

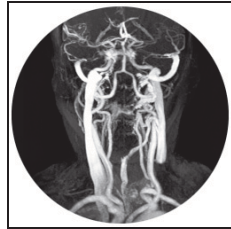
Neurovascular Perspectives

Neurovascular Perspectives is the newsletter of the International Society for Neurovascular Disease (ISNVD)

EDITORS

Michael Dake &
Robert Zivadinov

The International Society for NeuroVascular Disease (ISNVD) is a non-profit professional association devoted to furthering the development of research for neurovascular related diseases – including CCSVI. The society will hold annual scientific meetings and sponsor educational and scientific workshops. Target medical groups include, but are not limited to, Vascular Surgeons, Interventional Radiologists, Neurologists, Neurosurgeons, Physicists, and Technologists.



ISNVD

International Society for
Neurovascular Disease

President's Column

The last year has been one of growth and transition for our Society. As President, it has been my privilege to help shape some of the changes that have occurred. It is clear that the ISNVD becomes stronger and more organized each year as befits a growing and maturing professional society.

Our Society's office transitioned from Detroit to Buffalo over the last year. We owe a large measure of gratitude to Dr. Mark Haacke and Rachel Martis-Laze who have been so important to our organization since its inception. Under their direction, the Society created a strong foundation during its formative years. I know that I speak for entire membership when I congratulate the team in Detroit for a job well done. Without their dedication and commitment, the challenges we faced as a new Society would not have been mastered so smoothly.

Over the last year, we have established a uniform policy for membership renewal and streamlined the membership application process. The Executive Committee met by conference call at regular intervals to insure a smooth transition to Buffalo where Robert Zivadinov and Kelly Denz graciously spent countless hours volunteering their time to make sure that our new ISNVD office was prepared to take over without missing a beat. During these calls, the framework of the 2014 annual meeting was conceived.

We agreed to engage a professional meeting planner, Complete Conference Management, as a partner to help facilitate the arrangements for the February 7-9 meeting in San Francisco. CCM and your Executive Committee met regularly to develop a strategy for marketing and organizing the logistics required to ensure CME credit recognition, faculty arrangements,

sponsorship opportunities and venue negotiations. Of course, these concerns fail to capture all of the endless details that must be addressed in anticipation of a large international meeting. Suffice it to say, the ISNVD leadership team was completely pleased with the dedication and professional skills that CCM devoted to the process.

The 2013 ISNVD Annual Meeting was held at the Marines' Memorial Club and Hotel in downtown San Francisco. The event kicked off with a Friday evening welcome reception and keynote presentation by Paula Grammas, Ph.D., the Executive Director of the Garrison Institute of Aging and Professor of Neurology at the Texas Tech University Health Sciences Center. Her presentation entitled, "*The role of blood vessels and inflammation in the pathogenesis of neurological disorders*", was a fitting opening to our conference and served as a dynamic springboard to future discussions on a wide range of topics featured over the next day and a half.

The following day, four sessions highlighting different aspects of neurovascular function in healthy and disease states afforded attendees a comprehensive look at a number of leading edge considerations from anatomical to physiological to pathological perspectives. Interspersed between the didactic talks presented by experts in the field, some ISNVD members and other invited guest, faculty, scientific abstracts selected by a jury as part of a competitive process were presented within each of the sessions.

After a full day of education and discussion, a gala party sponsored by The Annette Funicello Foundation provided a welcome opportunity to socialize and enjoy a relaxed evening.

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Refreshments and a silent auction along with musical entertainment all centered on a Beach Party theme were appreciated by everyone. All fundraising proceeds went to the ISNVD for support of its mission. The following morning, the program focused on imaging and monitoring of brain hemodynamics as well as a concluding session exploring traumatic brain injury and its vascular consequences.

The general consensus was that the 2014 Annual Meeting represented a successful step forward in the evolution of our Society's goal of providing a multi-disciplinary forum to share scientific research and quality professional education focused on neurovascular diseases.

At the close of the 2014 meeting, my term as ISNVD President was over and the leadership of our Society is passed to our new president, Ziv Haskal. I look forward to working closely with Ziv and the ISNVD leadership team over the next year to insure that our organizational momentum continues to grow and that we enhance the pursuit of our mission through expanded programs, increased membership and exciting new research.

Finally, in order for us to be the vibrant and active organization you want to be a part of, our Society needs your help. I encourage each of you to engage and join other ISNVD members in sharing feedback, comments and thoughts regarding our direction. This newsletter provides a forum to communicate plans for future activities and convey discussions that will help guide our course. So please, accept this request to shape our tomorrow and let us know what you think by posting your ideas in the newsletter section of the Members Area @ www.isnvd.org.

