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WORLD NEUROLOGY

THE OFFICIAL NEWSLETTER OF THE WORLD FEDERATION OF NEUROLOGY

A Neurologist's Hands-On Relief Work in Haiti

BY MILL ETIENNE, M.D.

I recently returned from Haiti after spending 2 months on the USNS Comfort, a Naval hospital ship and large trauma center. The Comfort had been deployed as part of Joint Task Force-Haiti's Operation Unified Response to offer humanitarian assistance and disaster relief to Haiti and its people after the devastating earthquake of Jan. 12 overwhelmed the country's governmental and public health emergency response system.

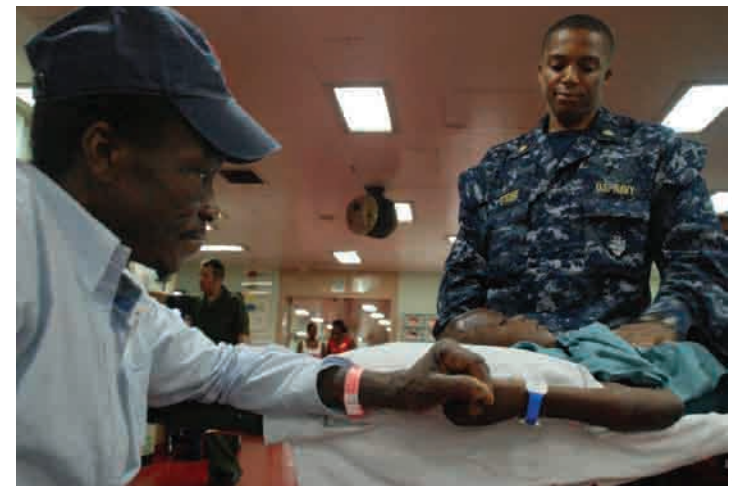
The Comfort has 1,000 medical beds, including 80 intensive-care unit beds; up to 12 operating rooms; and a 50-bay casualty receiving area—the equivalent of an emergency room.

After the Comfort arrived in Haiti, it served as the tertiary medical center for the region and offered the most advanced medical care available following the earthquake. Patients were being transported to our ship by helicopter while we were en route, so we started treating patients even before we dropped anchor on Haiti's shores. Patients were evaluated in the casualty receiving area and then either went to the operating room, a ward, or an ICU based on their medical or surgical needs.

The earthquake, which registered 7.0 on the Richter scale, contributed to more than 200,000 deaths, and countless more injured and homeless, making it the most destructive earthquake ever in the Western hemisphere. It occurred 10 miles southwest of Port-au-Prince, the capital city with a population density of 28,353/km^2. When it struck, Haiti was still recovering from a large tropical storm and three major hurricanes that had occurred in 2008.

Even before its latest disaster, Haiti was considered the most impoverished country in the Western hemisphere. It had two neurologists—one adult and one child—and three neurosurgeons, and five facilities capable of doing CT scans.

We were equipped to address the common neurological emergencies. We had hypertonic saline, and mannitol, antibiotics to treat CNS infections, and anticonvulsants (phenytoin, fosphenytoin, carbamazepine, levetiracetam, Phenobarbital, valproic acid) as well as tissue plasminogen activator. We also had tetanus toxoid and human tetanus-immune globulin, or HTIG, because although tetanus is a rare disease in developed countries, it remains a significant health problem in developing countries such as Haiti, where immunization coverage might not meet WHO recommendations. We managed six patients with tetanus during the mission.



COURTESY LT JANETTE ARENCIBIA/US NAVY

Dr. Mill Etienne does an exit evaluation on a Haitian child who was about to be discharged from the U.S. Comfort hospital ship.

We were able to do blood chemistries, hematology, CSF analysis, serum anticonvulsant levels, microbiology, and rapid malaria and HIV testing. Neuroimaging capabilities included roentgenography, ultrasound, and computed tomography. However, shortly after our arrival, an earthquake aftershock

See **Haiti** • *page 10*

INSIDE

Trial Generates Options for DBS Target Sites in Parkinson's

BY JEFF EVANS
Elsevier Global Medical News

TORONTO — Motor function in Parkinson's disease patients improved by a similar amount after 2 years of bilateral deep brain stimulation of the subthalamic nucleus or globus pallidus in the first blinded, randomized trial to compare outcomes with the two targets.

This result may free clinicians to give greater weight to the effects of deep brain stimulation (DBS) at each site on quality of life, neuropsychiatric symptoms, and medication reduction, Dr. Kenneth A. Follett said at the annual meeting of the American Academy of Neurology.

The subthalamic nucleus (STN) has become the preferred and most common target of deep brain stimulation for Parkinson's disease patients, even though "there really is a lack of high-quality evidence that STN-DBS provides clinical outcomes that are superior to outcomes with GPi [globus pallidus interna]-DBS," said Dr. Follett, professor and chief of neurosurgery at the University of Nebraska Medical Center, Omaha.

GPi-targeted patients completed the trial with slightly better neurocognitive performance in some areas and slightly more "on" stimulation time, but also with significantly greater medication use, than did STN-targeted patients.

"The bottom line is that given the uniformity of outcomes, clinicians may comfortably take into consideration factors other than just motor function when selecting a target. You may decide it's prudent to select one target versus the other based on symptoms. For example, a patient with severe, dose-limiting dyskinesias may be a [slightly] better candidate for GPi. A patient who has medication side effects such as nausea or hallucinations at a low dose may be a better candidate

See **DBS** • *page 12*

EDITOR IN CHIEF'S COLUMN

Child Neurology Is a Necessity, Not a Luxury

BY MARK HALLETT, M.D.

After the February issue of World Neurology came out, I received an angry e-mail from my friend Isabelle Rapin of the Albert Einstein College of Medicine in New York complaining that I had not included the announcement of the International Child Neurology Congress that was held in May in Cairo. Isabelle is a strong supporter of child neurology, and in fact, has just received the President's Award of the American Academy of Neurology, in part for such support.

I explained that World Neurology is happy to list such meetings (no charge!) as long as we are informed about them, and they would be of interest to neurologists around the world. We did list the meeting in the calendar in the April issue. In the process, I notified President Hachinski about the situation, and he noted the importance of strengthening the liaison between the World Federation of Neurology and the International Child Neurology Association.

Perhaps because of being sensitized about missing a child neurology event, my ears pricked up when I subsequently heard from several sources about the workforce crisis in child neurology in the United States. World Neurology has often had stories about the shortage of neurologists in various countries. But in the United States, too? In this issue, Bennett Lavenstein writes about that shortage in the United States and Canada as well as in developing countries (see p. 14).

The problems are ubiquitous. Why should this be so? It is likely not the fear of remembering all those metabolic and genetic diseases—though I must admit that I can't keep them all in mind. At least in the United States, the training for child neurology is longer than for adult neurology, and the reimbursement is less. These factors must be part of the problem, and, hopefully, can be ameliorated.

Certainly child neurology is important. Children have a long life ahead of them, and appropriate help for them can have a substantial impact on their quality of life for many years. Hopefully, the World Federation of Neurology can help with this crisis. Also, adult neurologists might lend a hand from time to time, and perhaps even encourage some medical students with both pediatric and neurology inclinations to take the dual training required.

Another message is that World Neurology is listening. Let us know if you have news to share your thoughts or concerns. Letters to the Editor are welcome; you can even e-mail us at worldneurology@elsevier.com. ■

ANNUAL REPORT FOR 2009

WFN Remains Strong Despite the Economic Crisis

BY RAAD SHAKIR, M.D.
WFN, Secretary-Treasurer General

Last year, I prefaced my annual report with comments on the global financial upheaval of the previous 12 months. Many were concerned that attendance at the World Congress of Neurology in Bangkok in October might be affected, but our Thai colleagues staged a memorable meeting that many consider one of the best ever, scientifically and socially; and we hope, once the final audited accounts appear, financially as well.

DR. SHAKIR

Now we are 6 months into 2010, with a new administration led by a new President, Vladimir Hachinski. There will be fresh ideas and new directions, but also a continuity of the fine work done by the previous President, Johan A. Aarli, and his officers.

As First Vice-President, Dr. Hachinski was part of that team and he knows full well the strong tradition he inherits. The WFN has identified a distinctive role for itself in global neurology, and now represents professional societies in 109 countries and regions. More are set to join us, and the impact of their WFN involvement on the practice of our specialty is undoubted. We also hope to play a small part in the development of neurological education and expertise in the member regions, and we shall seek to do so in partnership with other associations and clinical agencies.

Our financial status continues to be one of steady and gradual growth, with assets just over £2 million. It is vital that we spend wisely in pursuit of our stated charitable objectives, but also that steps are taken to secure the future of the organization.

The WFN functions with a very lean administration, with two full-time staff members and a part-time manager for the CME program. Our revenue derives from annual dues and world congresses, royalties from the *Journal of the Neurological Sciences*, and interest on our reserves.

