterior Cingulate Gyrus, Right Medial Frontal Gyrus, and Left Superior Frontal Gyrus showed greater activations (PostTx > PreTx). In drop-out cases (n = 8), at PreTx

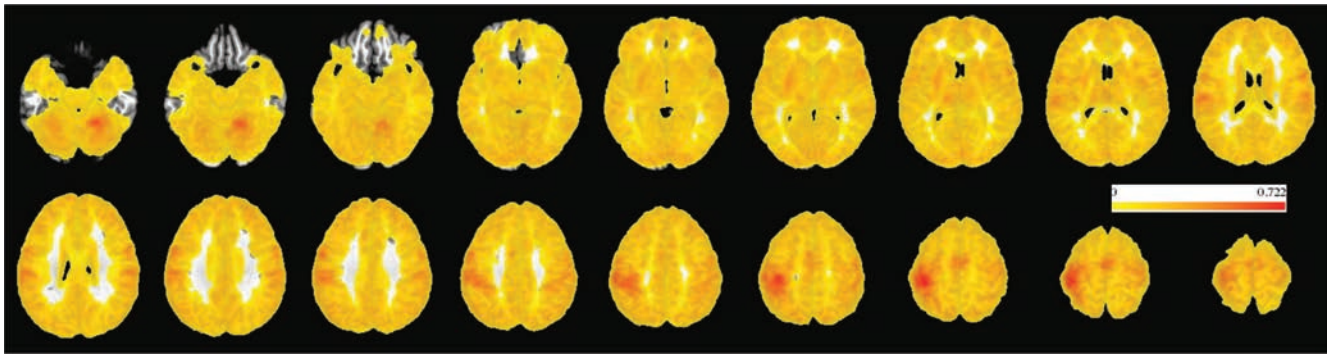

Fig 1. Axial T2-weighted MR of the cervical spine in the C4-5 region demonstrating a bulging disc (arrow) causing left nerve root narrowing.

Images, Right and Left Culmen and Left Posterior Cingulate Cortex were activated more than successful subjects.
Conclusion: One month heroin abstinence could change brain responses to drug related cues significantly both in subjective self-reports and objective imaging data. This study may suggest that some activation in cerebellum (culmen) and posterior cingulate cortex during cue induced craving in pre abstinence phase could predict treatment failure after 3 months of treatment admission among heroin dependents.

20. Correlation between Magnetic Resonance Images and Tumor Consistency in Meningiomas

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Introduction: The tumor consistency is one of the important factors that can help preoperative planning for meningiomas. In the present study the authors aimed to determine whether magnetic resonance imaging (MRI) could predict supratentorial meningioma consistency.
Patients and Methods: We prospectively analyzed 34 consecutive patients with supratentorial meningioma using 1.5 Tesla MRI. The MRI intensities of the tumors were categorized into "low", "iso", and "high" compared to that of the gray matter and the consistency of the tumors were classified into "hard" and "soft" based on operative findings. We compared the MRI findings with tumor consistency.
Results: Of the 34 tumors, 15 were classified as hard and 19 as soft. We found no relationship between T1-weighted images and the consistency of meningiomas. Hyperintensity on T2-wieghted images was correlated with soft tumor consistency ($P < 0.001$) as the hyperintensity on proton density (PD) and FLAIR images was ($P = 0.048$ and $P < 0.001$, respectively). Hyperintensity both on T2 and FLAIR images could correctly predict soft meningiomas in 68.4%.
Conclusion: The results of this study indicate that T2-weighted, FLAIR and PD images are useful for estimation of tumor consistency preoperatively.

21. BOLD-fMRI Analysis of Functional Connectivity Using Contextual and Temporal Information

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Introduction: A variety of techniques (e.g. data driven, model based) have been developed to explore the brain's cortical networks using Pearson correlations. The need of conventional methods to have a priori knowledge of the experimental time course, predicted hemodynamic responses, and seed selection limit the ability to evaluate connectivity throughout the entire brain or across neural networks. The present study introduces a new voxel-wise metric to measure the degree of connectivity between and within regions in response to a task.
Materials and Methods: 20 healthy volunteers participated in a block-design motor experiment (repetitions of sequential voluntary right finger movements followed by rest) using GRE-EPI sequence on a GE Signa 3T MRI along with 3D-SPGR structural scan. Images were preprocessed using Freesurfer and AFNI. Single subject connectivity map were generated using a voxel wise linear regression followed by measurement of a cosine distance metric between the vectors of correlation values sourced at gray matter and second vector (values sourced at CSF and white matter). Resulting data was manipulated by a deconvolution-reconvolution with a Gamma variate function to calculate the psychophysiological interaction.
Results: Regions identified using this methodology include contralateral primary sensorimotor cortex, bilateral SMA, ipsilateral cerebellum and thalamus.
Conclusion: The proposed method for calculating whole-brain functional connectivity demonstrates expected areas of the motor system generated without the selection of a seed or predicted hemodynamic response function required by current conventional SPM or functional connectivity methods. This method may serve as an effective tool for understanding both task-dependent and task-independent brain activity.

22. MRI More Useful Than PET for Diagnosis of Heidenhain Variant Creutzfeldt-Jacob Disease

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Introduction: MRI is able to detect subtle focal cortical abnormalities in the Heidenhain variant of Creutzfeldt-Jakob Disease (hvCJD) and can prove more useful than PET imaging.
Patients (or Materials) and Methods: A 70 year-old right-handed male experienced visual hallucinations and visuospatial disorientation with worsening ataxia followed by progressive anterograde amnesia and cortical blindness. Six weeks later he was comatose with startle myoclonus. A sharply-contoured periotic pattern was evident posteriorly on continuous EEG monitoring with brain MRI revealing subtle bilateral occipital cortical diffusion restriction. PET brain imaging showed diffuse non-focal cortical hypometabolism. Both cerebrospinal fluid (CSF) 14-3-3 and tau protein studies were positive. EEG progressed to refractory status epilepticus and the patient died four days later. The presence of abnormal brain protease-resistant prion protein and MM1 genotype at autopsy supported the diagnosis of hvCJD.
Results: While PET brain imaging is reportedly able to detect focal cortical abnormalities in hvCJD with greater sensitivity than MRI early in the disease, this is not absolute. When combined with EEG periodic sharp waves and a clinical history of visual disturbance and dementia, MRI showing isolated occipital lobe diffusion restriction suggests hvCJD and should prompt CSF 14-3-3 and tau protein analyses. These investigations facilitate valuable prognostication early in this aggressive disease.
Conclusion: hvCJD should be considered in patients with rapid-onset idiopathic visual disturbance and dementia. When combined with EEG and CSF analysis, isolated MRI visual cortex diffusion restriction is suggestive of this ultra-aggressive prion variant and may be more useful than costly PET imaging.

23. Extrapontine Myelinolysis: Complete Radiologic Resolution with Intravenous Immunoglobulin

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Introduction: Extrapontine myelinolysis (EPM) is a rare osmotic demyelination syndrome secondary to rapid correction of hyponatremia, which involves the basal ganglia, thalamus, cerebellum, and classically spares the pons. We describe one such case of EPM, which responded to intravenous immunoglobulin (IVIg) therapy.
Patients: A 20-year-old Asian female presented with a one-month history of intractable nausea, vomiting. She was previously treated at an outside hospital for severe hypovolemic hyponatremia (sodium 97 mmol/L) with normal saline and her serum sodium had been corrected to 134 mmol/L in 48 hours. Neurological exam at presentation revealed rigidity, diffuse hyper-reflexia with clonus in the lower extremities.
Results: MRI of the brain showed symmetric hyperintensities in the caudate nuclei and putamen bilaterally, on T2 and FLAIR sequences. She was diagnosed with EPM. A trial of Intravenous Immunoglobulin (IVIg) for five days resulted in significant improvement in symptoms. At the six-month follow up, the patient had complete resolution of neurologic deficits and radiographic lesions.
Conclusion: The reported case demonstrates complete resolution of extrapontine lesions following IVIg therapy. Possible explanations for the success of IVIg include the reduction of myelinotoxic substances and anti-myelin antibodies, and promotion of remyelination. This case highlights the importance of the need for strict regulation of sodium correction with emphasis on IVIg as a therapeutic option for EPM.