I looking forward to seeing you at the 2015 Annual Meeting.

Very truly yours,

MICHAEL D. DAKE, M.D.

Thelma and Henry Doelger Professor (III)
Department of Cardiothoracic Surgery
Stanford University School of Medicine
Falk Cardiovascular Research Center

Doctors and Scientist from all over the world came to San Francisco, California, the weekend of February 7-9, 2014 to discuss current and ongoing research as well as the future direction of the studies of the neurovascular nature. The three day meeting was full of discussion, questions and talk of patients with neurovascular disease-related issues. There were six well-attended sessions that included talks on various topics. Each session focused on one main topic. The talks were very informative and stimulating as well as productive as evidenced by the many questions asked at the end of each lecture.

The three-day conference had more than 40 invited speakers with about half of them being international. There were also about 50 additional attendees. The event was held at the Marines' Memorial Club and Hotel located in the heart of San Francisco, one of America's most beautiful as well as historic cities.

Upon their arrival, Board Members conducted a Board meeting Friday afternoon which lasted about one hour. That evening, Dr. Paula Grammas delivered the keynote speaker presentation which was excellent and very well-received by the audience. Dr. Grammas's talk was followed-up by a welcome reception hosted by The ISNVD's President, Michael Dake, M.D.



(Above: Dr. Franz Schelling and Dr. Paula Grammas)

Saturday morning, February 8th, started early with a breakfast to get ready for the day's events. At 8:00 a.m., Dr. Dake opened up the first scientific session Chaired by Dr. Robert Zivadinov from The State University of New York at Buffalo. Dr. Zivadinov's Session focused on, "*A Multi-Modality Approach to Extra Cranial Venous Disease.*"



General Annual Meeting Overview (con'td)

Following the first session, the first two selected abstracts were presented followed by a refreshment break along with a display of the technical exhibits which were e-posters.

(Below:) Drs. Marcello Mancini, Steve Alexander, Paolo Zamboni, Robert Zivadinov, Adnan Siddiqui, Lindsay Machan and Erica Menegatti participate in Session 1.



At 10:45 a.m., everyone came back into the meeting room and Session 2 kicked off which was Chaired by Dr. Ziv Haskal. The theme of Session two was “*The Treatment of Abnormal Venous Flow.*” This session contained five speakers followed by a panel discussion with questions and answers.

(Dr. Haskal is seen speaking during his Session below.)



Following session 2, there were two more oral abstracts presented as well as e-poster displays in the lobby.

At Noon, The ISNVD Executive Committee hosted a large business meeting luncheon in the 2nd meeting room which was very well-attended. Dr. Dake went over items of interest to the group such as financials and membership expansion.

At 1 p.m., the scientific sessions started again. Session number three was entitled, “*The Potential Role of Extracranial Venous System in CNS Disorders and Aging*” and was Chaired by Dr. Chih-Ping Chung from Taiwan. During her session, Dr. Chung oversaw eight invited speakers. Session three also concluded with a panel discussion as well as question and answer session.

Session three was again followed by two accepted abstract oral presentations as well as a refreshment break. E-posters were also on display again at this time.

At 3:30 p.m., the last session of the day started and was Chaired by our President, Dr. Michael Dake. Dr. Dake’s session was entitled, “*Quantifying Flow in Neurological Diseases.*” Session four also included seven invited speakers who were very informative as well as interesting. Dr. Dake’s session concluded with a panel discussion as well as question and answer session.



(Above): Dr. Steve Alexander speaks during Session 4.

From 5:00—5:30 p.m., the last two abstracts for the day were presented. The scientific sessions for the day had then adjourned.

At 5:30 p.m., the Board Members held their second meeting of the conference which lasted about one hour. During this meeting items such as finances and membership were also discussed as well as possible meeting locations for next year.

Saturday evening, Dr. Carol Schumacher hosted a Gala dinner/silent auction which was a fundraiser for The ISNVD. Dinner was served and live entertainment was provided.



(Above): Dr. Carol Schumacher tends to business at the very successful silent auction.

General Annual Meeting Overview (con'td): Faculty:

Sunday, February 9th, was our last day together. It opened with an early breakfast to get ready for the day's events. E-posters were also on display out in the lobby at this point

The last two scientific sessions started at 8:00 a.m. Session five was titled, "*Monitoring Hemodynamics of the Brain*" and was hosted by our Vice-President, Dr. Mark Haacke. Dr. Haacke oversaw three invited speakers. This session was also followed by a panel discussion filled with questions and answers.