We have not increased the amount each society pays for its individual neurologists for more than 30 years. It remains at a modest £3 a member annually. Some societies register thousands of members with us, others a mere handful; yet each society's vote carries the same weight at the Council of Delegates. It is interesting that the fairness of this arrangement has been raised by a society that registers only a few neurologists. The solution might lie in a system of weighting, where points are assigned to a member society's vote based on the number of neurologists it represents and consequently, the amount it pays in dues.

This is one example of an issue of fundamental interest to all members that will be addressed in the coming months. The WFN is at an important crossroads. ■

World Neurology

World Neurology, an official publication of the World Federation of Neurology, provides reports from the leadership of the WFN, its member societies, neurologists around the globe, and news from the cutting edge of clinical neurology. Content for **World Neurology** is provided by the World Federation of Neurology and Elsevier Global Medical News.

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PRESIDENT'S COLUMN

Talking Synergy and Streamlining

BY VLADIMIR HACHINSKI, M.D.

The World Federation of Neurology is striving for synergy between research, education, and treatment of neurological diseases and the promotion of global brain health.

By synergy, I mean working together so that the results are greater than the sum of the parts—in other words, the results should have added value.

For the Federation, synergy begins at home, and we are taking inventory of all our activities and asking the following questions:

- What is the value? Specifically, what is the likely return per unit effort or resources?
- What is the synergy within the WFN and with other possible partners among professionals, patients, and members of the public?
- What is the viability? Our greatest wealth is the sum of our members' talents and dedication, and not in funds. We are able to synergize, bridge, and help, but ultimately all projects need to be taken over by those who benefit from them.
- How do we evaluate what we are doing?

To begin the process of closer integration within the WFN, we have kept the committees small, with each member assigned to a specific task. In the first instance, we want to get comfortable with working with each other, and whenever possible, to design projects that will have input from multiple committees, task forces, and initiatives.

Structure follows function, so to facilitate our aims, we have reorganized our structure. It is divided into Administration, which subsumes ongoing activities, and Projects, each a portfolio under the responsibility of a member of the Steering Committee. The Finance, Fundraising, Publications, and Bylaws committees; communications, including the Web site and conferencing; and the Archives and the World Neurology Federation are in the Administration portfolio (see Organogram).

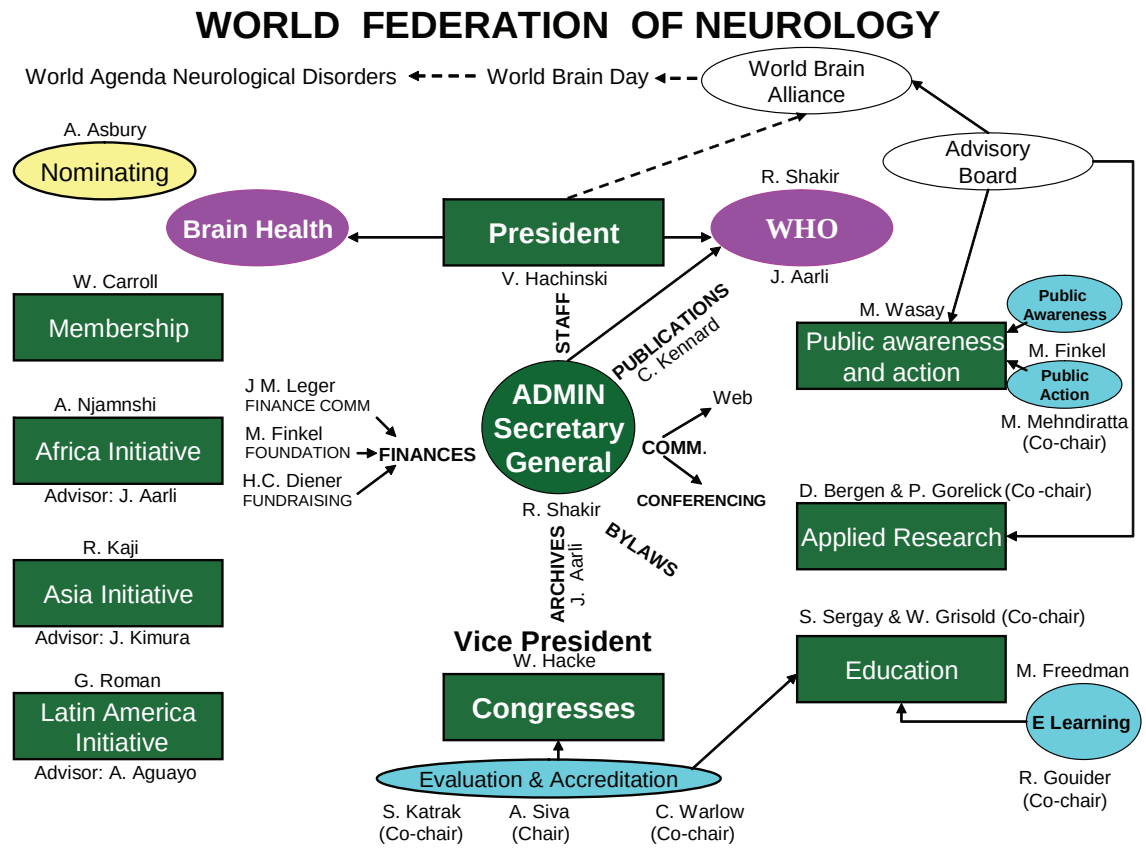
Within some of the committees, we have established task forces. For example, the Evaluation and Accreditation Task Force, which falls within the Congress Supervisory Committee, is charged with evaluating congresses and meetings whose organizers have requested WFN endorsement and with developing criteria for educational activities for accreditation. We aspire for the WFN label to stand for high quality and value. Consequently, the standards for those seeking our endorsement will rise.

The Public Awareness Task Force and Public Action Task Force are within the Public Awareness and Action Committee. The awareness task force is charged with increasing the profile of the WFN, and the action task force presides over the Federation's advocacy efforts. The Public Awareness Task force is looking for a Chair. Applications and nominations for the position are welcome. The expressions of interest should include a letter stating the candidate's plans for increasing the WFN's profile, the background that qualifies the candidate for such a task, a curriculum vitae, and the names of three references. They should be sent to Keith Newton, Executive Director of the WFN, info@wfneurology.org.

In other changes, the Nominating Committee is now a self-standing committee with well-defined responsibilities; former President Johan A. Aarli has kindly agreed to serve as the WFN's archivist and historian, and we will be moving toward an annual budgetary system that will have an administrative component as well as sections for prioritized projects and contingency.

After we have reviewed our activities and set our priorities, we plan to invite WFN members to express their interest in participating and to propose their projects to the respective committees and task forces for consideration. Each project is to have an aim, a plan, and a timetable. Eventually, the projects will be considered together, and those involving two or more committees and/or task forces and/or other organizations will be given priority. These expressions of interest can also be sent to the WFN's Mr. Newton. All appointments in the WFN are for 2 years, renewable.

We are also looking for Webmasters. We are in the process of reviewing our Web site and communications with a view to upgrading both. The aim will be to provide not only information, but interactive exchange as well, and perhaps in the future, e-learning. The nomination or application process is similar to that outlined above and should include examples of previous Web work. Together, we can do more. ■



COURTESY DR. VLADIMIR HACHINSKI

In the above organogram, dark green represents the portfolios and turquoise, the task forces. Purple indicates the entities that are part of the President's portfolio. The Nominating Committee is now a self-standing body.

Trabedersen Bests Standard Chemotherapy for High-Grade Gliomas

BY JANE SALODOF MACNEIL
Elsevier Global Medical News

Trabedersen, a novel TGF-beta 2 inhibitor, performed well compared with standard chemotherapy for high-grade gliomas in a phase IIb trial that enrolled 145 patients with recurrent or refractory stage III or IV disease.

Patients with anaplastic astrocytomas had the best results, Dr. Piotr Jachimczak said in a telephone call from Germany to a press briefing at the annual meeting of the American Association for Cancer Research in Washington, where the data were presented.

Younger patients with glioblastoma also fared better than controls treated with temozolomide or vincristine, said Dr. Jachimczak, senior scientific advisor at Antisense Pharma, the drug's developer, in Regensburg.

Trabedersen has orphan drug status in the United States and Europe for glioma, a brain tumor that often overexpresses TGF-beta 2. A phosphorothioate antisense oligonucleotide, the drug is administered intra-tumorally via convection-enhanced delivery. This enables trabedersen to cross the blood-brain barrier, said Dr. Jachimczak.

Patients in the study received trabedersen in 10-mcM or 80-mcM doses 7 days on and 7 days off, for up to 11 cycles or standard therapy. The investigators reported the lower dose of trabedersen was "superior in efficacy and safety."

In patients with anaplastic astrocytomas, the survival rate at 24 months was 83.3% with the low dose, 53.3% with the high dose, and 41.7% with standard therapy. Responses lasted about 3 times longer in the low-dose cohort than in the standard chemotherapy group: 29.1 months vs. 8.0 months. Both trabedersen groups had better median overall survival than the control group, with the benefit in the low-dose group reported as a gain of 17.4 months.