24. Chronic Sagittal Sinus Thrombosis: An Uncommon Presentation of Neurosarcoidosis

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Introduction: Neurosarcoidosis occurs in 5% of patients with sarcoidosis. Chronic sinus venous thrombosis as a presentation of neurosarcoidosis is very rare. We describe one such case of newly diagnosed systemic sarcoidosis who had similar findings.
Patient (or Materials) and Methods: A 56 year-old Caucasian male presented with a one-year history of headache. The headache was associated with nausea, vomiting, photophobia and dizziness. Neurological exam did not reveal any remarkable abnormalities.
Results: CT-scan of the head showed nonspecific thickening of the falx cerebri. MRI, MRA and MRV imaging of the brain showed diffuse smooth pachymeningeal enhancement and chronic superior sagittal sinus thrombosis. Lumbar puncture revealed a mild elevation of protein concentration (62 mg/dl) and a normal cell count. Opening pressure measured 34 cm H2O. Whole body CT-scan revealed diffuse mediastinal and retroperitoneal lymphadenopathy. Lymph node biopsy revealed non-caseating granulomas. Whole body [^{18}F]-FDG PET scanning showed extensive avid mediastinal and hilar lymphadenopathy. The ophthalmological examination was consistent with bilateral chronic granulamatous anterior uveitis. All of the viral and fungal cultures remained negative.
Conclusion: This case highlights chronic sinus venous thrombosis as an unusual presentation of neurosarcoidosis. Other associated radiologic features such as meningeal enhancement, periventricular white matter lesions, enhancing parenchymal lesions, dural mass lesions, hydrocephalus, cranial nerve involvement or spinal cord lesions, should raise the suspicion of this diagnosis.

25. Spinal Cord Infarction in a Healthy 14 Year Old Boy

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Introduction: Spinal cord infarction is rare in children, especially if not triggered by aortic surgery or arterial hypotension. In children, the MRI findings and clinical presentation can be very similar with transverse myelitis, making it more difficult to diagnose.
Patients (or Materials) and Methods: 14 years old boy, presents with sudden onset of chest pain followed by diffuse weakness after playing basketball. Exam was pertinent for weakness over distal arm muscles, as well as bilateral proximal and distal weakness of the lower extremities, diminished reflexes, T4 sensory level and autonomic dysfunction.
Results: Infectious and hypercoagulable work-up, was negative. MRI of the cervical cord showed abnormal T2 signal in the anterior spinal cord, from C5 through T2. DWI showed increased signal, with matching low signal on ADC maps. Cervicocranial and spinal angiography was negative for vascular occlusion or arteriovenous malformation. Patient was started on intravenous high doses of methylprednisolone for 5 days. His strength improved. He was discharged on aspirin and with physical therapy.
Conclusion: There is no consensus on the management of infarctions of the spinal cord in children, but data have been extrapolated from acute stroke and spinal cord injury. The use of steroids most likely reduced the inflammation and spinal shock and has facilitated recovery. Therefore early diagnosis with a high index of suspicion should be done especially in children where is easier to miss the diagnosis, due to the relatively smaller volume and cross-sectional area of the pediatric spinal cord, compared to the adult spinal cord.

26. Radiologic Spectrum of Corpus Callosum Infarctions: A Case Series

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Introduction: Corpus Callosum (CC) infarctions are uncommon. The low incidence relates to a rich vascular supply from the anterior and posterior cerebral circulations and protective hemodynamic factors.
Patients: We present three patients with varying degrees of CC infarcts.
Results: Case 1: 59-year old male was found to have left sided hemiparesis following CABG. MRI showed diffusion restriction confined exclusively to the body of the CC, with severe atherosclerotic narrowing of distal petrous and cavernous ICA bilaterally on MRA. A double lumen was noted in the left ICA, raising concerns for a dissection. Case 2: 46-year-old male presented with acute onset of decreased volitional speech output and bilateral lower extremity weakness. MRI revealed diffusion restriction in the striato-capsular region on the right, genu of the corpus callosum, and frontal subcortical white matter bilaterally. CTA showed an azygous ACA arising from the left internal carotid artery, with partial occlusion of the distal left A1 segment by a thrombus. Case 3: 49-year-old female with sickle cell trait presented with sudden onset of confusion. Diffusion restriction was noted in the splenium of the corpus callosum on MRI. ECHO was remarkable for an enlarged right atrium with a thrombus and a patent foramen ovale.
Conclusion: The location of the ischemia often suggests the etiology. Embolic events affect the splenium, while atherothrombosis affects genu and body. Better understanding of clinical and radiologic complexities can aid in the diagnosis and perhaps obviate the need for biopsy.

27. Is Your Brain Really Necessary: Combined Quantitative MRI and Quantitative MRS may Improve Early Diagnosis of Alzheimer's Disease

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Introduction: Although reduction in brain volume can occur without significant cognitive impairment, recent ADNI studies validate reductions in hippocampal and amygdala volume as biomarkers for mild cognitive impairment (MCI) and Alzheimer's disease (AD). Quantitative MR spectroscopy (MRS) has also been proposed as an AD/MCI biomarker. A combination of quantitative MRI and MRS could provide more robust AD diagnosis than either alone.
Patients and Methods: Quantitative MRI and ^{1}H MRS were performed on 37 subjects (AD n = 5, MCI n = 2, Elderly Controls n = 20, Young Controls n = 10). Short echo time (TE) MRS marker N-acetylaspartate (NAA) and glial marker myo-inositol (mI) were expressed as NAA/mI. Brain volumes were normalized to intracranial volume.
Results: As age and dementia progress, hippocampal volume (AD vs. Elderly, $p = 0.012$; Young vs. Elderly, $p = 0.007$), amygdala volume (AD vs. Elderly, $p = 0.040$; Young vs. Elderly, $p = 0.060$), and NAA/mI ratio (AD vs. Elderly, $p = 0.001$; Young vs. Elderly, $p = 0.001$) all decrease compared to age-matched controls. When mean normalized volumes and mean MRS ratios for each group were compared against each other, NAA/mI-total hippocampal volume ($R^2 = 0.994$, $p < 0.01$), and NAA/mI-total amygdala volume ($R^2 = 0.982$, $p < 0.02$) both showed increasingly significant linear correlations.
Conclusion: Volumetric measurements of the hippocampus and amygdala both strongly correlate with MRS markers, possibly that as the brain shrinks, NAA decreases and mI increases. Thus, quantitative MRI and MRS, when combined apparently provide improved biomarkers over either alone to effectively aid in clinical MCI/AD diagnoses.

28. Hypoglycemic injury on MRI

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Introduction: We describe the neuroimaging findings in an MRI of a patient with hypoglycemic injury.
Patients (or Materials) and Methods: Case Report
Results: A 28-year-old man with type I Diabetes on Insulin, presented with 2 years of ataxia, peripheral neuropathy and cognitive impairment. He is known to have bipolar disorder and several suicide attempts with intentional Insulin overdose. Examination revealed repetitive motor behavior with frequent circling of his hands. MRI brain showed T1 hyperintensities predominantly in bilateral basal ganglia and to some extent in pulvinar and dentate nucleus. Susceptibility signals on gradient sequence in the basal ganglia suggested mineralization. Spectroscopy of Brain revealed decreased NAA over the basal ganglia bilaterally with mildly elevated choline suggesting neuronal loss with gliosis (*figures on poster*).
Discussion and Conclusion: Etiologies which could cause such hyperintense T1 signals include Neurofibromatosis-1, parenteral nutrition, liver failure, ischemic insult, carbon monoxide poisoning, Wilson's disease, hypoglycemia and various causes of basal ganglia calcification including hyperparathyroidism. In the appropriate clinical background, symmetric and more intense involvement of caudoputamen favor a diagnosis of hypoglycemia, which was confirmed clinically in our patient.

References

1. Specific Changes in Human Brain After Hypoglycemic Injury. Stroke. 1997;28:584–587.

29. Progressive Lytic Herpes Simplex Virus (HSV) Type I Encephalitis Despite Maximum Medical Therapy

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Introduction: Untreated Herpes simplex virus (HSV) type-1 encephalitis can have significant morbidity and mortality. We present a case of progressive lytic HSV-1 encephalitis despite maximum medical therapy.
Patients (or Materials) and Methods: Case report
Results: A 19-year-old female with hypothyroidism presented with four days of altered personality, headaches, short-term memory loss, poor executive functioning, hyperorality and hypersexuality.
On presentation, she had a MRI brain which showed on T2/FLAIR and DWI, abnormal hyperintensity in the bilateral mesial temporal lobes extending to the frontal lobes. Her LP was significant for W-820, P-73, G-72 and positive HSV-1-PCR. Intravenous acyclovir was started. A repeat MRI nine days after symptom onset continued to show progression. Decadron was then started because of mass effect. A repeat LP on day 11 showed improving, but still significant, pleocytosis (W-608, P-114, G-52). HSV-1-PCR remained positive. Her dose of acyclovir was increased but she worsened clinically. Foscarnet was added for concern of acyclovir-resistant HSV. A repeat LP on day 16 finally returned negative for HSV-1-PCR. However, she developed severe labial swelling on the foscarnet, and it was stopped. She remained on acyclovir. A repeat MRI on day 37 was stable. She completed 5 weeks of IV acyclovir, got discharged and continued 3 more weeks as oral valacyclovir
Conclusion: Fulminant HSV-1 encephalitis, as demonstrated by this case, can cause significant morbidity. MRI FLAIR and DWI are useful in gauging the damage to the brain and can guide clinical decision making on the dose, duration, and type of antiviral used to treat.