From 9:30—10:00 a.m. there were two more accepted oral abstract presentations followed by a final refreshment break as well as technical exhibits.

At the conclusion of session 5, Dr. Dake presented the Young Investigator Award which went to Dr. Chun-Yu Cheng from Taiwan. Dr. Dake presented her with a certificate as well as a check for winning in the amount of \$500.00. The title of the winning abstract was, "***The Nature of Abnormal Ultrasonographic findings in Internal Jugular Veins.***" We will share the details of this abstract with you later in the newsletter. Congratulations to Dr. Cheng!

Lastly, at 10:15 a.m., Session six began. Session six was also Chaired by Dr. Haacke. Session six's title was "*Traumatic Brain Injury (TBI) and Vascular Consequences.*" Dr. Haacke had four more invited speakers included in this session. This was also followed by a panel-discussion as well as question and answer session.



COURSE DIRECTORS (COURSE CHAIRS)

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ISNVD Annual Meeting Chairperson
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Faculty/Invited Speakers (cont'd)

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London, United Kingdom

Paolo Zamboni, M.D.
ISNVD Chairperson, Annual Meeting
Universita di Ferrara
Vascular Disease Center
Ferrara, Italy

Scheduled Talks:

Keynote Lecture:

Dr. Paula Grammas—"The Role of Blood Vessels and Inflammation in the Pathogenesis of Neurological Disorders."

Session 1:

Dr. Marcello Mancini—"The Current Status of Ultrasound Imaging for the Screening of CCSVI."

Dr. Erica Menegatti—"What is the Normal Jugular Vein Valve Function."

Dr. Lindsay Machan—"Prevalence of Extracranial Venous Narrowing on Catheter Venography in people with Multiple Sclerosis: Results of a Blind Study."

Dr. Paolo Zamboni- "Identifying CCSVI with Cervial Plethysmography."

Dr. Hector Ferral—"Diagnostic Contributions of Catheter Vennography for the Screening of CCSVI."

Dr. Adnan Siddiqui—"What Additional Information can Intravascular Ultrasound Provide?"

Dr. Steve Alexander—"Molecular Markers of Abnormal CNS hemodynamics."

Dr. Robert Zivadinov—"State of the Art I: Why we Need a Multi-Modality Diagnostic Approach."

Session 2:

Dr. Kottil W. Rammohan- "Designing an Endovascular Trial—What Elements are Essential and Why CCSVI Trials Might Differ from Disease Modifying Trials?"

Dr. Michael Dake- "State of the Art II: Current Results of Safety and Efficacy of CCSVI Therapy in MS Patients."

"Procedural Endpoints: How to Best Measure Meaningful Flow Impairment, Inter-and Post Procedural Therapy."

- A. Dr. Hector Ferral—IVUS Driven Intervention
- B. Dr. Hector Ferral— Optimizing Pure Venographic Therapy

Intervention Studies in 2014:

- A. Dr. Ziv Haskal—"The Time is Ripe for Primary and Replicative Therapy Trials in Multiple Sclerosis."
- B. Dr. Kottil W. Rammohan- "Therapy Trials Need to Wait. The Landscape Has Changed."

Session 3:

Dr. Mark Haacke—"CCSVI and Parkinson's Disease."

Dr. Chun-Yu Cheng—"Etiologies of Jugular Venous Abnormalities in Transient Monocular Blindness."

Dr. Clive Beggs- "Age-related White Matter Changes, Alzheimer's Disease and Jugular Venous Reflux."

Dr. Noam Alperin—"Cerebral Venous Drainage Impairment in Idiopathic Intracranial Hypertension."

Dr. Wei-Ta Chen—"Headache and Venous Abnormalities."

Dr. Mark Wilson—"Venous Abnormalities Involved in High Altitude-Associated Neurological Disorders."

Dr. Han-Hwa Hu- "Cerebral Venous Drainage Impairment and Cerebral Small Vessel Disorders."

Dr. Chris Imray—"The Role of Inflammation Factors I Chronic Cerebral Venous Insufficiency: From the View of Lower Limbs' Venous Disorders."

Dr. Chih-Ping Chung- "The Future Perspective of Researchers on Neurological Diseases Associated with Chronic Cerebral Venous Insufficiency."

Session 4:

Dr. Eric Peterson—"Normal Regulatory Mechanisms of CNS Blood Flow."

Dr. Steve Alexander—"Understanding the Blood-Brain Barrier in health and Disease."