The overall benefit in glioblastoma patients was described as "as efficacious as standard chemotherapy." In a prespecified subgroup of patients who were less than 55 years in age and had Karnofsky performance scores of less than 80%, however, patients treated with trabedersen had a 2-year survival rate of 40% vs. 13.3% in those treated with standard chemotherapy. The drug has produced several long-lasting remissions, including one in a patient who is alive after 8 years.

The investigators are enrolling glioma patients for a randomized, multinational phase III trial of trabedersen called SAPPHIRE. Dr. Jachimczak noted that he and the other investigators are employees of study sponsor Antisense Pharma. ■

Abuse Screening Should Be Part of the Neurology Exam

Abuse is generally under-recognized and inadequately treated in all areas of medicine. It affects people in all age groups, spares no sociodemographic boundaries, and can contribute to health problems ranging from depression to coronary artery disease.

In the neurology population, past or ongoing violence and abuse may be associated with migraine, intractable pain, and psychogenic nonepileptic seizures.

Specifically, women who have been abused have a 50%-70% increase in central nervous system and stress-related problems. Childhood maltreatment has been shown to be highly prevalent in migraine and is associated with depression and anxiety (Headache 2010;50:20-51), supporting the suggestion that as the Adverse Childhood Experiences score increases, there are resultant impairments in brain structure and function (Eur. Arch. Psychiatry Clin. Neurosci. 2006;256:174-86).

Many Types, Many Forms

Physical abuse, including shooting, stabbing, punching, grabbing, or pushing, is the most commonly reported type of violence, but emotional abuse is the most common type of abuse and can take the form of intimidation, name calling, bullying, and demeaning behavior. Sexual abuse, defined as sexual contact or sexual activity that is not consensual, is dramatically underreported.

Other forms of abuse can be financial, including withholding money or using funds in a coercive fashion. Neglect might include denying adequate nutrition, a lack of hygiene, and poor medical and emotional support. Elder abuse is common in those who are physically or mentally disabled, and their caregivers should be carefully questioned as to whether they are overwhelmed, have a support system, or have adequate free time. Child abuse is defined as any type of neglect or violence directed at children. In the United States, it affects up to 3 million children a year.

It is estimated that in the United States, 1-4 million women annually are physically, sexually, or emotionally abused by intimate partners. The health-related cost of intimate partner abuse exceeds US$5.8 billion, with nearly $4.1 billion of that going to direct medical and mental health services.

Making It Routine

Identifying abuse can lead to appropriate intervention, improved doctor-patient relationships, and lower revictimization rates. The American Medical Association encourages physicians to routinely screen all patients for abuse; in the United States, staff in emergency departments routinely inquire about domestic violence; and the American Congress of Obstetricians and Gynecologists recommends its members screen all patients for intimate partner violence.

Sadly, only 35% of all adult neurology programs provide didactic experience on the issue of abuse, and less than 18% have faculty members who could educate residents on the subject.

Neurologists do not routinely screen patients for a history of past or ongoing abuse. The reasons given for not screening include time constraints, fear of making the patient uncomfortable, or that the physician feels awkward discussing the topic. Some may also feel that abuse is not relevant to the clinical problem being addressed or they may be concerned about not having the resources to address abuse if it is disclosed.

Certain "red flags" may raise the practitioner's suspicions about abuse (see box), but all neurology patients should be screened. Neurologists see patients at risk for abuse or who have neurological disease as a result of abuse. Screening only those whom you suspect of being abused means some abused patients will be overlooked.

Screening can easily be integrated into the new patient history. Self-administered questionnaires are most effective in eliciting positive responses or, as part of the marital and childhood history, abuse questions can be included. This allows the physician to review the history with the patient and discuss the abuse in a way that is nonthreatening and nonconfrontational for the patient.

Some physicians might ask about abuse in a more direct fashion, for example: "Have you ever been physically, emotionally, sexually, or financially abused?" One should reassure patients that this is a routine question that is an important part of their history and could affect care. There are several other approaches to raise awareness, such as displaying posters that condemn abuse. Some health care workers wear "I care about domestic abuse" buttons on their lab coat.

BY ELLIOTT SCHULMAN, M.D.

Dr. Schulman practices headache management and general neurology at Lankenau Hospital, Wynnewood, Pa., USA, and is adjunct clinical professor of neurology at Thomas Jefferson University's Jefferson Medical College, Philadelphia.

Talk, Report, Refer

If a patient has acknowledged abuse, spend a few minutes talking to him or her about it, acknowledging that abuse is wrong and never justified. It is important to create a safe, private environment for patients to discuss the maltreatment.

The physician might be uncomfortable at first, but with experience comes a skill set that will help facilitate discussion. One should determine if the abuse is ongoing or occurred in the past; reassure the patient you are there to help; and be sure to be compassionate and show empathy—showing a lack of interest or being rushed could close the door on this important disclosure.

Requirements for reporting abuse vary between countries and are generally more stringent for child abuse. All reports of abuse should be documented in the patient's medical record. Addressing the issue during subsequent visits may be helpful, especially if it wasn't adequately addressed at the time of disclosure or the abuse is ongoing.

For patients who were abused in childhood, you may suggest counseling. You should also give them community resources, such as Web sites; and education Web sites for the physician are also available (see box). ■

Share your thoughts and comments on this topic by writing to us at worldneurology@elsevier.com.

Red Flags

- Chronic pain syndromes
- Anxiety, depression, posttraumatic stress disorder, substance abuse
- Vague and/or unexplained physical symptoms
- Noncompliance, missed appointments
- Partner or significant other answering for patient or insisting on accompanying patient during entire office visit
- Discomfort in discussing relationships
- Unexplained injuries or injuries in different states of healing

Information and Support in the U.S.

For Physicians

Academy on Violence and Abuse www.avahealth.org

American Congress of Obstetricians and Gynecologists: Violence Against Women www.acog.org/departments/dept_web.cfm?recno=17

American Medical Association
- **Preparing Your Practice to Address Family Violence:** www.ama-assn.org/ama1/pub/upload/mm/433/familyviolence.pdf
- **Finding Your ACE Score:** www.acestudy.org/files/ACE_Score_Calculator.pdf

Centers for Disease Control and Prevention www.cdc.gov/ViolencePrevention/index.html

Family Violence Prevention Fund www.endabuse.org/health

National Resource Center on Domestic Violence www.nrcdv.org

National Clearinghouse on Child Abuse and Neglect Information www.childwelfare.gov

For Patients

Family Violence Prevention Fund www.endabuse.org

Manweb (a Web site for battered men) www.batteredmen.com

National Center on Elder Abuse www.ncea.aoa.gov

National Clearinghouse on Abuse in Later Life www.ncall.us/get_help.html

National Domestic Violence Hotline www.ndvh.org

National Organization for Victim Assistance ww.trynova.org

Rape, Abuse, & Incest National Network: National Sexual Assault Hotline www.rainn.org

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WFN

SOCIETE MAROCAINE DE NEUROLOGIE

Calendar of International Events

2010

14th Congress of the European Federation of Neurological Societies
Sept. 25-28
Geneva, Switzerland
www2.kenes.com/efns2010/Pages/home.aspx

23rd Scientific Meeting of the International Society of Hypertension
Sept. 26-30
Vancouver, Canada
www.VancouverHypertension2010.com

7th World Stroke Congress
Oct. 13-16
Seoul, Korea
www2.kenes.com/Stroke/Pages/Home.aspx

2nd European Headache and Migraine Trust International Congress
Oct. 28-31
Nice, France
www2.kenes.com/ehmtic/Pages/Home.aspx

14th Congress of the World Society of Pain Clinicians & 1st Asian Congress on Pain
Oct. 28-31
Beijing, China
Contact: nijiaxiang@263.net

4th World Congress on Controversies in Neurology
Oct. 28-31
Barcelona, Spain
www.comtecmed.com/cony/2010

7th International Congress on Mental Dysfunctions & Other Non-Motor Features in Parkinson's Disease
Dec. 9-12
Barcelona, Spain
www2.kenes.com/mdpd2010/Pages/Home.aspx

2011

10th International Conference on Alzheimer's & Parkinson's Diseases
March 9-13
Barcelona, Spain
www.kenes.com/adpd

World Congress on Huntington's Disease
Sept. 11-14
Melbourne, Australia
www.worldcongress-hd2011.org

20th World Congress of Neurology
Nov. 12-18
Marrakesh, Morocco
www2.kenes.com/wcn/Pages/Home.aspx

MEETING ROUND-UPS

AAN Focuses on Practice, Science, CME

Attendees at the 62nd annual meeting of the American Academy of Neurology in Toronto in April got to experience firsthand the organization's efforts to deliver gold standard education programming and cutting-edge research.

The AAN works to promote the highest-quality patient-centered neurological care and to enhance its members' career satisfaction. So, listening to suggestions from members who enjoy a variety of learning formats, Dr. Cindy Comella's education committee offered innovative programming—the Morning Report, Neuro Flash, and the Neurology Skills Pavilion—that engaged attendees, stimulated dialogue, and invited hands-on participation. Many education programs used an audience response system so that participants could engage in real-time interaction with program faculty.