30. MRI Evidence of Carotidynia- the Need for Re-Examination of this Clinical and Radiological Enigma

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Introduction: Idiopathic carotidynia has been previously described as a self-limiting neck pain syndrome featuring tenderness over the carotid bifurcation without structural abnormality. There have only been a few case reports with imaging evidence suggesting a local inflammatory perivascular process.
Patients (or Materials) and Methods: We describe a case of a 65 year old lady with a history of hypertension, hyperlipidemia, smoking and breast cancer post lumpectomy who presented with right-sided neck and face pain of about 4 weeks duration. The patient was seen by a primary care physician who suspected cervical lymphadenopathy and ordered a contrast-enhanced MRI of the face, orbits and neck.
Results: There was no MRI evidence of lymphadenopathy. Deep to the marker placed on the skin over the epicenter of the neck pain, there was a thick, concentric rind of enhancing tissue around the right carotid artery at the level of the bifurcation. There was no evidence of vessel narrowing or mass effect on adjacent structures. A neck MRA subsequently done showed some straightening of the ipsilateral proximal internal carotid artery, but there was no evidence of dissection or atherosclerotic disease.

The patient had repeat neck MRI imaging which showed resolution of the lesion when her symptoms subsided.
Conclusion: A patient who presents with features consistent with carotidynia should have a contrast-enhanced MRI and MRA of the neck to evaluate for similar radiological findings as described. Even if absent, these imaging studies would be pertinent in the investigation of other differential diagnoses like carotid artery dissection, atherosclerotic disease and lymphoma.

31. Wernicke's Encephalopathy: Diagnostically Deceptive but Treatable

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Introduction: Wernicke's encephalopathy (WE) is an acute neuropsychiatric syndrome caused by thiamine deficiency and characterized by the triad of mental status change, gait ataxia and oculomotor abnormalities. It was originally described in alcoholics, but is now being recognised in non-alcoholics. If left untreated, Korsakoff's syndrome, an irreversible impairment in memory, can occur. We present a case of WE precipitated by prolonged hyperemesis and malnutrition.
Patients (or Materials) and Methods: Case Report
Results: A 54-year-old-female with a four-month history of severe vomiting and gastroparesis following fundoplication presented with confusion, hypomimia, quadriparesis, diffuse hyporeflexia and sixth cranial nerve ophthalmoplegia. Magnetic Resonance Imaging (MRI) of the brain showed symmetrical hyper-intensity in the posterior and medial portions of the thalamus on diffusion weighted and fluid attenuated inversion recovery (FLAIR) imaging. There was also hyper-intensity around the aqueduct in the inferior mid-brain and pons on FLAIR Imaging. Ocular movements rapidly improved while confusion and hypomimia improved slowly following intravenous thiamine therapy. However, anterograde memory impairment persisted after two weeks of thiamine therapy. Prior to initiation of therapy blood thiamine levels were low (22 nmol/L; normal range 70 to 180 nmol/L)
Conclusion: WE is potentially reversible and must be diagnosed before progression to Korsakoff's syndrome. It is important to emphasize this classic condition given its reversibility. Correct diagnosis of WE may be missed due to the fact that the classical triad of WE is found in only a minority of patients. Diagnosis is usually clinical but imaging studies, especially MRI, may aid in the diagnosis.

32. Diagnostic Imaging Pitfalls of ADEM (Acute Disseminated Encephalomyelitis) in Older Adults

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Introduction: ADEM, primarily a post-infectious disorder in children, is rarely seen in the elderly. We describe three older adults with pathologically confirmed ADEM, who presented with rapid neurological decline, complicated by co-morbidities, obscuring the clinical and imaging diagnosis of this monophasic demyelinating disease.
Patients (or Materials) and Methods: 1) 57 yr woman with rapidly progressive paraparesis had non-enhancing T2 lesions in subcortical white matter. Despite plasma exchange and steroids she died 6 days after onset. Autopsy showed demyelinating and hemorrhagic inflammatory lesions of the white matter of the cerebrum, brainstem and spinal cord. 2) 69 yr man with rapidly evolving left sided weakness progressed to unresponsiveness, despite treatment with steroids. MRI showed abnormal white matter DWI/FLAIR signal with eventual enhancement. Brain biopsy showed small lesions of perivenular demyelination with scant perivascular mononuclear inflammatory infiltration. 3) 85 yr woman with breast cancer developed acute confusion, weakness, difficulty walking. MRI brain showed T2 hyperintensities and areas of restricted diffusion. MRI lesions were also noted in the thoracic spine. Because of imaging and CSF findings, carcinomatosis and ischemia were considered. Autopsy showed monophasic primary demyelinating lesions in the cerebral hemispheres, cerebellum, brainstem and spinal cord.
Results:/Conclusion: ADEM should be considered in older adults presenting with acute neurological deterioration of the central nervous system (including spinal cord), even when imaging suggests a confounding, co-morbid diagnosis.

33. Rare Case of Multiple Myeloma Causing Preseptal Mass and Meningeal Involvement

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Introduction: The etiology for a preseptal mass other than orbital cellulitis is extremely rare. Orbital and meningeal involvement in multiple myeloma is also infrequent. The following case report involves a 53 year-old male with diagnosed stage III multiple myeloma that presented with diplopia and headache.
Patients (or Materials) and Methods: The patient was initially diagnosed one year prior with IgA lambda multiple myeloma with 86% plasma cells noted on bone marrow biopsy. Preseptal mass was first assumed to be infectious and treated with antibiotics with no remission.
Results: MRI of the brain revealed rare CNS involvement with diffuse leptomeningeal enhancement. CSF cytology with flow cytometry confirmed plasma cell tumor and indicated a different phenotype from CSF collected two weeks prior in that there was a loss of CD56 expression. Biopsy of the left preseptal orbital mass indicated a dense lymphoplasmacytic infiltrate consistent with plasma cell tumor. The patient was treated with IV and intrathecal chemotherapy and palliative radiation to left orbit. Patient expired one month after initial presentation of diplopia and headache.
Conclusion: In conclusion, multiple myeloma with meningeal and preseptal involvement is a rare finding. From a comparison of our patient with other case reports it appears that there was a direct spread of plasma cells from a hematogenous spread to the CNS. Loss of CD56 may be a marker for extramedullary spread of multiple myeloma. Overall, orbital and CNS involvement of multiple myeloma carries a poor prognosis.

34. Post-partum Cerebral Venous Sinus Thrombosis: Iatrogenic, Hypercoagulable or Both?

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Introduction: Cerebral venous sinus thrombosis (CVST) is a potentially devastating condition with early mortality up to 13%. Incidence during pregnancy or peripeurum has been reported as high as 1 in 10,000. Epidural spinal anesthesia (ESA) has been reported as a rare cause.
Methods: We report a case of post-partum CVST and review the classical and rare imaging findings. We postulate the cause in this case was multifactorial, due to cerebrospinal fluid leak post-ESA and underlying coagulopathy
Discussion: A 29 year-old female presented with severe headache, nausea, and spells eight days following spontaneous vaginal delivery with ESA. Non-contrasted head CT demonstrated bilateral subdural effusions and intraparenchymal hemorrhage. MR venogram revealed superior saggital and left transverse sinus thrombosis. MRI lumbar spine showed a fluid collection at L4-S1, compatible with CSF leak. Laboratory evaluation included antiphospholipid antibodies, ESR, ANA, protein C and S activity, prothrombin gene mutation, Factor V Leiden, and homocysteine; all normal except for low protein S activity. Protein S may be decreased in pregnancy; however, the low protein S activity and antigen levels continued at 9 months post-discharge, off anticoagulation.
Conclusion: In our patient, the CSF leak likely contributed significant risk in a patient with an underlying hypercoagulable state. Although CVST can be difficult to diagnose due to varied symptomatology, the diagnosis is important to consider due to potential morbidity and mortality. Non-invasive neuroimaging should be considered in cases of progressive headache in young females on OCPs, or in the ante- and postpartum periods.

35. Hereditary Diffuse Leukoencephalopathy with Axonal Spheroids (HDLS): Observational Scoring System for Brain MRI

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Introduction: Hereditary diffuse leukoencephalopathy with axonal spheroids (HDLS) is a rare brain disease with only 22 reports published. Inheritance is autosomal dominant and the genetic cause remains unknown. The pathological hallmark is axonal spheroids in brain white matter.
Patients and Methods: 15 new patients from Germany, Norway and the US underwent 20 brain MRIs. All 15 patients had HDLS diagnosis confirmed by brain biopsy/autopsy. Sagittal T1-, axial T1/T2-weighted and FLAIR images were visually assessed for location and distribution of white matter lesions (WML), involvement of grey matter, and atrophy. A severity score (0–57) was calculated for each MRI based on a scale modified from Loes et al AJNR 1994;15:1761.
Results: 12 out of the 15 patients demonstrated focal, confluent WML; 1 had generalized WML; 2 had patchy WML; and all had bilateral, slightly asymmetric WML. All cases had frontal predominance of WML; all had central and subcortical involvement; and 14 displayed periventricular distribution. 14 had progressive disease course with an initial MRI mean score of 16.65 (range, 10–33.5). In 3 cases with longitudinal studies, 2 had slight progression (mean initial score, 20; mean follow up score, 23); one had stable disease (score, 4). Corticospinal tracts were involved in late disease stages. There was no involvement of grey matter, brainstem or cerebellum.
Conclusion: MRI severity score may serve as a biomarker to define the natural history of HDLS and to evaluate response to future treatments. Recognition of the typical MRI pattern of HDLS might be helpful in the diagnostic workup.