Dr. Noam Alperin- "Origin of Craniospinal CSF Flow Pulsation and How We Measure it."

Scheduled Talks—(cont'd)

Dr. Roy Weller—"The Lymphatic System: What is its Normal role and What Can Go Wrong?"

Dr. Leonard Prouty—"The Use of Biomarkers to Evaluate the Lymphatic System Function."

Dr. Clive Beggs—"Venous Hemodynamics in Neurologic Disorders."

Dr. Eleuterio Toro—"Theoretical Study of Cerebral Venous Haemodynamics Associated with the CCSVI Condition."

Session 5:

Dr. Yulin Ge—"Nitric Oxide and a Vascular Hypothesis in Multiple Sclerosis."

Dr. Larry Latour—"Perfusion Imaging in Stroke: Its Current Clinical Status and its Role in Treating Patients."

Dr. Yulin Ge—"Hemodynamic Impairment in MS: Imaging Techniques and Perspectives."

Dr. Paolo Zamboni- "SPECT and PECT Perfusion Changes after CCSVI Restoration."

Session 6:

Dr. Ramon Diaz-Arrastia—"State of the Art IV: Understanding the Fundamental Physiology of TBI, from Research to Treatment."

Dr. Gunjun Parikh—"Typical Vascular Lesions of TBI and Their Evolution."

Dr. Karen Tong—"The Clinical Spectrum and Natural History of TBI Sequelae."

Dr. Zhifeng Kou—"State of the Art IV: The Role of Imaging and Venous Abnormalities in TB."

Scientific Sessions

Friday, February 7th, 6:00 p.m:

Key Note Speaker: Dr. Paula Grammas

Dr. Paula Grammas spoke on "*The Role of Blood Vessels and Inflammation in the Pathogenesis of Neurological Disorders.*" Her talk was very informative and very well-received as she spoke to a full house.

Dr. Grammas is a Ph.D. and is Executive Director of the Garrison Institute of Aging as well as Professor of Neurology at the Texas Tech University Health Sciences Center.

Summary of Scientific Session 1 by Chairperson Dr. Robert Zivadinov, M.D., Ph.D.

The extra-cranial venous system is complex and not well studied in comparison to peripheral venous system. A newly proposed vascular condition, named chronic cerebrospinal venous insufficiency (CCSVI), described initially in patients with multiple sclerosis (MS) has triggered intense interest in better understanding of the role of extra-cranial venous anomalies and developmental variants. So far, there is no established diagnostic imaging modality, non invasive or invasive, that can serve as the "gold standard" for detection of these venous anomalies. Dr. Mancini presented current status of ultrasound imaging for the screening of CCSVI. He outlined pros and cons of ultrasound imaging for the detection of extracranial venous abnormalities, indicative of CCSVI. Dr. Menegatti focused on a very important emerging topic, i.e. "what is normal and abnormal in jugular vein function" This is indeed the first time we begin to assess comprehensively, the jugular valve functioning.

The session was continued by an excellent presentation from Dr. Machan who presented a recently published, randomized, blinded study from British Columbia on the prevalence of extracranial venous narrowing on catheter venography in people with multiple sclerosis. Dr. Ferral and Dr. Siddiqui followed by presenting comprehensive summaries of pros and cons for the use of catheter venography and intravascular ultrasound for detection of extracranial venous abnormalities, indicative of CCSVI.

The need for non-invasive imaging and molecular markers for screening and prediction of these venous abnormalities is immediate. The ability to define and reliably detect noninvasively these anomalies is an essential step toward establishing their incidence and prevalence. Dr. Zamboni discussed role of plethysmography for extracranial venous abnormalities, indicative of CCSVI, while Dr. Alexander focused on molecular markers of abnormal CNS hemodynamics.



(Above): Dr. Robert Zivadinov Chairs his session while Drs. Paolo Zamboni, Lindsay Machan, Erica Menegatti and Marcello Mancini listen to Dr. Hector Ferral speak.

Scientific Sessions

Finally, Dr. Zivadinov concluded the session by stating that consensus guidelines and standardized imaging protocols for detection of extracranial venous abnormalities, indicative of CCSVI are emerging. He underlined, that most likely, a multimodal imaging approach will ultimately be the most comprehensive means for screening, diagnostic and monitoring purposes. He discussed that further research is needed to determine the spectrum of extra-cranial venous pathology and to compare the imaging findings with pathological examinations. He concluded the session by saying that the role for these anomalies in causing significant hemodynamic consequences for the intra-cranial venous drainage in MS patients and other neurologic disorders, and in aging, remains still unproven at this time.