BY ROBERT C. GRIGGS, M.D.

Dr. Griggs is the president of American Academy of Neurology and professor of neurology, medicine, pathology, laboratory medicine, and pediatrics at the University of Rochester School of Medicine and Dentistry in Rochester, N.Y., USA.

Science is a mainstay of the annual meeting, and this year, a record of more than 2,300 abstracts, 50 scientific platform, and six poster sessions were presented. The plenary sessions were packed! They were held in a 6,000-seat auditorium, and there was a standing room crowd as well. My presidential session was led off by Dr. Steve Goldman, whose lecture on novel gene and cell-based therapies was truly spectacular.

We inaugurated an awards plenary session that included lectures from the recipients of the Potamkin Prize for Research in Pick's, Alzheimer's, and Related Diseases (Dr. Bruce L. Miller and Dr. Lennart Mucke), the Sheila Essey Award for ALS research (Clive Svendsen, Ph.D.), the John Dystel Prize for Multiple Sclerosis Research (Dr. David A. Hafler), and the Dreifuss-Penry Epilepsy Award (Dr. Martin Gallagher). These lectureships marked the beginning of the AAN's new focus on featuring the best research from neurology subspecialists at the annual meeting.

Toronto also saw the first annual Research Career Development Symposium: Transitioning From Residency to Research. The event, sponsored by the AAN, AAN Foundation, and the National Institute for Neurological Disorders and Stroke (NINDS), brought together recipients of the AAN Foundation's Clinical Research Training Fellowships from the past 2 years, as well as R25 funding recipients.

The daylong workshop provided mentoring for neurologists who were embarking on an academic career in neurological research on how to acquire a National Institutes of Health career development award. The goal of the program is to promote investigative independence in academic neurology. The symposium reflects the AAN and NINDS' commitment to recruiting the best and the brightest into neurology and ensuring a strong future for neurology research.

The meeting also focused on the needs of practicing neurologists. The new Highlights in the Field sessions provided in-depth focus on scientific advances in each subspecialty. Another new program, Specialists in Focus, was in response to our child neurologists' requests for advanced exploration of progress in pediatric neurology (see pp. 2 and 14). This reflects the academy's commitment to finding new ways to help strengthen its support for the neurological subspecialties.

Neurologists in the United States have weathered an uncertain year as reforms to health care were debated across the country. The AAN has been in the forefront of representing the needs of U.S. neurologists and our patients, meeting with and educating hundreds of members of Congress and enlisting the support of patient organizations. The legislation that was signed into law by President Obama does not reflect the urgent needs of neurologists for fair reimbursement. We are continuing to work with Congress to obtain new policies to address the needs of our patients.

Toronto also premiered our first Neuro Film Festival, with compelling short videos by patients, their families, and fellow neurologists who offered insights and inspiration from those who wage a daily battle against neurological disease.

We also made extensive use of Facebook, Twitter, and YouTube (www.youtube.com/AANchannel), as well as our Web site (www.AAN.com), to keep attendees engaged and updated on meeting events. Our member and patient Web sites were enhanced to create a great interactive experience.

The academy's commitment to being "indispensable to our members" was very evident at the Toronto meeting. Our educational programs attracted record numbers of neurologists from overseas, the United States, and Canada, as well as record numbers of residents and fellows and medical students.

The interests of both subspecialists and general neurologists were combined in our most successful meeting ever! ■

WFN Course Is a First for Ecuador

The Ecuadorian Society of Neurology and the World Federation of Neurology's Association of Parkinsonism and Related Disorders organized a course in movement disorders in Guayaquil, Ecuador, in January, marking the first time the Federation has held a meeting in Ecuador.

About 150 medical students, residents, and Ecuadorian doctors from Quito and Guayaquil attended the course. Many of the participants expressed their interest in and gratitude for the course, which they said was invaluable given that academic resources in the country are scant and most clinicians have little time for research.

During the 2-day course, the participants attended lectures on sleep disturbances in Parkinson's disease; the genetics of Parkinson's, dystonia, and gait disorders; and newer therapeutic approaches to Parkinson's.

The faculty included experts from the United States, such as Dr. Zbigniew K. Wszolek, Dr. Jay Van Gerpen, and me, all of us, from the Mayo Clinic Jacksonville, Fla., USA; and Dr. Erik Ch. Wolters, of the Netherlands.

BY PABLO R. CASTILLO, M.D.

Dr. Castillo is assistant professor of medicine at the Mayo Clinic Jacksonville, Fla., USA.

As part of the course, each attendee received a copy of the textbook, "Parkinsonism and Related Disorders" edited by Erik Wolters, Teus Van Laar, and Henk Berendse, published by VU University Press, 2008.

The faculty was also able to visit the neurology wards of the Luis Vernaza General Hospital, the main teaching hospital in Guayaquil and one of the oldest in Latin America—it was founded in 1564.

I was honored to organize this event and I sincerely hope that the WFN continues to support similar courses. I have found in my experience, being a native Ecuadorian myself, that the impact that a gifted professor can have on the members of a receptive audience is lifelong. ■

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FROM THE AAN ANNUAL MEETING

REM Sleep Behavior Disorder May Flag Impairment

BY AMY ROTHMAN SCHONFELD
Elsevier Global Medical News

TORONTO — People who act out their dreams as a result of having REM sleep behavior disorder have an increased risk of developing mild cognitive impairment or parkinsonism within 3 years of follow-up, according to researchers affiliated with the Mayo Clinic Study of Aging.

Evidence also suggests that knowledge of a REM sleep behavior disorder (RBD) diagnosis might enhance the accuracy of diagnosing associated dementia, in addition to predicting future cognitive or motor impairment.

"We already knew from studies of clinic-based samples that between 45% and 85% of patients with RBD develop one of the synucleinopathies [Parkinson's disease, Parkinson's disease with dementia, dementia with Lewy bodies (DLB), or multiple system atrophy]," said Dr. Brendon P. Boot, a fellow at the Mayo Clinic in Rochester, Minn., USA. "We were interested to know what the risk is for the elderly living in the community."

The synucleinopathies are a group of neurodegenerative disorders characterized by aggregation of alpha-synuclein, a protein normally found in neuronal synapses.

Diagnosing RBD requires polysomnographic testing. However, the researchers used the Mayo Sleep Questionnaire (MSQ) to screen for RBD by asking the subject's bed partner: Has your spouse ever "acted out his or her dreams" while sleeping? This includes punching, flailing arms in the air, shouting, or screaming.

In one of the Mayo Clinic studies presented at the annual meeting of the American Academy of Neurology, Dr. Boot reported that the MSQ has a sensitivity of 100% and a specificity of 95% for the diagnosis of RBD, based on testing of 96 cognitively normal, 29 mildly cognitively impaired, and 3 mildly demented community-dwelling elderly individuals from Olmsted County, Minn.

Dr. Boot and his colleagues then administered the MSQ in another study of 543 cognitively normal individuals aged between 70 and 89 years and found that 44 had probable RBD. After a median follow-up of 33 months, 1 of these 44 patients developed Parkinson's disease and 13 developed mild cognitive impairment (MCI).

Those with MCI are at increased risk of developing dementia, and so RBD plus MCI may represent an early sign of a synucleinopathy. After adjustment for age, sex, education, and medical comorbidity, patients with probable RBD had 2.5 times greater risk of developing MCI or a synucleinopathy than did those without RBD.

In another study, Tanis J. Ferman, Ph.D., from the Mayo Clinic in Jacksonville, Fla., USA, explored the diagnostic value of RBD in 82 patients with DLB and 64 patients with Alzheimer's disease. In autopsy examinations of patients with dementia, the presence of RBD was associated with nearly sixfold higher odds of having DLB rather than Alzheimer's disease, suggesting RBD might be a useful early clinical indicator of DLB. Dr. Boot and Dr. Furman had no relevant disclosures. ■

COMMENTARY

There is an increasing appreciation regarding the relationship between the emergence of RBD and the development of neurodegenerative disease. Importantly, RBD may predate other clinical features so its early recognition may represent a therapeutic window offering important opportunities for any future putative neuroprotective agents. Thus, the development of easily administered screening tools for RBD could offer major advances for those working in the field, especially given the potential difficulties in accessing PSG, the accepted standard technique for diagnosis.

A series of three recent studies from the Mayo Clinic Study on Aging have highlighted the utility of a novel RBD questionnaire.

The first of these studies reported that the MSQ offers high sensitivity and specificity for the identification of REM sleep behavior disorder in elderly cohorts when validated against polysomnography, particularly in the absence of obstructive sleep apnea.

In a second clinicopathological study, the implementation of the MSQ to recognize RBD increased the diagnostic accuracy between dementia with Lewy bodies and Alzheimer's disease.

A third prospective study showed that the MSQ may offer some predictive capability for the early identification of those elderly individuals who will go on to develop neurodegenerative conditions. It remains to be seen whether use of the MSQ by the wider clinical community will replicate these findings, but certainly these important results should help direct future approaches.