36. Plasma Exchange as Therapy for HIV-Associated Myelitis

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Introduction: Although HIV-associated infections can affect the spinal cord, HIV itself can cause myelitis. Because immunosuppressive therapy is contraindicated, treatment has traditionally been supportive. We report a case of HIV-associated myelitis responsive to plasma exchange (PLEX) therapy.
Patients (or Materials) and Methods: Case report.
Results: While on HAART, a 47 year-old male with a 5 year history of HIV (CD4 count of 82 cells/mm^3) presented with progressive weakness and numbness for one year, beginning in the lower extremities and spreading rostrally. Exam revealed mild bifacial weakness, quadriparesis with 2 to 4/5 strength in the upper extremities and 0/5 strength in the lower extremities with the exception of 1/5 left EHL, decreased pinprick in distal lower extremities and lateral arms, hyperreflexic throughout, and extensor plantar responses. MRI showed diffuse hyperintensity, edema, and patchy enhancement throughout the cervical cord, from the medulla to C7. LP showed 4 mg/dL WBC, 5 mg/dL RBC, 73 mg/dL glucose, 69 mg/dL protein, IgG index 0.85, CSF cytology, cultures, and viral were negative. Serum testing was negative for viral etiologies, ACE, and NMO antibody. A malignancy workup and spinal angiogram were unrevealing. He received 1g IV Solumedrol for 14 days without improvement and then started on PLEX x 6 sessions with significant motor improvement.
Conclusion: PLEX is sometimes beneficial in autoimmune causes of transverse myelitis, and its role in HIV-associated myelitis is unclear. Given the limitations of immunosuppressive therapy in HIV, this case highlights a potential role of PLEX in the treatment of HIV-associated myelitis.

37. Baló's Concentric Sclerosis Presenting as a Ring-enhancing Lesion in a HIV-infected Patient.

Case Report Derrick Robertson, Eugeniu Muntean, Yazan Suradi, Lingling Rong
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Introduction: Baló's concentric sclerosis is a rare demyelinating disease characterized as rapidly progressive, monophasic, and often fatal. Recent literature suggests patients can have an asymptomatic course or even spontaneous remission. We report a case of an HIV-infected patient presenting with ring-enhancing lesion subsequently diagnosed as Baló's concentric sclerosis.
Patients (or Materials) and Methods: A previously healthy 32 year-old man presented with left-sided numbness and weakness that progressed gradually over 3 weeks. Examination showed normal mental status and cranial nerves, left-sided hemiparesis, and left-sided hyperreflexia.
Results: An extensive work-up included serum, cerebrospinal fluid (CSF) studies, and neuroimaging. HIV antibodies were positive and CD4 count was 755. CSF studies including bacterial, viral, and fungal cultures were negative. CSF showed an elevated IGG index. Initial MRI brain showed T2 hyperintensity with contrast enhancement in the right corona radiata measuring 0.9×0.5 cm. Repeat MRI brain 2 weeks later showed significant increase to 2.9 × 1.8 cm. Brain SPECT showed normal tracer distribution throughout. The patient underwent a stereotactic biopsy with final pathologic findings consistent with an atypical demyelinating process and no evidence of infection or neoplasm. The patient was placed on high-dose corticosteroids with significant improvement in symptoms.
Conclusion: Central nervous system manifestations of HIV known to cause ring-enhancing lesions are well documented and include lymphoma, toxoplasmosis, tuberculous and cryptococcal infections. Our patient had a normal CD4 count and therefore was not necessarily at increased risk for these opportunistic disease processes. He had the characteristic concentric ring pattern on MRI and typical histopathological findings. His newly diagnosed HIV infection served as a distraction from his eventual diagnosis of Baló's concentric sclerosis.

38. Dynamic Causal Modeling of fMRI Data Reveals Disordered Cortico-Hippocampal-Striatal Interactions During Associative Learning in Schizophrenia

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Introduction: Hippocampal-dependent associative learning is subserved by interactions with frontal (Banyai et al 2011) and striatal regions. Impaired fronto-hippocampal-striatal function is a hallmark of schizophrenia-related pathophysiology, yet few *in vivo* fMRI studies have assessed network interactions using appropriate analytical techniques. Here, we applied Dynamic Causal Modeling (DCM; Stephan et al 2010) to fMRI data collected during paired-associate learning (Diwadkar et al 2008).
Methods: fMRI (4.0T) was collected in patients (n = 9) and controls (n = 10; 18 ≤ age ≤ 35 yrs). Because DCM relies on Bayesian model selection (BMS) to identify the most appropriate generative model for the data relative to neurobiologically-plausible competitors, 144 models were constructed by permuting connections between 6 brain regions. In addition to three primary regions, the supra-network included visual, inferior temporal, and parietal cortices. This set of 2,736 models (144 modelsx 19 subjects) was submitted to a second-level Random Effects Analyses for BMS. Inter-group inferences were based on Bayesian averages of estimated network coupling (Penny et al 2010). All analyses were conducted in SPM8.
Results: BMS identified one winning model with an exceedance probability, 60% greater than its closest competitor. In this model, patients evidenced inhibitory fronto-hippocampal coupling, but hyper-excitatory striatal-hippocampal coupling.
Conclusion: These results demonstrate that DCM is sensitive to identifying reduced fronto-hippocampal coupling and compensatory increases in fronto-striatal coupling during associative learning in schizophrenia. The application of DCM to *in vivo* fMRI data constitutes a substantive new advance in the application and ability of fMRI to identify the correlates of schizophrenia-related pathophysiology (Diwadkar, Wadehra et al In Press, Arch Gen Psychiatry).

39. Bilateral Internuclear Opthalmoplegia Resulting from Bilateral Acute Infarction of the Dorsal Midbrain and Periaqueductal Grey Area: A Case Report

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Introduction: Internuclear ophthalmoplegia is a neurological finding which is characterized by an inability of the eye to deviate past the midline on adduction. This deficit is commonly associated with lesions affecting the medial longitudinal fasciculus, which is responsible for conveying motor input from the paramedian pontine reticular formation in the pons to the oculomotor nucleus in the midbrain. Bilateral internuclear ophthalmoplegias associated with acute ischemic infarction are uncommon due to the bilateral blood supply to this region originating from both posterior cerebral arteries.
However, in some cases anatomical variants have been observed in which perforating vessels from the posterior cerebral artery arise predominantly from one side to supply structures bilaterally. When a dominant thalamoperforator arises in such a fashion, it is known as an artery of Percheron.
In this report, we present a 79 year old patient with a history of metastatic prostate cancer, hypertension, hyperlipidemia, and diabetes mellitus who is referred with a chief complaint of acute onset diplopia. Physical exam reveals a complete left internuclear opthalmoplegia as well as a partial right internuclear opthalmoplegia. The left eye is exotropic, and the right has an inferior skew deviation. There are no other focal neurological deficits. Brain MRI showed bilateral infarctions of the dorsal midbrain and periaqueductal grey area. These findings suggest the presence of an aberrant midbrain vascular supply originating from a single posterior cerebral artery.

40. An Usual Case of Central Pontine Myelinolysis: Is There a Causative Role of Vitamin B12 Deficiency?

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Introduction: Central pontine myelinolysis (CPM) is a demyelinating disorder that classically affects the pontine base and particularly occurs in chronic alcoholism, liver failure, and malnourishment. However, other etiologies are less described. We present a case of resolving CPM in a patient with history of gastric bypass and vitamin B12 deficiency.
Patients (or Materials) and Methods: chart review of a case report
Results: 55 year-old female with a remote history of gastric-bypass presented with proximal lower extremity weakness after a 4-week bout of upper respiratory symptoms. An inflammatory myopathy was suspected. An EMG did show mild to moderate myopathic motor unit potentials, but a muscle biopsy did not corroborate this. She was also found to have a vitamin B12 deficiency (177 pg/mL; normal 221–700 pg/mL). her MMA level was 397 mmol/L (normal 79–376). Other laboratory workup revealed a normal metabolic panel, including sodium, but low albumin of 1.9 g/dL and protein of 4.1 g/dL, which were 2.4 g/dL and 5.8 g/dl, respectively, 42 days earlier. Her brain MRI showed acute to subacute CPM. She was placed on low-dose oral steroids for inflammatory myopathy and vitamin B12 supplementation with improvement to full motor strength five months after symptom onset. Nine months after symptom onset she returned to the hospital with flu-like illness. Her brain MRI at this time showed resolved CPM and normal B12 levels.
Conclusion: This case highlights reversible myelinolysis occurring in a patient with vitamin B12 deficiency and suspected.