(Below): Dr. Adnan Siddiqui, from The State University of New York at Buffalo delivers his talk during Dr. Zivadinov's Session 1.



Summary of Scientific Session 2 by Chairperson Dr. Ziv Haskal, M.D.

Session 2 was entitled “*The Treatment of Abnormal Venous Flow.*” The roster of esteemed speakers included Drs. Rammohan, Dake, Ferral and Haskal. Dr. Rammohan, an MS neurologist from Miami, provided important perspectives upon the classical endpoints of MS clinical trials evaluating disease modifying medications and why a CCSVI trial might additionally look at earlier functional endpoints as part of validation of effect. Dr Siskin, originally intended to review the State of the Art in CCSVI Trials was unable to attend but provided his lecture for presentation in his stead. Additional information was added to the clinical literature in the last year, though much of it was focused upon comparative studies validating imaging, diagnosis, and incidence of potential CCSVI in normal and affected populations. No new controlled trials were completed, nor interim results were available to be presented. This provided a basis for a debate between as to whether primary therapeutic trials of catheter directed interventions in MS patients were appropriate in 2014 (Haskal), or whether therapy trials needed to wait (Rammohan).



Above: Dr. Ziv Haskal speaks during his Session while Dr. Hector Ferral listens in.

Dr Haskal argued that small scale phase 1 multicenter trials were appropriate to provide supportive evidence that there was indeed 'signal' to the treatment of CCSVI in MS. Dr Rammohan argued a more cautious approach. Both agreed that a large scale multi-center RCT was presently unlikely in the U.S. in 2014. Adding to this were two lectures by Dr Ferral examining differing methods for assessing venographic endpoints, both IVUS and venography. Considering the excellent reviews of sonography, IVUC, MRV, and catheter venography, and the limits of each methods (evidenced by the diversity of studies claiming clear incident differences among patients groups with CCSVI vs normals-- and others arguing none), one might conclude that there was room for continuing in depth evaluation of these methods, their cross-correlations and a move to more universal, reproducible measures.

Summary of Scientific Session 3 by Chairperson Dr. Chih-Ping Chung, M.D.

Chronic cerebrospinal venous insufficiency (CCSVI) is a theory emerged after clinical observations that extracranial (mainly internal jugular vein) drainage venous abnormalities are associated with multiple sclerosis (MS). In session 3, we had many specialists talking about their research demonstrating extracranial and/or cerebral venous abnormalities in neurological disorders other than MS. These included neurodegenerative diseases (Parkinson's disease, Alzheimer's disease and small vessel disease), headache, transient monocular blindness and high altitude-related neurological disorders.

To culminate her session, Dr. Chung talked about her opinions regarding the future of CCSVI researches: (1) To prove the causal relationship between extracranial drainage venous abnormalities and neurological diseases by clinical longitudinal studies and animal models; and

Scientific Sessions

(2) To explore the pathophysiological consequences of each extracranial drainage venous abnormality; and (3) to study the etiologies of these extracranial drainage venous abnormalities. Dr. Chris Imray also provided his views from lower limbs' venous insufficiency regarding the role of inflammation in the pathophysiology of CCSVI.

(Below): Dr. Chih-Ping Chung speaks during her session.



Summary of Scientific Session 4 by Chairperson Dr. Michael Dake, M.D.

Quantifying flow in neurological diseases was the focus of Session 4 during the recent ISNVD Annual Meeting. Dr. Eric Peterson from the Department of Neurological Surgery at the University of Miami presented a comprehensive detailed look at the normal regulatory mechanisms of central nervous system blood flow. Based on current understandings of the mechanisms responsible for controlling blood flow, Dr. Peterson reviewed cerebral pressure auto-regulation, flow metabolism coupling, the neurogenic regulation of cerebral blood flow and the regulatory roles of the endothelium, astrocytes, and the micro-vascular communication in maintaining circulatory homeostasis. Dr. Steven Alexander presented the current understanding of the blood-brain barrier and how it functions in health and disease. He reviewed the origins and effects of structural and functional abnormalities caused by both inflammatory and degenerative causes. He described the effects of hypoxia and ischemia on this vital boundary and reviewed the known micro-vascular and macro-vascular sequel.

(Below): Dr. Michael Dake speaks during his session.