SIMON J.G. LEWIS, M.D., *is senior lecturer in cognitive neuroscience at the Brain & Mind Research Institute at the University of Sydney (Australia).*

Drug Side Effects Common With Antiepileptics

BY HEIDI SPLETE
Elsevier Global Medical News

TORONTO — Just under 40% of epilepsy patients are bothered by side effects of their antiepileptic drugs, based on data from a survey of adults with epilepsy.

Information on the tolerability of antiepileptic drugs (AEDs) and the reasons for discontinuing treatment are limited, said George J. Wan, Ph.D., in a poster presentation at the annual meeting of the American Academy of Neurology.

Dr. Wan, of Ortho-McNeil Janssen Scientific Affairs LLC, and his colleagues reviewed data from the National Survey of Epilepsy, Comorbidities, and Health Outcomes (EPIC) that was conducted in the United States in 2009. It included 7,500 epilepsy patients and 2,500 controls.

The researchers evaluated responses from 5,117 self-reporting epilepsy patients. A total of 2,395 respondents reported being formally diagnosed with epilepsy or a seizure disorder; of those, 1,415 (59%) were taking AEDs at the time of the survey. About 60% of the respondents reported taking one AED; 35%, two or three, and 5%, four or more. They had been taking AEDs for an average of 115 months.

A total of 772 respondents said they were "not at all" bothered by side effects from AEDs in the 4 weeks before the survey. But 519 respondents reported some degree of bother: 22% were mildly bothered; 12%, moderately; 5%, markedly; and 1%, extremely. The researchers did not identify specific side effects.

Overall, 72% of respondents said they were either "somewhat satisfied" or "very satisfied" with their AED regimens. But a total of 304 respondents had discontinued their regimens. Of those, 50% discontinued on their doctor's advice; 45% because of side effects; 30%, because of improvement in or disappearance of seizures; and 21%, because of inadequate seizure control. Some respondents had more than one reason for discontinuing.

After controlling for baseline characteristics and lifetime seizures, patients who were taking two or more AEDs were significantly less likely to be satisfied with the side effects compared with those taking one AED. The researchers said the study was limited by the use of self-reports. Ortho-McNeil Janssen Scientific Affairs supported the study. ■

New Ischemic Lesions Detected After Endovascular Procedures

BY AMY ROTHMAN SCHONFELD
Elsevier Global Medical News

TORONTO — More than one-third of endovascular procedures in patients with cerebrovascular disease resulted in at least one new ischemic lesion as detected by diffusion-weighted MRI.

"Our current understanding of complication risks after endovascular procedures is that the rate is minimal, but this is based on clinical neurologic deficits," said Dr. Yousef M. Mohammad, who presented his findings at the annual meeting of the American Academy of Neurology. "We became aware of growing reports of periprocedural ischemic events as demonstrated by MRI diffusion imaging in patients undergoing endovascular procedures for both diagnostic and therapeutic purposes."

Dr. Mohammad and colleagues undertook a literature review, searching publications in MEDLINE, EMBASE, Current Contents, and Cochrane CENTRAL; expert files; and bibliographies of included articles published in English between 1999 and 2009. Studies had to be prospective in design, and include patients who had undergone pre- and post-procedural diffusion-weighted MRI within 48 hours of the endovascular procedure. With this method, 48 studies met the inclusion criteria, with the results of 2,702 procedures. Of these, 36% of cases had one or more new ischemic lesions after an endovascular procedure.

When analyzed according to type of procedure, ischemic lesions appeared after 14% of 457 diagnostic angiograms; 40% of 1,859 carotid angioplasties; and 25% of 102 embolizations for arteriovenous malformations. The highest rate was associated with coil embolization for intracranial aneurysms, with new ischemic lesions seen in 47% of 284 procedures.

Notably, focal neurological deficits were seen in only 11% of patients with new ischemic lesions. "While new clinical deficits are infrequent, neuropsychological consequences associated with such lesions require further study," said Dr. Mohammad, the director of the Stroke Fellowship Program at Rush University Medical Center, Chicago.

He disclosed that he has received personal compensation for activities with Boehringer Ingelheim Pharmaceuticals Inc. ■

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One Patient Every 6 Minutes

Haiti • *from page 1*

disrupted the CT scanner, rendering it unusable for our first few days in Haiti. The dysfunction of the CT led to increased use of skull roentgenograms and ultrasound for diagnostic purposes. Subsequent aftershocks did not significantly affect patient care. EMG, nerve conduction studies, and EEG were not available. EEG guidance would have been helpful in two children who had encephalitis with nonconvulsive status epilepticus.

At our peak, we received an average of one patient every 6 minutes into the casualty receiving area. The volume of patients quickly overwhelmed the hospital tracking system, so I preferred to see patients in the casualty receiving area. Likewise, surgeons periodically walked through the casualty receiving area to identify potential surgical candidates before they were transferred to the wards.

Many might consider the signature wound of this particular earthquake to be limb amputations, but not to be overlooked are the large number of Haitian people who suffered neurological injury during the earthquake. We were fortunate to have a pediatric neurologist from the U.S. Agency for International Development (USAID) on the ship and with whom I was able to collaborate closely.

The most common neurology consults were for patients with paraparesis or quadraparesis who had suffered spine trauma from being crushed under falling debris. All of those patients were out of the window for the administration of steroids, and they were evaluated by one of our two neurosurgeons for possible surgical intervention.

The next most common consults were for head injuries with diagnoses including subdural hematoma, intraparenchymal hemorrhage, subarachnoid hemorrhage, diffuse axonal injury, and basilar skull fractures. Some patients with basilar skull fracture had CSF leaks complicated by meningitis.

To maximize the number of patients we could treat, our surgeons were primarily in the operating rooms, while the internists did most of the postoperative care with guidance from the surgeons during early morning and night rounds. I was able to provide additional support to the internists with follow-up for many of the neurosurgical patients.

After we had treated the initial surge of patients, I was able to visit several of the country's hospitals. I saw dozens of patients who had static encephalopathy, many of whom also suffered from epilepsy. In most instances, the patients recently had stopped anticonvulsants because they were no longer available. The Comfort pharmacy was able to provide carbamazepine and valproic acid to last these patients a few months, but it remains unclear how they will get anticonvulsants after those supplies are exhausted.

I also worked with Dr. Paul Farmer from Partners in Health, a community-based provider of health care. I went with him to see patients at the newly built hospital in Lacolline as well as at the PIH flagship hospital in Cange. I even got to make home visits with a few patients.

I was appointed chairman of the health care ethics committee. Most of the consults we received were on issues I had addressed in the United States, such as determining the goals of care in comatose, vegetative, or minimally conscious patients; and consent for medical procedures. The issues were the same, but the sociocultural context was different. Having Haitian Americans as well as a chaplain, nurses, psychiatrist, surgeon, and neurologists on the ethics committee helped us raise the appropriate questions in these complex cases. In all cases, we stressed the importance of respect for local communities, cultures, and traditions, as well as respect for the sovereignty of the host nation.

Aftercare of our patients was a major challenge. For example, one boy who presented with Sydenham's chorea and was diagnosed with rheumatic heart disease needed monthly penicillin injections, while a young girl who presented with sickle cell crisis as a left middle cerebral artery stroke and seizures needed to have monthly blood transfusions. Moreover, patients who had received amputations did not yet have a plan for prosthetics, and few facilities were equipped to manage the long-term care of resource-intense patients.

Working as a neurologist on the Comfort during the U.S. Navy's largest humanitarian mission in its 235-year history was the most challenging work I have done as a physician. It was particularly difficult because of my close ties to the country—I was born in Haiti and lived there for 5 years. It was also the most rewarding work I have ever done because I was able to use my skills to help my birth country in its greatest hour of need while also serving my adopted country.

It was even more difficult to leave knowing that there was much work still to be done. I know many prosthetic limbs have been placed and I am glad to know that the many nongovernmental organizations and agencies like USAID remained there and are leading the charge.

There remains a great need for neurologists in Haiti, and I encourage neurologists around the world to volunteer their time in this effort. ■

DR. ETIENNE *is lieutenant commander in the U.S. Navy and is in the department of neurology at the National Naval Medical Center, Bethesda, Md., USA. You can write to him at worldneurology@elsevier.com.*

The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government.