41. A Case of Polyarteritis Nodosa with Central Nervous System Involvement

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Background: Neurological symptoms as the only presentation of polyarteritis nodosa (PAN) are rare. To date, only a few such cases of PAN with ischemic infarcts and aneurysms have been reported. Here we report a case of polyarteritis nodosa involving both peripheral and central nervous systems.
Case Presentation: A 77-year-old male presented with gradual onset of right facial droop, dysarthria, unsteady gait, right lower extremity weakness and urinary retention, which worsened to the extent of severe paraparesis over the period of six months. Multiple MRIs at over a six month period revealed multiple areas restricted diffusions and T 2 hyperintensities both supra and infratentorially, involving grey as well as white matter, suggesting either a demyelinating disorder or multiple ischemic strokes. Initial treatment with IVIG and single high dose steroids did not improve patient's condition. Thereafter, muscle, sural nerve, right frontal lobe biopsy were done. The muscle biopsy was significant for polyarteritis nodosa and but the brain biopsy turned out to be indeterminate. The combined therapy with cyclophsphamide and prednisone resulted in significant clinical improvement in patient's condition after a period of one month along with interval resolution of brain lesions.
Conclusions: CNS vasculitis often has nebulous neuroimaging features, and a diagnosis of vasculitis should be suspected when the MRI of the brain shows multiple ischemic infarcts not limited to specific arterial territories as well as T2 hyperintensities that are not consistent with diagnosis of any demyelinating disease. Utility of peripheral nerve or muscle biopsy can be useful as well. Better knowledge of these potential manifestations of vasculitis may facilitate more prompt diagnosis and treatment.

42. Central Pontine Myelinolysis Associated with Hodgkin Lymphoma

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Introduction: There are a few cases of central pontine myelinolysis associated with Hodgkin lymphoma. Most cases are associated with electrolyte imbalances, malnutrition and alcoholism. The underlying mechanism in Hodgkin lymphoma is not well known.

Patients (or Materials) and Methods: 16 year old girl presents with 4 weeks of non intentional weight loss (11 lb in 2 weeks), fever and nights sweats along with balance difficulties. No nausea or vomiting. On exam found to have hepatosplenomegaly and cervical lymphadenopathy. Blood work revealed pancytopenia. Neurological exam remarkable for nasal speech, face flat unless asked to smile or close eyes. Cranial nerve exam within normal limits. Formal strength exam shows diffuse weakness 4/5 in all groups except neck flexion and extention which were 3/5. Proximal strength in limbs worse than distal. Sensation intact to cold, vibration. Poor heel knee shin, good finger touching. Poor finger tapping, poor sequential finger touching. Reflexes brisk in lower extremities with bilateral clonus and left upgoing Babinski. Unable perform tandem walk.
Results: MRI brain showed diffuse cerebral atrophy, and central pontine myelinolysis. No known sodium variations, however alteration in sodium concentration cannot be fully excluded especially if happened before admission. Bone marrow biopsy was nondiagnostic. Cervical lymph node excision positive for Hodgkin lymphoma, nodular type
Conclusion: The cause of central pontine myelinolysis in this case is most likely multifactorial due to underlying Hodgkin lymphoma and/or associated nutritional deficiency.

43. Magnetic Resonance Spectroscopy (MRS) Markers of Carbon Monoxide (CO) Brain Damage

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Carbon monoxide (CO) exposure is a common cause of toxic brain damage, whereby effects range from transient neurological dysfunction through permanent dementia & headaches to coma and death. A spectrum of severity of magnetic resonance imaging (MRI) findings after CO damage, including globus pallidus and white matter lesions, is well documented. Reports of MR spectroscopy (MRS) findings remain sparse. The authors have documented many instances of normal MRI studies, under circumstances of human exposures to elevated parts per million (ppm) of CO and with subsequent abnormally high carboxyhemoglobin (COHb) arterial levels, whereby brain MRI has been normal but MRS was abnormal with decreased n-acetyl aspartase (NAA) levels in the basal ganglia either bilaterally or unilaterally.

44. Post Transplant Lymphoproliferative Disorder Masquerading as Posterior Reversible Encephalopathy Syndrome (PRES)

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Introduction: Purpose of this abstract is to report a fatal case of post-transplant lymphoproliferative disorder masquerading as posterior reversible encephalopathy syndrome (PRES). PRES is a clinical and radiological entity that is characterized by headaches, confusion, seizures, and/or visual impairment in the setting of acute hypertension. On non-contrast brain MRI, PRES has a typical pattern of vasogenic edema and T2/FLAIR hyperintensities with no associated restricted diffusion in the affected areas (usually, bilateral parieto-occipital cortical and subcortical regions). Atypical MRI appearances may be noted, but gadolinium enhancement, particularly, early in the disease course is distinctly unusual.
Patient (or materials) and Method/Case Report: A 55-year-old man, 7-years post cadaveric renal transplant presented with two-week course of intermittent headaches, ataxia and cognitive impairment in the setting of acute renal insufficiency and malignant hypertension. Computed tomography (CT) of the head and non-contrast brain MRI revealed radiological features consistent with PRES. Despite optimal treatment for PRES, new onset fever with respiratory and cognitive decline ensued. Gadolinium -enhanced brain MRI revealed multiple ring-enhancing lesions and patient died 18 days after presentation with subfalcine herniation.
Results: At autopsy EBV positive polyclonal post-transplant lymphoproliferative disorder of the central nervous system was observed.
Conclusion: Our case of fatal lymphoproliferative disorder presenting as PRES on noncontrast brain MRI emphasizes the early need for gadolinium enhanced MRI imaging. MRI with contrast can reveal unexpected brain lesions beyond the classical PRES and potentially alter the course of the disease.

45. The Appearance Of Reverse Flow on the Temporal Doppler Trace During Tilt, is a Predictor of Syncope

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Background and objective: In a study to identify an early hemodynamic predictor of syncope, 12 men (25–40 y) underwent 30min of 80° head-up tilt, followed by progressive lower body negative pressure until presyncope.
Method: Temporal artery (supplying extracranial tissues: TEMP), middle cerebral (MCA), and superficial femoral (FEM) arterial flow velocity (V) and vascular resistance (VR), were measured continuously using Doppler ultrasound. Ratios of the Doppler Vmean (V_{MCA}/V_{FEM} or V_{MCA}/V_{TEMP}) were used to assess flow redistribution between these areas.
Result: The progression of the testing protocol showed increases in vascular resistance in all territories. At Presyncope, both MCA_{VR} and FEM_{VR} were reduced while there was a large increase in $TEMP_{VR}$. The temporal artery vasoconstricts early during central hypovolemia resulting in the appearance of negative velocity deflections, which could be used for the early detection of impending syncope. Analysis of the velocity ratios showed little change until the onset of presyncope where there was an increase in V_{MCA}/V_{TEMP} which confirmed that the vasoconstriction of the vascular bed supplied by the TEMP artery contributed to cardiac output redistribution in favour of the brain, and a reduction in V_{MCA}/V_{FEM} suggesting a redistribution of cardiac output towards the legs. In 67% of the tests the appearance of the negative component of V_{TEMP} was an early sign of increasing $TEMP_{VR}$ that occurred before visually detectable changes in V_{FEM} or V_{MCA} and within 5 min before presyncope.
Conclusion: Such easily identifiable Doppler signs in realtime allowed experimenters to anticipate test termination in 67% of the cases.

46. Neuromuscular Ultrasound May Prevent Iatrogenic Injury Associated with Biopsy of a Neck Mass

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Background and Purpose: Morbidity associated with blind biopsy of a palpable neck mass may be prevented by preprocedural neuromuscular ultrasound (US) evaluation. We present a case in which US was used after biopsy for diagnostic purposes, demonstrating the utility of US for imaging of the brachial plexus.
Methods: Case Report: A 64-year-old right-handed female was evaluated for left lateral shoulder paresthesias that developed after needle biopsy of a previously asymptomatic neck mass, thought to be a lymph node. Neurological examination showed mild left deltoid atrophy, proximal left upper extremity weakness, and decreased pinprick sensation over the left lateral shoulder to the elbow. Electromyography revealed active motor axon loss changes affecting the left deltoid and biceps, consistent with a left C5/C6 root lesion. Neuromuscular US clearly demonstrated an ovoid mass attached to the C5 root of the brachial plexus with a central hypoechoic region representing the biopsy site. MRI of the brachial plexus confirmed the location of the mass, excluded additional masses, and revealed no significant enhancement with gadolinium contrast.
Results: Based on our evaluation, the mass was concluded to be a benign peripheral nerve sheath tumor and did not require resection. The patient's symptoms were caused by the biopsy of C5 brachial plexus root, which could have been prevented with preprocedural imaging.
Conclusion: Neuromuscular ultrasound may be used successfully to characterize a neck mass – ideally prior to biopsy – improving patient outcomes and decreasing cost and co-morbidity associated with iatrogenic injury.