Dr. Noam Alperin from the University of Miami detailed the origin of cranio-spinal CSF flow pulsation and how we measure it and Dr. Roy Weller followed this presentation with an explanation of the normal function of the lymphatic system of the brain and what can go wrong with the major pathways of lymphatic drainage from the brain. Dr. Leonard Prouty followed with talk on the various biomarkers that have been identified to evaluate glymphatic system function. The last two talks of the session by Dr. Clive Beggs and Dr. Eleuterio Toro provided exciting information regarding the role of venous hemodynamics in neurological disorders and how mathematical modeling can help us better understand with a very high order of predictive accuracy the effects of changes in anatomical and physiological variables on blood flow, respectively.

Summary of Scientific Session 5 by Chairperson Dr. Mark Haacke, M.D.

Dr. Lawrence Latour spoke on "The Perfusion Imaging in Stroke: Its Current Clinical Status and its Role in Treating Patients." Despite two decades of work revolving around PWI, little evidence exists to support the use of diagnosing and selecting patients for treatment based only on PWI and diffusion/perfusion mismatch. In treating acute ischemic stroke, 15 minutes makes a difference and it is safe to treat even if pathology mimics a stroke as the treatment can prevent future stroke.

Dr. Yulin Ge discussed "Hemodynamic Impairment in Multiple Sclerosis: Imaging Techniques and Perspectives."

Vascular hypotheses for MS have been around for years. The first sign is a prominent perivenular space in 7T MRI. PWI is able to detect increased perfusion in NAWM before a lesion formation. Venules are prominent with increased perfusion, but in chronic lesions there is reduced perfusion. MS patients with CV problems have increased problems in MS.

Dr. Zamboni spoke on "SPECT and PECT Perfusion Changes after CCSVI Restoration." Diffuse hypo-perfusion exists in MS that cannot be explained by the autoimmune hypothesis. It precedes plaque formation. Dr. Zamboni posed the question, "Can CCSVI be a contributor to hypo-perfusion?" A pilot study was done with five CCSVI cases using PET scanning. Three patients improved perfusion with venoplasty. Another pilot study was done on eight CCSVI cases, comparing perfusion differences before and after open angioplasty treatment; SPECT was used to measure perfusion. The vast majority of patients improved perfusion after treatment.

Scientific Sessions



(Above): Dr. Mark Haacke speaks during his session.

Summary of Scientific Session 6 by Chairperson Dr. Mark Haacke.

Dr. Diaz-Arrastia discussed “State of the Art III: Understanding the Fundamental Physiology of TBI, from Research to Treatment.” The single most common cause of death and permanent disability in young people under 45 is TBI. Between 10-15% of patients with TBI have microvascular injuries as shown with SWI. Dr. Diaz-Arrastia’s group is using several different treatment options: sildenafil, erythropoietin, statins, G-CSF, VEGF, pioglitazone, exercise, enriched endothelial progenitor cells, from cord blood or bone marrow, and low level laser light therapy. Infrared can penetrate the skull and releases NO. He believes that people who have TBI at an early age, have an increased risk of dementia in later life.

Dr. Gunjun Parikh talked about Typical Vascular Lesions of TBI and Their Evolution. The brain is a large microvascular tree that can be divided into two categories for blood vessels: extraparenchymal and intraparenchymal. The first thing that is affected in TBI are the dura and cortex. Dr. Parikh and associates prospectively evaluated 256 patients in Traumatic Head Injury Classification who were admitted to the emergency department after mild head injuries. Out of 256 patients, 104 (41%) showed evidence of brain hemorrhaging. Of the 104 who underwent additional MRI scanning within 17 hours after the injury, 20% showed microbleed lesions and 33% had tube-shaped linear lesions suggesting vascular injury.

Lastly, Dr. Karen Tong spoke on “The Clinical Spectrum and Natural History of TBI Sequelae.” Dr. Tong discussed how TBI relates to the micro vasculature of the brain neurovascular unit (NVU).

The NVU is described as a physiologic entity that is structurally defined by interactions occurring between endothelial cells, pericytes, smooth muscle cells, astrocytes and neurons. BBB dysfunction results in edema and may affect protein clearance and accelerate brain aging or disease pathology.

Dr. Zhifeng Kou’s talk focused on “State of the Art IV: The Role of Imaging and Venous Abnormalities in TBI.” In 28 moderate to severe TBI patients, bleeding and venous damage were tracked with Susceptibility Weighted Imaging and mapping (SWIM). Inverse correlation between number of hemorrhagic lesions, venous-related lesions, and lesion volumes associated with venous damage were inversely correlated with GCS. High numbers of bleeds were also associated with degree of venous fragility. A mild TBI study showed increased biomarker levels (UCH-L1 and GFAP) compared to normal controls. Compromised BBB occurs and there is an increased CBF mechanism to compensate in these patients. In moderate to severe patients, the venous system is more vulnerable to bleeding and the presence of such bleeds is attributed to worse clinical severity.