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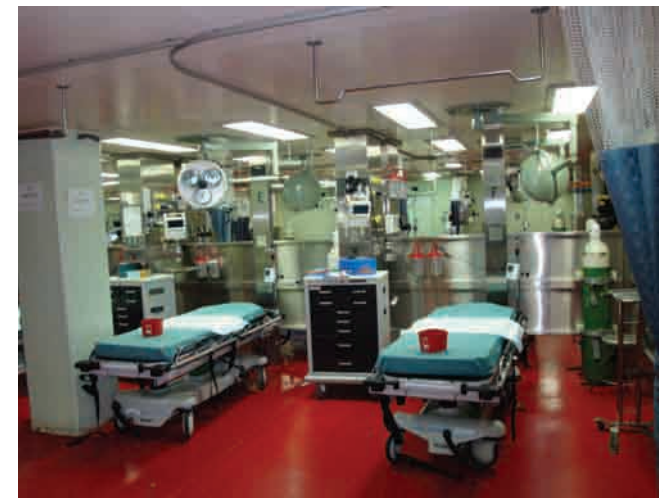
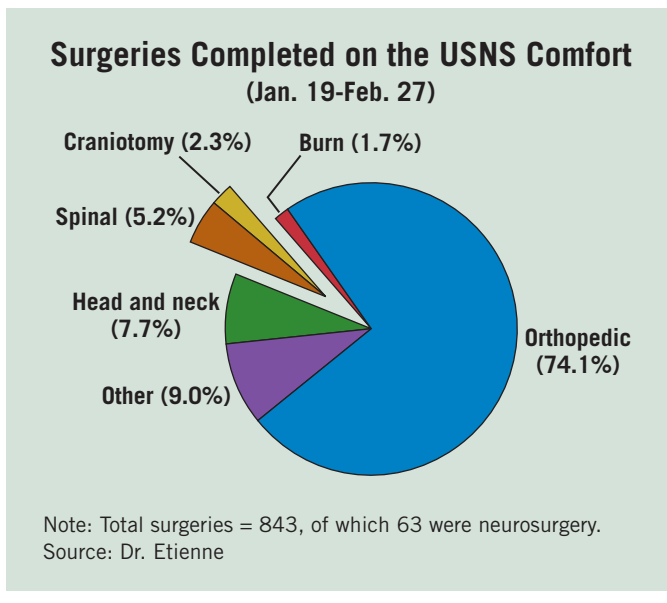
Dr. Etienne performs an initial neurological evaluation on a child who had been taken to the U.S. Comfort for treatment.



COURTESY DR. MILL ETIENNE

The casualty receiving area, fully prepared for earthquake victims: Some were flown to the ship before it docked.



ELSEVIER GLOBAL MEDICAL NEWS

WFN Trailblazer Is Dean of Top Honduran Medical School

Congratulations are due to Prof. Marco T. Medina, the World Federation of Neurology Delegate for Honduras and longstanding member of the Education Committee, who has been appointed dean of the School of Medical Sciences at the National Autonomous University of Honduras (Decano de la Facultad de Ciencias Médicas, Universidad Nacional Autónoma de Honduras).

PROF. MARCO T. MEDINA

The school was founded in 1882 in Tegucigalpa, Honduras. The first dean was Dr. Karl Ernest Bernhard, a German physician who was a student of the Czech physiologist, Jan Evangelista Purkinje. There are 8,000 medical students at the school, which is considered the most important in Honduras.

Prof. Medina has been a key player in one of the WFN's most successful initiatives in establishing a neurology training program. Twelve years ago, Honduras had only one neurologist for every 325,000 inhabitants, and all those wanting to train as neurologists had to go overseas to do so. In collaboration with the Postgraduate Direction of the National Autonomous University of Honduras, the Honduran Neurological Association, and the Honduran Secretary of Health, the WFN Education Committee, which was under the chairmanship of Dr. Ted Munsat at that time, helped establish the country's first neurology training program. Prof. Medina led that program, which used a problem- and epidemiological-oriented methodology and was overseen by an external WFN review board.

Within 8 years, there was a 31% increase in the national neurologist-to-inhabitant ratio, and the program had both promoted research in Central America and resulted in a significant improvement in the quality of patient care in Honduras.

Prof. Medina's new appointment is not only appropriate recognition of the impact he personally has made on the neurological services in his region, but indicative of the important and practical influence the WFN can bring to areas of need. ■

SMART Criteria Allow for Broader Use of IV r-TPA

BY AMY ROTHMAN SCHONFELD
Elsevier Global Medical News

TORONTO — By following new evidenced-based SMART criteria that reflect current knowledge of stroke management, almost 90% of ischemic stroke patients who met at least one or more common exclusion criteria for IV recombinant tissue plasminogen activator treatment were able to undergo successful thrombolysis, according to findings presented at the annual meeting of the American Academy of Neurology.

"Despite the results of randomized trials demonstrating the safety and efficacy of IV r-TPA [recombinant tissue plasminogen activator] for acute ischemic stroke, its use remains exceedingly low, about 1%-3%," said Dr. Jack Rose, associate director of Neurocritical Care at the California Pacific Medical Center in San Francisco, in his presentation.

He noted that at his center, by following the Simplified Management of Acute Stroke Using Revised Treatment, or SMART criteria, about 25% of all ischemic stroke patients now seen there receive some form of TPA.

Dr. Rose presented the results from 195 patients with ischemic stroke who were seen between July 2006 and December 2009 and treated with TPA. Of those, about 70% (140) received IV r-TPA alone. Favorable outcomes (modified Rankin Scale scores of less than or equal to 1) were achieved for 58% of the patients. The symptomatic intracerebral hemorrhage rate was 2.4%.

What was unusual was that 89% of the patients "violated" at least one common r-TPA treatment criterion. For example, 42% were older than 80 years; 13%, older than 90 years; and 9% had prior stroke. Others had severe strokes, mild strokes with disabling symptoms, asymptomatic brain lesions, low NIH Stroke Scale scores, prior trauma, bleeding problems or were on anticoagulant therapy, dementia, pregnancy, or abnormal blood glycemic levels. The mean contraindication rate was 1.4 per patient.

To be included, patients must have had disabling neurological symptoms caused by intracerebral ischemia. The only exclusion criterion was acute symptomatic intracranial hemorrhage. Most of the patients were seen within 4.5 hours of symptom onset, although a small subset received treatment beyond that time window if neuroimaging results suggested intervention would be beneficial.

Dr. Rose said that modification of IV r-TPA stroke treatment criteria is urgently needed. "Most of the criteria that have been followed are not evidenced based, and a lot of stroke centers use even more stringent criteria than the original trials suggested," he commented.

With IV r-TPA given according to the SMART criteria, 20%-30% of stroke patients can potentially receive thrombolysis, he said, adding that at California Pacific Medical Center, the treatment rate went from 7% of ischemic stroke patients to 29% in the fourth quarter of 2009.

Dr. Rose explains to patients when obtaining informed consent that they have a condition that might preclude them from receiving IV TPA at other centers, but that his hospital does not follow the same criteria. Dr. Rose had no conflicts to disclose. ■

CASE REPORT

The MRI of HSV-1 Encephalitis

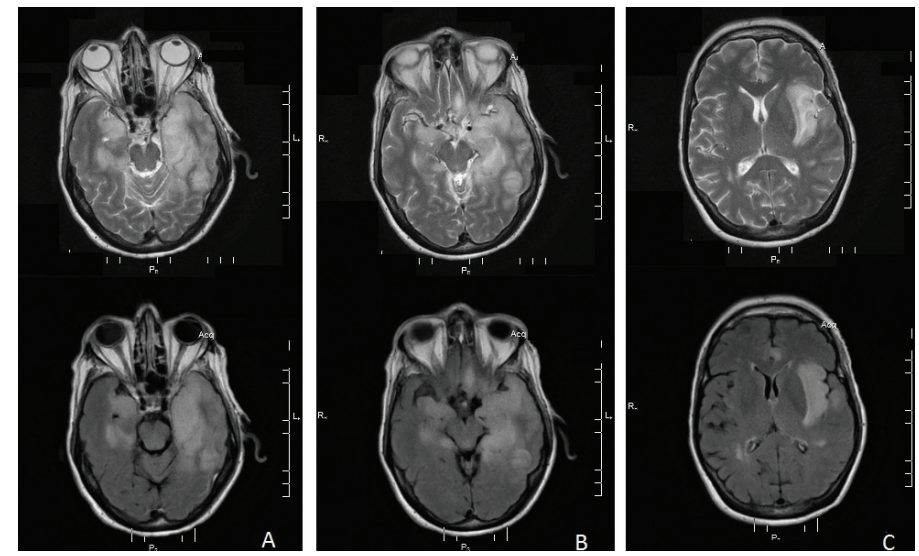
BY CAITLIN ZANER, B.S.; JOSE CABASSA, M.D.; JENNIFER PRITCHARD, M.D.; BETH JOLLY, M.D.; BAIJU GHANDI, M.D.; JOEL GABRE, B.A.; AND STEPHEN G. REICH, M.D.

HSV-1 encephalitis is rare, with an annual incidence of two to four cases per million. It is a hemorrhagic, necrotizing encephalitis with a predilection for the temporal and frontal lobes. Diagnosis is based on a combination of clinical, CSF, radiographic, and EEG findings and confirmed by brain biopsy or CSF polymerase chain reaction (PCR) for HSV-1 (Curr. Treat. Options Neurol. 2005;7:145-50). The 62-year-old woman in the current case report exemplifies a typical case of HSV-1 encephalitis with characteristic findings on MRI. She was brought to medical attention for fever and acute confusion.

The initial MRI (not shown) revealed increased signal intensity of the left mesial temporal lobe only. A lumbar puncture showed 50 WBC/mm^3 (68% polymorphonuclear leukocytes); glucose, 69 mcg/mL; and protein, 78 mg/mL.