47. Environmental Factors Rather than Genetics Influence the Cerebrovascular Blow Flow and Resistance. Findings of the International Twin Study

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Introduction: Cerebrovascular resistance is a pressure dependent mechanism due to the cerebral autoregulation defined as the normal buffering of changes in arterial blood pressure. Our purpose was to assess the heritability (A), shared (C) and unshared (E) environmental components of middle cerebral artery (MCA) mean flow velocities (MFV) and pulsatility indexes (PI).
Patients (or Materials) and Methods: 175 Italian and American (90 monozygotic /MZ/ and 85 dizygotic /DZ/) twin pairs (mean age 53 ± 13 years) underwent transcranial Doppler sonography (MFV, PI on left and right MCAs).
Results: Heritability of right left and right MFV indicated 0.001 (95% CI, 0.000 to 0.287) and 0.107 (95%CI, 0.000 to 0.423), C was 0.724 (95% CI, 0.616 to 0.826) and 0.577 (95% CI, 0.320 to 0.730), and E was 0.275 (95% CI, 0.201 to 0.382) and 0.317 (95% CI, 0.219 to 0.457). Heritability of left and right PI values indicated 0.000 (95% CI, 0.000 to 0.094) and 0.049 (95% CI, 0.000 to 0.332), C was 0.293 (95% CI, 0.105 to 0.459) and 0.411 (95% CI, 0.210 to 0.566), and E was 0.707 (95% CI, 0.550 to 0.889) and 0.540 (95% CI, 0.415 to 0.689), respectively.
Conclusion: No genetic but common environmental factors (familiar socialization) seem to play a significant role on the onset of MCA MFVs. Environmental factors related to individual experience (e.g., smoking, diet, diabetes, physical activity) influence the PIs.

48. Cerebral Vasospasm Secondary to Intracerebral and Intraventricular Hemorrhage,

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Introduction: cerebral vasospasm is a well known complication of patients suffering from subarachnoid hemmorhage (SAH).vasospasm in the absence of SAH is rare. We present 3 patients who developed cerebral ischemia secondary to vasospasm associated with intracerebral(ICH) & intraventricular hemorrhage.(IVH).
Patients (or Materials) and Methods: All the 3 patients were males aged 50, 58 & 64 years. Presented with acute onset of head ache, vomiting & altered sensorium.one patient had a mild right hemiparesis. CT scan brain showed right thalamic hemorrhage in 2 patients & a left thalamo capsular hemorrhage in one patient. The CT angiogram(CTA)on admission was normal in all the 3 patients. Despite a stable neurological status first week post admission, during the second week there was deterioration in the level of consciousness & focal motor deficits occurred in all the three patients.
MRI scan brain revealed multiple areas of infarcts in all the 3 patients. Trans cranial Doppler(TCD) examination revealed multiple areas of vasospasm in all the patients which was confirmed by CTA. All the 3 patients improved with triple H therapy. Repeat TCD & CTA after a week showed complete resolution of vasospasm.
Results: All our three patients had symptomatic cerebral vasospasm as a result of ICH & IVH in the absence of SAH. TCD helped in detecting the vasospasm. The cerebral vasospasm could be recognised because of a high index of suspicion. Because of early intervention there was complete resolution of vasospasm.
Conclusion: These three cases shows the importance of TCD examination, if clinically suspected, even in the absence of SAH, in patients with ICH & IVH to detect symptomatic vasospasm and to do early intervention.

49. Patients with Small Cerebral "Hypertensive" Lacunar Infarction in the Middle Carotid Artery Territory-MRI Data and TCD Sonoqraphic Correlation

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Introduction: The incidentally revealed lacunar hypertensive infarction, sometimes have no neurological symptoms corresponding to the localization of detected brain lesions. Is there a certain TCD changes – to predict this status in future – is the aim of this study.
Patients (or Materials) and Methods: Patients with arterial hypertension, who had supratentorial (MCA territory) focal infarctions diagnosed on MRI, have been examined on TCD (30 patients). All infarction foci were localized in the subcortical and periventricular white matter. Measurments of Peak Systolic Velocity (PSV),End Diastolic Velocity (EDV) and Mean Flow Velocity(MFV), Gosling Pulsatility Index (PI) and Pourselot Resistance Index (RI) of MCA in this group have been compared with identical TCD measurements of the control group hypertensive patients who had no abnormality on MRI. All the patients who had atherosclerotic calcifications in the lumen of the subclinoid or M1 portion of MCA excluded from the study.
Results: The mean PSV /EDV in patients with hypertensive infarction was 80–26 cm/s. Average RI was 0.5.Significant decrease of EDV (26cm/s) and higher RI has been found. There were no PI differences in both groups (50 and 55 cm/s).
Conclusion: Study shows significant differences of EDV and PI in patients with focal lacunar subcortical and periventricular infarctions in comparison of two hypertensive groups. This probably reflects poor collateral supply of periventricular white matter and periphery small vessels lumen vasospasm.
Low EDV and high RI probably might be a useful diagnostic criteria to selection of the hypertensive patients for clinical TCD monitoring, as well as to determine groups with higher risk of cerebrovascular complications of the hypertensive disease based on the haemodynamic disturbances.

50. The Prevalence of Intracardiac Shunts and Vulnerable Carotid Plaqueing in Cryptogenic Strokes and TIA's

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Methods: 918 patients between the ages of 15 and 85 years were referred by neurologists to the vascular lab between 2005 and 2010 with multiple cryptogenic TIA's and/or MRI confirmed areas of cerebral infarct. Tests performed included: carotid duplex examination looking specifically for plaque formations with morphologically ominous composition and right-to-left cardiac shunt detection using agitated saline injections and timed, gauged Valsalva maneuvers while monitoring a middle cerebral artery with transcranial Doppler and counting the number of microbubbles that pass through the targeted MCA.
Results: Vulnerable or morphologically ominous carotid plaqueing is age related peaking between the ages of 61 and 85 years. Large right-to-left cardiac shunts were age independent with equal occurrence over the entire age range.
Conclusions: Large right-to-left cardiac shunts are present in 20% of the 918 patients in this study group equally spread among the age groups. In the patients over 55 years, vulnerable or morphologically ominous plaques are found 50% of the time and less than 10% of the time in patients under 55 years. It is apparent that large right-to-left cardiac shunt in cryptogenic stroke and TIA patients has a distinct pathophysiology unrelated to atherosclerotic disease.

51. Incidence of Congenital Vascular Malformations in Neonates: a Power Doppler Imaging Prospective Study

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Introduction: Vascular malformations of the intracranial vessels are extremely rare developmental anomalies that can be isolated or associated with other malformations. They are frequently asymptomatic in neonates. Their exact incidence is unknown.
Patients (or Materials) and Methods: To assess incidence of vascular malformations in our population, power Doppler imaging was obtained in all neonates born during the same year and requiring a neurosonographic evaluation.
Results: Four hundred eighty five neonates, who were born in the same year, underwent sonographic evaluation. The majority were premature infants with gestation age between 20 and 32 weeks. Five neonates had developmental anomalies of their intracranial vessels. The vascular malformations were asymptomatic in all patients. In one neonate with alobar holoprosencephaly and encephalocele, two primitive marginal sinuses were visualized explaining the absence of the straight and sagittal sinuses. In four neonates the vascular malformation was not associated with other dysplastic features. Two neonates had ACA hypoplasia (one left, one right). Two neonates had hypoplasia of the left ICA with reverse flow in the left ACA.
Conclusion: Congenital vascular malformations of the intracranial vessels are usually asymptomatic in neonates but may require close follow up. Their incidence is close to 1%.

52. A Clinical, Angiography and Transcranial Doppler Score for Predicting the Long Term Clinical Outcome in Aneurysmal Subarachnoid Hemorrhage

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Introduction: To determine which baseline clinical, radiological and transcranial doppler (TCD) parameters are predictive of clinical outcome after aneurysmal subarachnoid hemorrhage (SAH).
Materials and Methods: We prospectively evaluated 138 SAH patients. CT Fisher grade, aneurysmal location in the first cerebral angiography, first of serial TCD studies and clinical parameters on day of the TCD were included. The primary outcome was modified rankin scale (mRS) score dichotomized into good (mRS ≤ 2) or poor (mRS ≥ 3) outcome. Univariate and multivariate logistic regression analysis (LRA) were performed.
Results: First angiography and TCD study were done at mean ± SD interval of 1.2 ± 2 and 3.7 ± 2.5 days, respectively, from SAH onset. At three months, 78 (56.5%) patients had a good and 60 (43.5%) had a poor outcome. By univariate analysis the following parameters were associated with a poor outcome: HH grade, motor or language deficiets, GCS score ≤ 8 ($p < 0.001$ for all), diastolic BP ($p = 0.047$), Fisher grade ($p < 0.001$) and baseline TCD showing mean flow velocity (MFV) > 120 cm/sec in any vessel ($p = 0.07$ with trend). LRA showed that only motor or language deficiets, GCS of ≤8, TCD MFV > 120 cm/sec and Fisher score of 4 were predictive of poor outcome. On a scoring scale of 1 to 5 with 1 point each for the above five variables, a higher score predicted an increased odds ratio (OR) for poor outcome (OR = 2 with score of 1 and 90 with score of 5).
Conclusion: In aneurysmal SAH, a scoring system based on clinical, TCD and CT findings predicts the outcome. Further validation is suggested.