(Above): Drs. Franz Schelling and Clive Beggs listen to Dr. Haacke speak.

Young Investigator Award Winner!

Additionally, The Board would like to congratulate Dr. Chun-Yu Cheng from Taipei, Taiwan for winning the Young Investigator Award that was selected from 12 accepted abstracts. Dr. Cheng came to the ISNVD conference with her supervisor, Dr. Chih-Ping Chung, also from Taiwan. The title of Dr. Cheng's winning abstract was "***The Nature of abnormal ultrasonographic findings in internal jugular veins.***" Dr. Cheng received a check in the amount of \$500.00 from The Society as well as a certificate documenting her success.



(Above-pictured is Dr. Dake presenting Dr. Cheng with the Young Investigator's Award.)

Accepted Platforms:

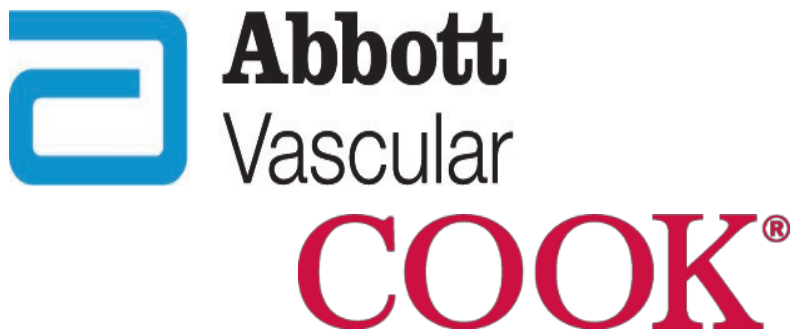
1. **Dr. Marcello Mancini**—"Extracranial brain draining veins in mouse: assessment by High Resolution Ultrasound & MR Angioplasty of the neck."
2. **Chris Magnano, M.S.**—"Inverse Relationship Between Internal Jugular Vein Narrowing and Increased Brain Volumes in Healthy Individuals."
3. **Dr. Kuhyun Yang**—"A Report of Four Cases of Ethmoidal type Dural Arteriovenous Fistula Technique Using Intraoperative ICG Angiography."
4. **Sean Seth, M.S.**—"Classification of Venous Outflow in the Extracranial Vessels in a large cohort of MS patients."
5. **Dr. Chun-Yu Cheng**—"The nature of abnormal ultrasonographic findings in internal jugular veins." - **WINNER**
6. **Dr. Roberto Cappellani**—"CCSVI is Associated with Subcortical Deep Gray Matter Abnormalities in healthy individuals; a diffusion tensor MRI study."
7. **Dr. Charles Woodfield**—"Observed differences of PC-MRI measured venous outflow and CSF pulsatility in migraine subjects receiving an atlas correction intervention."
8. **Dr. Hao Feng**—"Relationship between Jugular Venous Reflux and perihematoma edema and outcome after spontaneous Intracerebral Hemorrhage."
9. **Dr. Zhifeng Kou**—"Cerebral Hemodynamic Changes in Mild traumatic Brain Injury at the Acute Stage."
10. **Dr. Yu-Chien Tsao**—"Altered IJV hemodynamics and impaired cerebral autoregulation in patients with panic disorder."
11. **Dr. Zhifeng Kou**—"Hemorrhagic lesions based on venous and arterial damage and its clinical correlation in Traumatic Brain Injury."
12. **Dr. Charles Woodfield**—"Observed changes in the quality of life and intracranial compliance in migraine subjects receiving an atlas intervention."

Accepted E-poster Presentations:

1. **Dr. Aldo Bruno**—"CCSVI in Meniere's Syndrome: Diagnosis and Treatment."
2. **Dr. Salvatore Sciafani**—"Left Renal Vein Compression is Common in CCSVI."
3. **Chris Magnano, M.S.**—"Internal Jugular vein Cross-Sectional Area Enlargement in Healthy Individuals is associated with the Aging Process."
4. **Dr. Robert Zivadinov**—"Severity of CCSVI is Associated with Decreased Magnetization Transfer Ratio in Healthy Individuals."
5. **Mr. Sean Sethi**—"Quantitative Flow Differences between MS and HC Subjects."
6. **Dr. Soo-Hyun Joo**—"Apathy and White Matter integrity in Alzheimer's Disease: A Whole Brain Analysis with Tract-based Spatial Statistics."
7. **Dr. Mark Haacke**—"Assessment and Quantification of MS lesions and Internal Jugular Vein Function."
8. **Dr. Franck Amyot**—"Functional Near Infrared Spectroscopy (fNIRS) for Measuring TBI Biomarker."
9. **Dr. Franz Schelling**—"Wetterwinkel Lesions: Traumatic Brain Injury Parallels Multiple Sclerosis."
10. **Dr. Seung-Chul Hong**—"Thalamic Shape and Cognitive Performance in Amnesic Mild Cognitive Impairment."
11. **Sean Seth, M.S.**—"Quantitative Flow Differences between MS and Healthy Control Subjects."

SPONSORS

ISNVD would like to gratefully thank these Corporate Members for their support in ensuring scientists and clinicians have the opportunity to contribute and change the lives of so many.



Business/Board Meetings

During the three-day conference, there were three separate meetings that were held on-site; Two Board meetings and one business meeting that included all members.

The first board meeting was held Friday evening at the hotel at 4:30 p.m. The second meeting was the annual business meeting which was held during lunch, the next day at noon in the main ballroom. Lastly, The ISNVD Board members held their final meeting at 5:30 p.m. on Saturday, right before the big Gala dinner.

The following items were discussed:

- ISNVD Finances
- Attendance of ISNVD meeting
- Membership growth
- Scientific directions
- Establishing grant cycle for research
- Partnership with industries
- Donations
- Joint meetings with other Societies
- Locations for future ISNVD meeting venues

Becoming a Member

On a separate note, The Executive Committee received positive feedback from the conference—especially from non-members.

If you are interested in becoming an ISNVD member or know of someone who may be interested, please go to our website at www.isnvd.org for more information or contact our Buffalo, New York office at (716) 859-3579.

Gala Dinner/Business-Board Meetings



On Saturday evening, there was a gala dinner fundraiser hosted and coordinated by Dr. Carol Schumacher.

The purpose of the event was to raise funding for neurovascular research on venous disease through the Annette Funicello Foundation. Carol not only coordinated the entire dinner but also sponsored a silent auction that was very successful.

The theme for the Gala dinner was “Beach Party” in honor of Annette Funicello who had passed away last year from complications of Multiple Sclerosis. Annette starred in many beach party-themed movies during the 1960s and 70s and her Foundation benefits the study of MS. Live entertainment for the evening:



Live entertainment for the evening was from a Jazz Quartet that included Jeff Beal, trumpet, John Burr, piano, John Shiflett, bass and Jason Lewis—drums.

(Below): Dr. David Hubbard and Dr. Salvatore Sclafani discuss research during the gala event.



(Above:) Drs. Mark Haacke and Michael Dake enjoy the silent auction.



(Above): Drs. Ziv Haskal, Paolo Zamboni, Erica Meneghetti, Marcello Mancini and Noam Alperin chat. (Below): Drs. Woodfield & Zamboni.



ISNVD Executive Committee:

President: Michael D. Dake

President Elect: Ziv Haskal

Vice President: E. Mark Haacke

Immediate Past President: Marian Simka

Secretary: Salvatore Sclafani

Treasurer: Robert Zivadinov

Chair, Annual Meeting Program Committee: Michael Dake

Chairperson: J. Steven Alexander

Chairperson: Hector Ferral

Chairperson: Paolo Zamboni

Committee Chairpersons:

Finance Committee: David Hubbard/Robert Zivadinov

Nominating Committee: Salvatore Sclafani

Annual Meeting Chairs: Mark Haacke/Chih-Ping Chung

Awards Committee: Marian Simka/Alireza Minagar

Publications Committee: E. Mark Haacke/Clive Beggs

Education Committee: Karen L. Marr/Adnan Sidiqqi/Marcello Mancini

Governance Committee: Marian Simka/Joseph Hewett

Section and Affiliations Committee: Zahid Latif/Nikolaos Liasis

Safety Committee: Bulent Arslan

Public Relations Committee: Sandy McDonald

We would like to acknowledge the fact that there will be a "changing of the guard" this coming Spring. We are very happy to remind everyone that Dr. Ziv Haskal will take over as President this Spring.

Thank You

Many thank yous go out to everyone who worked hard to put together this awesome scientific convention as well as to those of you who attended. We take great pride in the fact that our 2014 annual meeting was a huge success! We hope to see you again next year.

Very truly yours,

The ISNVD Executive Committee