She was started on acyclovir, but within 24 hours developed global aphasia and a right hemiparesis. An EEG showed diffuse slowing with periodic lateralized epileptiform discharges over the left temporal region. At this point, CSF PCR returned positive for HSV-1. Repeat imaging revealed a pattern characteristic of HSV-1 encephalitis with increased signal on T2 and T2 FLAIR MRI involving the orbital surfaces of the frontal lobes including the cingulate and both temporal lobes with extension into the left insular cortex (Am. J. Roentgenol. 1993;161:167-76). ■

The authors are in the department of neurology at the University of Maryland School of Medicine, Baltimore, USA.



COURTESY THE UNIVERSITY OF MARYLAND

Figure A (left panel) with T2 (top image) and T2 FLAIR MRI (bottom image) shows bilateral, asymmetric involvement of inferior frontal and temporal lobes; figure B (middle panel) with T2 and T2 FLAIR MRI shows extensive involvement of inferior frontal and temporal lobes; and figure C (right panel) with T2 and T2 FLAIR MRI shows involvement of the left insular cortex.

Possible Effect on QOL

DBS • *from page 1*

for STN-DBS, knowing that she'll be more likely to reduce medications postoperatively," Dr. Follett said.

Although it is unclear whether medication reduction is necessarily desirable for all patients, it "may play some role ultimately in selection of target," he noted.

During 2002-2008, patients enrolled in the trial and underwent follow-up at 13 VA Parkinson's Disease Research, Education, and Clinical Care Centers and their affiliated universities.

To be enrolled, patients had to have a diagnosis of idiopathic Parkinson's disease, at least moderately disabled off medications (Hoehn and Yahr stage 2 or worse), L-dopa responsive with clearly defined "on" periods, persistent disabling symptoms such as dyskinesias, motor fluctuations, and a minimum of 3 hours per day in the "off" state or "on" with dyskinesias.

The randomized DBS trial was embedded within another randomized trial that compared best medical therapy (BMT) with pooled outcomes of DBS. After 6 months, clinical outcomes were examined and BMT patients were randomized to either DBS target.

In an interim analysis of the data when 134 patients had been randomized to BMT and 121 to DBS, the data safety monitoring board decided to stop randomizing patients to BMT because enough data had been gathered to compare the primary outcome.

An additional 61 patients were randomized to only one of the DBS targets, leaving a total of 316 enrolled patients. The investigators conducted follow-up with the patients for 2 years after DBS implantation, meaning that patients who had been initially randomized to BMT received 30 months of follow-up.

A total of 17 BMT patients withdrew from the trial without being randomized to DBS, leaving 152 patients in the GPi group and 147 in the STN group. Their mean age was about 62 years and they had been on Parkinson's disease medications for a mean of 11-12 years. Patients and clinical raters were blinded to the target brain region.

In the "on stimulation, off medication state," scores on the motor subscale (part III) of the United Parkinson's Disease Rating Scale (UPDRS III) at 6 months improved similarly in the GPi (from 42 at baseline to 30) and STN patients (from 43 to about 32.5). The scores at 2 years—the primary outcome of the trial—were no different. Additional longitudinal analyses with mixed-effect models that used worst-case scenarios for all incomplete data also found no difference between the groups.

These 25%-30% reductions in UPDRS III scores are not as great as the 40%-50% improvements that have been reported in open-label, uncontrolled studies. This might be a result of having slightly fewer disabled patients in the current study than in studies described in earlier reports, said Dr. Follett. He noted the possibility of a "floor effect" to DBS, meaning that "you can only improve patients to a certain point, so the lower the UPDRS starting score, the [lower the percentage of] improvement there's going to be."

Data from the patients' motor diaries indicated that at 2 years, GPi patients had about 1 hour more of "on" stimulation time without dyskinesias (from 6.5 to 11.4 hours) than did STN patients (from 7 to 11 hours), although this was not statistically significant.

Quality of life assessments at baseline with the Parkinson's Disease Questionnaire (PDQ-39) indicated that STN-targeted patients had slightly worse scores for emotional well-being, social support, and cognition, which Dr. Follett suggested might reflect the fact that the STN arm included slightly fewer men than women, who "tend to report slightly greater disability in chronic disease compared with men."

At 2 years, there were no differences between the groups on the PDQ-39. With the exception of social support and communication, quality of life improved on each subscale of the PDQ-39. GPi patients reported slightly improved depressive symptoms on the Beck Depression Inventory, compared with slight worsening of symptoms in STN patients. But the difference was not statistically significant. "We're realizing that quality of life issues are perhaps more important than we gave them credit for. … Some data [show] that improvement in motor function does not necessarily translate to improvement in quality of life," said Dr. Follett.

Baseline assessments of neurocognitive function and mood in category fluency and learning and memory also were slightly worse in STN patients than in GPi patients. After 2 years of DBS, neurocognitive function worsened slightly in both groups. STN patients experienced significantly greater worsening of visuomotor processing speed than did GPi patients, although the change was slight.

No differences between the groups were detected on other UPDRS subscales (I, II, and IV).

Because the trial was not powered to test for differences between secondary outcomes, Dr. Follett noted that further analyses of the data will contend with what to make of very small differences that are detected between groups because of the large sample size.

Use of Parkinson's disease medications declined by a significantly greater percentage with STN-DBS (30% decrease) than with GPi-DBS (about a 20% decrease).

Similar numbers of serious adverse events occurred in the GPi (77) and STN (83) arms, and there was no difference in the type of events that were seen, such as prolonged or new hospitalization, repeat surgery, morbidity, or death. ■

COMMENTARY

The present trial includes an impressive number of Parkinson's disease patients with DBS targeting the GPi or STN. After 2 years of DBS, the trial showed no significant difference between the two targets on motor performance and quality of life, although medication reduction was, as expected, less pronounced with GPi DBS.

Thus, if medication reduction is needed, often because of unwanted effects, STN may be the preferred target. GPi stimulation resulted in 1 hour more without dyskinesias than did STN stimulation, indicating that GPi may be the preferred target in case of severe dyskinesias.

It has been hoped that GPi DBS would cause fewer severe side effects, especially neuropsychiatric side effects, than STN DBS. However, it did not seem to be significantly different from STN DBS in that respect. Although neuropsychiatric adverse events were not mentioned as such, I expect that they were included in the large number of serious adverse events reported—77 in 152 patients in the GPi-stimulated group and 83 in 147 STN-stimulated patients. Such a large number of serious adverse events demand a thorough analysis for future improvement.

KAREN ØSTERGAARD, M.D., *is a senior lecturer and consultant neurologist at Aarhus University Hospital (Denmark). She has received honoraria from Medtronic for serving on an advisory board for DBS.*

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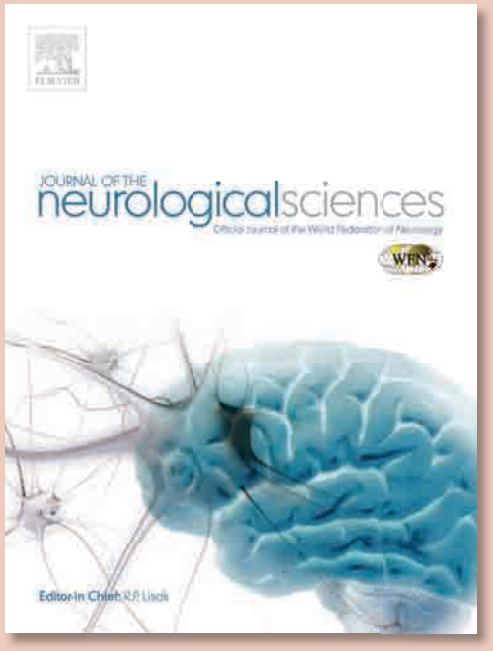

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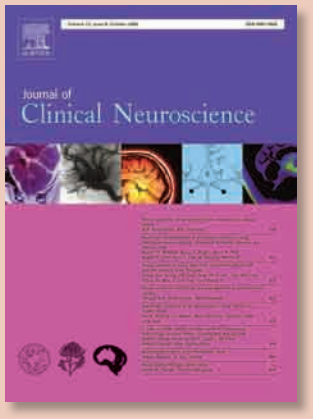