53. Relationship Between Site of Arterial Occlusion and NIHSS Score in Hyperacute Stroke: Analysis by Transcranial Doppler

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Introduction: Angiographic studies have shown that National Institute of Health stroke scale score (NIHSSS) is an inaccurate marker for predicting intracranial occlusion. By using transcranial doppler (TCD) we aimed to determine if there is: a correlation between site of occlusion and

NIHSSS and a cutoff NIHSSS which accurately predicts proximal occlusions (PO).
Patients (or Materials) and Methods: 374 patients from CLOTBUST data bank were included. PO included terminal internal carotid artery (TICA), M1 segment of middle cerebral artery (MCA) and basilar artery (BA) occlusions whereas distal occlusion (DO) included M2 MCA, anterior and posterior cerebral artery (ACA/ PCA) and vertebral artery (VA) occlusions. Univariate analysis (UA) was performed for individual sites of occlusion and for predictors of PO. Logistic regression analysis (LRA) was performed for different NIHSSS cutoffs to predict PO.
Results: By UA, baseline NIHSSS (bNIHSSS), thrombolysis in brain ischemia (TIBI) flow grade, degree of recanalization and modified Rankin scale (mRS) at 3 months were significantly different between the various sites of occlusion and bNIHSSS, TIBI flow grade and CT ASPECTS score differentiated PO from DO. LRA showed that bNIHSSS and TIBI flow grade ($p < 0.001$ each) differentiated PO from DO. The respective sensitivity, specificity, positive predictive value and negative predictive value of various NIHSSS cutoffs to differentiate PO from DO were: 100%, 2.8%, 67.2%, 100% for NIHSSS ≥ 5; 93.8%, 28%, 72.1%, 68.2% for NIHSSS ≥ 10; 72.8%, 59.8%, 78.3%, 52.5% for NIHSSS ≥ 15; 33.8%, 83.2%, 80%, 38.7% for NIHSSS ≥ 20 and 6.6%, 97.2%, 82.4%, 34.3% for NIHSSS ≥ 25.
Conclusion: Although NIHSSS are higher in PO, there is no satisfactory cutoff NIHSSS which differentiates PO from DO.

54. Cross-Sectional Comparison of White Matter Tracts in Early and Later Multiple Sclerosis Using Tract-Based Spatial Statistics

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Introduction: Damage to white matter tracts occurs early in multiple sclerosis, even in areas that appear normal by conventional MRI imaging. Tractography using voxelwise analysis of multi-subject diffusion data (TBSS) can be reliably used to detect global abnormalities in the white matter tracts before conventional MRI detection.
Patients (or Materials) and Methods: Subjects: early RRMS ($N = 6$) was defined as those patients with disease onset ≤ 2 years and EDSS of ≤ 3. Later RRMS ($N = 4$) was defined as disease onset between 2–4 years and EDSS between 3–5.5. Traditional MRI in both groups showed less than 5 cm2 of white matter disease burden. Age and sex matched controls with no history of inflammatory CNS disease were used as controls ($N = 4$).
Results: Using TBSS we have captured a significant amount of white matter tract damage in the early MS group compared to controls ($p = 0.005$). Remarkable areas of departure from mean FA values include the corpus callosum, cortical U-fibers in the frontal and parietal cortex, thalamus and portions of the basal ganglia without brainstem/cerebellar involvement. The amount of white matter tract damage is even more diffuse in the later MS group ($p = 0.014$), extending even to the brainstem and cerebellar white matter tracts.
Conclusion: Early detection of white matter damage using DTI MRI tractography is a powerful tool to assist physicians in treatment planning. The corpus callosum appears to be a strong marker for white matter tract damage, and appears to be affected even early in the disease course.

55. Mechanism of Acute Ischemic Stroke in Patients with Severe Intracranial Atherosclerotic Disease

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Introduction: Intracranial atherosclerotic disease (ICAD) is one of the most common causes of ischemic stroke world wide. Although the pathogenesis of cerebral infarction in ICAD has been reported from autopsy series, the mechanism of stroke is not well known. This study utilized perfusion imaging and diffusion weighted imaging or computerized tomography (CT) imaging to help identify the mechanism of stroke in severe, symptomatic ICAD involving all major intracranial vessels.
Patients (or Materials) and Methods: We reviewed CT or MR perfusion studies and DWI or CT scans in 17 patients presenting with severe symptomatic ICAD. Perfusion scans were classified according to stage of perfusion deficit and DWI or CT images were categorized by lesion pattern as borderzone, cortical or penetrating artery infarct. Perfusion findings and infarct patterns were compared in these patients to further elucidate the mechanism of ischemia in ICAD.
Results: Fifteen patients had borderzone infarctions, either alone or in combination with cortical and/or penetrating artery infarcts. Two patients had no borderzone infarctions, both of which had ICAD in the posterior circulation. Of the 15 patients with borderzone infarctions, 5 had borderzone infarction only, 4 had borderzone and cortical infarcts, 5 had all types of infarcts and 1 had borderzone and penetrating artery infarcts. Thirteen of the 15 patients with borderzone infarcts had perfusion deficits while both patients with non-borderzone infarcts had no perfusion deficit.
Conclusion: In patients with severe ICAD, the mechanism of stroke is due to a combination of hemodynamic insufficiency, artery to artery emboli and penetrating artery occlusion. However, hemodynamic insufficiency plays a major role.

56. Identification of a Symptomatic Sural Schwannoma with High Frequency Ultrasound

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Introduction: High-frequency ultrasound (US) is a useful adjunct to electromyography (EMG) and can be used effectively in the evaluation of focal peripheral neuropathies, including the sural nerve.
Patients and Methods: A 55-year-old right-handed female was referred to the Neurology clinic for pain in the right-ankle of 2-years duration which was attributed to Achilles tendinitis. Her initial examination was normal except for mild tenderness behind the right lateral malleolus. An MRI of the ankle done previously was negative for musculoskeletal pathology. EMG was recommended but she refused. An US showed focal enlargement of the right sural nerve in the calf. The lesion was noncompressible, hypoechoic, and tender to palpation, consistent with a neuroma. She opted for surgical resection and the biopsy was consistent with schwannoma. Apart from expected numbness, she had complete resolution of pain.
Results: Neuromuscular US is a useful and dynamic adjunct to EMG in the evaluation of peripheral neuropathies. EMG with Nerve Conduction Study (NCS) remains the diagnostic gold standard for differentiating radiculopathy, plexopathy, neuropathy or myopathy; as it provides anatomic information and precise localization. When combined with electrodiagnostic tests for evaluation of mononeuropathy, studies have shown that US significantly impacts management by providing valuable structural information. In addition, US can be used to localize a nerve lesion in order to focus a subsequent MRI, reducing scan time and cost.
Conclusion: Neuromuscular US complements EMG/NCS in the diagnosis of focal peripheral neuropathies, including nerve sheath tumors.

57. Bilateral ACA Stroke Secondary to Unilateral Hypoplasia of ACA: Report of Two Cases

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Introduction: Unilateral hypoplasia of anterior cerebtal artery (ACA) is a predisposing factor for this rare type of bilateral ACA stroke.
Patients (or Materials) and Methods: We are reporting two cases of bilateral ACA stroke. One patient has bilateral ACA stroke on MRI and CT scan of brain. Another patient has the uncommon stroke on CT perfusion.
Results: The first patient was a 45 year old woman with diabetes mellitus and hypertension who presented with acute onset of weakness of the right upper and lower limbs. On examination, she was obeying simple commands but was not able to talk. She had power of 3/5 on the right side with upgoing plantar.CT scna of brain showed acute infarcts in both frontal lobes. MRI brain showed restricted diffusion on DWI/ADC at both frontal lobes, left MCA and corpus callosum consistent with acute infarcts. MRA brain showed stenosis at intracranial left ICA, left MCA and left ACA.Right ACA was not visualised.
The second patient was a 57 year old man with hypertension who presented with acute myocardial infarct. During coronary angiography, he developed acute stroke with right hemiparesis. CT perfusion showed acute left MCA (50% matched defect) and acute bilateral ACA stroke (unmatched defect). CTA showed occluded left ICA with left bihemispheric ACA.
Conclusion: We are presenting two rare but interesting cases of bilateral ACA stroke secondary to unilateral hypoplasia of ACA.

58. Self -Referral for MRI Imaging: A Comparison Between Neurologist Shareholders Versus Non-Shareholders in a Single Specialty Private Practice

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Objective: To compare the frequency of diagnostic neuroimaging studies self-referred by neurologists who are shareholders in an outpatient MRI facility versus non-shareholders within a single specialty practice.
Method: In a retrospective statistical review of all patients referred to an outpatient MRI facility in a two year period (between 6/1/2009 to 6/1/2011), a total of 1416 patients were referred for MRI's of the head and spine by the practice. The practice encompassed 2 shareholders and 4 non-shareholders in a single location practice. Neurology shareholders encountered 3894 patients and referred 338; neurology non-shareholders encountered 10272 and referred 1078 patients for diagnostic imaging. The frequency by which physician shareholders and non-shareholders referred patients for diagnostic imaging was calculated over the 2 year period. Comparisons were made using the chi square test.
Results: In the review of all patients referred to the diagnostic center, non-shareholder neurologists referred patients 1.6 times more often than shareholder neurologists with a chi square of 8.34. The p value of <0.0039 was significant for neurology non-shareholder utilizing diagnostic imaging more frequently than shareholder neurologists.
Conclusion: Non-shareholder neurologists utilized imaging more frequently than shareholder neurologists. Importantly, the non-shareholder physicians received no benefit for patient referrals to the diagnostic center. There is no evidence for overutilization by physicians who are shareholders in this study. A possible explanation of differences between these two physician groups may include experience (shareholder physicians on average with more private practice years) as well as postgraduate neurology training on part of the non-shareholder physicians. This study is ongoing with additional data collection.

59. Dural Arteriovenous Fistula with Embolisation

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Introduction: Early diagnosis and management of intracranial dural arteriovenous fistula (DAVF) can prevent the occurrence of stroke.
Patients (or Materials) and Methods: We are presenting an interesting case of dural arteriovenous fistula with embolisation done.
Results: The patient was a 56 year old man with who presented with an episode of right-sided weakness and slurred speech lasting for 30 minutes. It happened ten days prior to presentation to clinic. He has history of diabetes mellitus, hypertension and ischaemic heart disease. On examination, BP was 130/82. His neurological examination was normal. MRI brain showed right transverse sigmoid sinus dural arteriovenous fistula (grade three), parasagittal meningioma and multiple infarcts in cerebellar and occipital lobes. There were patent posterior communicating arteries bilaterally. Cerebral angiography showed right transverse sigmoid sinus dural arteriovenous fistula (grade three). DAVF was fed by petrosquamous branch of the right middle meningeal and transosseos branch of the right occipital arteries. There is cortical venous reflux into the dilated and tortuous vein of Trolard. The dilated veins have aneurysmal dilatation. Embolisation of the arteriovenous fistula was done.
Conclusion: We are presenting an interesting case of right transverse sigmoid sinus dural arteriovenous fistula (grade three) with embolisation.

60. Adult Choroid Plexus Carcinoma with Associated Li-Fraumeni Syndrome

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Li-Fraumeni syndrome is an autosomal dominant, highly penetrant cancer predisposition syndrome with early onset of malignant tumor formation. First described in 1969 by Li and Fraumeni, it is characterized by five cancers: sarcoma, adrenocortical carcinoma, breast cancer, leukemia and brain tumors. The penetrance, as well as early age of onset, pertaining to p53 related carcinoma is relatively higher in women when compared to men. Choroid plexus tumors (CPTs) are intraventricular neoplasms of epithelial origin affecting mostly children. CPTs are subclassified as choroid plexus carcinoma (WHO grade 3), choroid plexus papilloma (WHO grade 1) and atypical choroid plexus papilloma (WHO grade 2).

We report a case of a forty-six year old Caucasian female with a history of Li-Fraumeni syndrome that developed disorientation and retroorbital head pain. She has a history of bilateral breast adenocarcinoma first diagnosed at the age of 24, with recurrence at age 37. Subsequent chemotherapy consisted of 5-FU, Cytoxan and methotrexate following mastectomy.

Initially thought to be sinusitis, an MRI brain revealed a large right intraventricular mass with diffuse vasogenic edema encompassing the right cerebral hemisphere with resulting mass effect and right to left shift. Our patient underwent partial surgical resection and has improved clinically. Postoperatively, she describes blurriness and gray colored distortion to her visual fields.

Pathological specimen was consistent with the diagnosis of choroid plexus carcinoma. Repeat neuroaxis imaging revealed no indication for residual or recurrent tumor. Recommendations were made for PET scan to rule underlying primary neoplasm and chemotherapy regiment of carboplatin and etoposide.

61. Association of Soluble RAGE Levels with Carotid Atherosclerotic Plaque Characteristics by High-Resolution Ultrasound

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Introduction: Recent cohort studies suggested serum levels RAGE (sRAGE) and its ligands are associated with the risk of cardiovascular disease. We hypothesized that sRAGE levels are associated with subclinical ultrasound measures of atherosclerosis in an ethnically diverse population.

Methods: Clinically stroke-free participants (n = 1102) in the multi-ethnic Northern Manhattan Study (NOMAS) underwent high-resolution carotid B-mode ultrasound to measure carotid plaque morphology (plaque density, thickness and area) and IMT. Plaque density was analyzed by Gray Scale Median (GSM) using automated M'Ath software. Serum sRAGE was measured by ELISA and log-transformed to stabilize variance. Multiple linear and logistic regressions were employed to estimate sRAGE associations with IMT and plaque measures.

Results: The mean age was 64yrs; 65% were Hispanic, 19% black, and 16% white. The majority of subjects had carotid plaque present (54%). Mean IMT was 0.93 ± 0.09mm. sRAGE levels were inversely associated with carotid plaque echogenicity in Hispanics (GSM 44 ± 0–179), but not in blacks (GSM 52 ± 0–189) or whites (GSM 63 ± 0–190). No association was seen between sRAGE levels and carotid IMT, plaque area or plaque thickness. Further analysis in Hispanics demonstrated increased sRAGE levels to be associated with lower plaque density. Compared to bottom sRAGE quartile, those in the top quartile displaying a lower odds (0.43, 95% CI 0.22–0.83), after adjusting for sociodemographic and vascular risk factors

Conclusion: In the present study, lower sRAGE levels were associated with increased plaque density amongst Hispanics subjects. These data suggest sRAGE levels may be useful in predicting atherosclerotic plaque morphology and its stabilization, especially amongst minority groups.

62. Decreased [^{11}C]-Flumazenil Binding in Early Alzheimer Disease

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Introduction. Neuronal loss in Alzheimer's disease (AD), a better correlate of cognitive impairment than amyloid deposition, is currently gauged by the degree of regional atrophy. However, functional markers, such as GABA-A receptor density, a marker of neuronal integrity, could be more sensitive. In postmortem hippocampus, GABA-A mRNA expression is reduced even in mild cognitive impairment. We measured whole-brain GABA-A binding potential in vivo using [^{11}C]-flumazenil positron emission tomography (PET).

Methods. Twelve subjects, six patients with early Alzheimer's disease and six healthy controls, were studied with [^{11}C]-flumazenil PET, PET of metabolism and volumetric MRI. Data were evaluated with both voxel-based parametric methods and volume of interest (VOI) methods.

Results. In early AD, on voxel-based analysis [^{11}C]-flumazenil binding was decreased in infero-medial temporal cortex, retrosplenial cortex and posterior perisylvian regions. PET of metabolism and MRI volumetric analyses showed changes in regions affected in early AD, but, unlike with [^{11}C]-flumazenil binding, the parametric findings failed to reach corrected significance in any region of the brain. On VOI analysis, the temporal and frontal lobes, as well as the cingulate gyrus showed decreased [^{11}C]-flumazenil binding. Among the regions measured, hippocampi had the lowest binding potential. [^{11}C]-flumazenil hippocampal binding potential correlated with memory performance.

Conclusion. [^{11}C]-flumazenil binding was decreased precisely in the regions showing the greatest degree of neuronal loss in post-mortem studies of early AD. It could be a useful marker of neuronal loss in early AD and it should be studied in the preclinical stages of the disease.

63. A Randomized, Open, Placebo- and Active-Controlled, parallel, Phase I study in Single Center to Evaluate Cerebral Blood Flow After Administrations of Cilostazol and Ginkgo Biloba Extract Combination in Healthy Volunteers

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Objectives: To evaluate cerebral blood flow after administrations of cilostazol and ginkgo biloba extract combination in healthy volunteers

Methodology: 50 healthy male volunteer were enrolled a randomized, open, placebo- and active-controlled, parallel study. They randomly grouped as cilostazol-ginkgo biloba extract combination group (n = 20), cilostazol group (n = 10), ginkgo biloba extract group (n = 10), and placebo group (n = 10). We analyzed examination, brain SPECT, laboratory studies and adverse effect such as headache before and after medication.

Result and Discussion: Compared with pre-brain SPECR SPM, cilostazol-ginkgo biloba extract combination group showed significantly increased cerebral perfusion on posterior lobe of right cerebellum, middle frontal gyrus of right frontal lobe, precuneus of right parietal lobe, middle frontal gyrus of left frontal lobe, parietal lobule of left parietal lobe. Cilostazol group demonstrate increased cerebral blood flow on middle frontal gyrus of left frontal, ginkgo-biloba extract group showed increased cerebral blood flow right parahippocampal gyrus and posterior lobe and vermis of left cerebellum. There was no change of cerebral blood flow on the placebo group. Cerebral blood flow tends to increase in cilostazol-ginkgo biloba extract group, ginkgo biloba extract group, cilostazol group, and placebo in order. Significant adverse effect was not observed in each group.

Conclusion: Healthy men who take cilostazol-ginkgo biloba extract combination showed increased cerebral blood flow in various brain areas. We suggest that this study would be preliminary result that cilostazol-ginkgo biloba extract combitaion has clinical effect to cerebral ischemia.