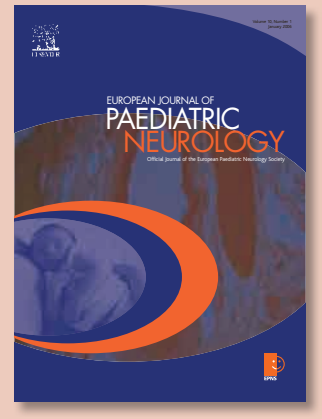

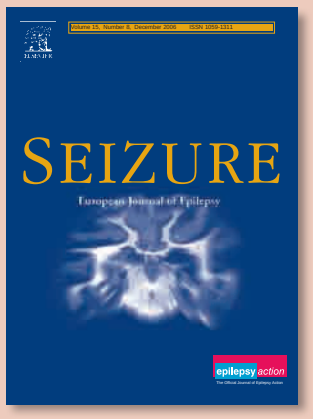

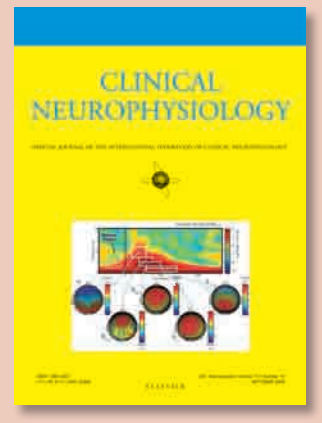

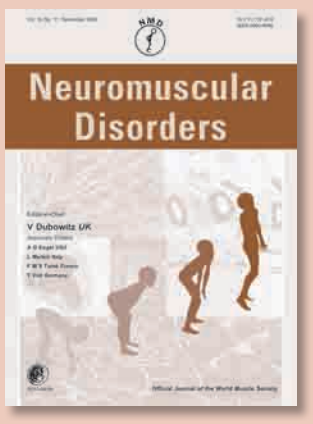

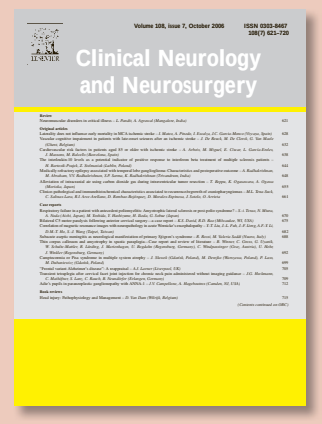

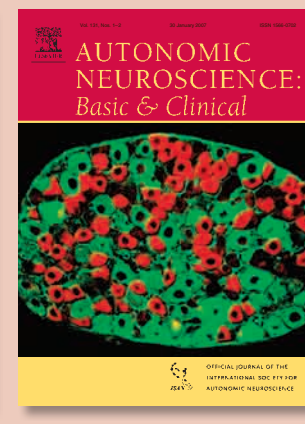

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Crisis in the Child Neurology Workforce

The subspecialty will remain in a precarious position as long as it is seen as a luxury and not a necessity.

Workforce crisis can be viewed as supply not meeting demand currently or in the future. This applies to the specialty of child neurology globally. While the problem has been well studied in the United States, Canada, and throughout the world, both resource-rich and resource-poor countries share many issues that require major input and aid to ameliorate the problems. The efforts of the International Child Neurology Association (ICNA) have been directed at some of those issues.

Child neurology encompasses genetics, epilepsy, developmental medicine, metabolism, neurodegenerative disorders, neurophysiology, neuropharmacology, neonatal neurology, and the neurological complications of common and rare pediatric diseases. Advances in many areas, including neuroimaging and therapeutics, has advanced the field specifically in the past 10 years. Delivery of care by well-trained child neurologists remains the challenge.

As the care for children with complex neurological and behavioral disorders has expanded, the demand for the unique skill of the child neurologist has outstripped the available expertise. Several factors, some unique to certain areas of the world, have contributed to the undersupply: attrition because of aging, that is, the "graying" of the specialty population; little exposure to child neurology in medical school; longer training programs compared with those in adult neurology, including postresidency fellowship training; lower remuneration and reimbursement scales than their adult counterparts; large medical school debt burdens that have to be repaid; and minimal grant funding opportunities. Counter to this, however, is the higher level of professional satisfaction enjoyed by child neurologists compared with that of their adult colleagues (Neurology 2005;64:942-8).

United States

Currently in the United States, there are 1,500 child neurologists, the majority of whom are board certified. This represents a ratio of 1.28 child neurologists to 100,000 children with neurological disorders. A survey conducted by the Bureau of Health Professions noted a 20% undersupply relative to demand. A recent projection stated that by 2018 the United States will have a shortage of 150,000 physicians overall (Wall Street Journal, April 12, 2010), and a survey regarding child neurology projects a 20%-25% shortfall by 2020 in terms of manpower (Neurology 2000;54:787-9).

To address this issue, the Child Neurology Society under the leadership of Dr. James Bale, Dr. Stephen Ashwal, and Dr. Michael Painter, took the initiative by funding a study in 2005 with the Leonard Davis Institute of Health Economics at the University of Pennsylvania, Philadelphia, to evaluate specialty care by child neurologists in the United States and produce a workforce analysis. This served as the basis for public awareness of the issue, elucidation of the problem by thought leaders, and ultimately the proposal for a legislative fix to increase the number of subspecialty trained pediatric physicians in the United States, including child neurologists, by incorporating a loan forgiveness amendment in the Health Reform Act of 2010.

Data relating to child neurologists in terms of age, work hours, academic affiliations, income, career satisfaction, appropriateness of referrals and so on, have been published (Neurology 2005;64:942-8). Geographic differences exist, with 0.8 child neurologists per 100,000 in the West to 1.6 in the Northeast. The ratio of child neurologists to pediatricians ranges from 1.6 per 100 pediatricians in the West to 2.3 per 100 in the Midcentral areas. Rural areas have 0.8 child neurologists per 100 pediatricians. Projecting to 2022, a no-growth specialty will occur, with ultimately 1.0 child neurologist per 100 pediatricians. The number of trainees entering the field has remained constant, with only 36-40 graduates per year until recently. The overall number of individuals entering pediatric specialty training declined this past decade.

BY BENNETT LAVENSTEIN, M.D.

Dr. Lavenstein is the chair of the Legislative Affairs Committee of the Child Neurology Society in the United States.

In the United States, overlap with behavioral neurology and developmental medicine led to the merger of the Society for Developmental Medicine with the Child Neurology Society, thereby strengthening the membership of the Child Neurology Society. On the other hand, pediatricians in general need to become familiar and comfortable with handling problems related to cerebral palsy, autism, headache, and ADHD, leaving the child neurologist available to handle more complex cases. As to physician extenders, nurse practitioners play an important role in delivering neurological care. Since many child neurologists throughout the world are involved with clinical duties as well as teaching, research, and administrative commitments, the number of full-time equivalent child neurologists does not meet current or projected demand.

Canada

In Canada, most child neurologists practice in hospital settings, and a smaller number practice in community settings predominantly metropolitan areas. Canada has a ratio of 1.1 child neurologists per 1,000,000 of the total number of children under age 15 years. Regional variations are extreme, with 0.7 per million to 4.0 per million population. A survey of child neurologists evaluated by questionnaire (J. Child Neurol. 2003:18:180-4) revealed that wait times for new nonurgent consultation had a median of 12.5 weeks. Child neurologists in Canada engage in an average of 42 hours per week in clinical activities including direct patient care and interpretation of neurophysiologic studies. Other activities include research, teaching, and administrative activities with marked variation among the professionals. The mean age of practicing child neurologists was reported to be 51 years, similar to that of their American counterparts. Primary care physicians are increasingly referring patients with developmental issues and school failures compared with 20 years ago. As allied specialties have enlarged, additional requirements for more child neurology services has evolved. An estimate of need currently for Canada has been published projecting 2.5-3.0 child neurologists per 100,000 children rather than the current 1 per 100,000.

Resource-Poor Countries

In resource-poor countries worldwide where 70% of the children with disabilities reside, most of the children have neurological involvement. The prevalence of epilepsy, for example, is higher in resource-poor countries than in the West (The World Health Report 2001. Geneva: World Health Organization, 2001). A study in Kenya (JAMA 2007;297:2232-40) revealed that neurological features occurred in 20% of children admitted to hospitals. In many African countries there are fewer than 10 doctors per 100,000 of the total population compared with 230/100,000 in the United Kingdom (Human Development Report 2007/2008. New York: Palgrave Macmillan). As a result, there are no child neurologists in many African countries. Many countries have tried to organize symposia, regional meetings through the auspices of the sections of child neurology or developmental medicine.

In Bangladesh, one of the world's least developed countries and where 50% of the population lives in poverty, there are no medications for neurological disease in the top 10 drugs available to the extreme poor (Neurology 2010;74:e5-8). Phenobarbital is not available in Dhaka, the capital city; it is viewed with suspicion and drug companies view it as a nonprofitable drug. Health efforts concentrate on sanitation and vitamins to improve health. Specific disorders such as neurolathyism, lead poisoning, leprosy, and nutritional disorders are prevalent. In resource-poor countries, the incorporation of child neurological care into the primary care physicians' training might be a way of addressing the lack of child neurologists and improving delivery of care. Unique to Bangladesh is a village-by-village approach to health care delivery that has led to the development of hospitals for cancer and heart disease but not specifically neurology.

The ICNA has played an important role in providing educational seminars throughout the world. It also supports a Web site providing access to papers and management protocols for child neurology plus training programs throughout the world (www.icnapedia.org).

Globally, child neurology supply does not satisfy child neurology demand. Issues of training, distribution, funding, and attrition are issues worldwide. Because the data indicate that child neurology is a necessary subspecialty and not a luxury, child neurology care remains in a precarious position. ■

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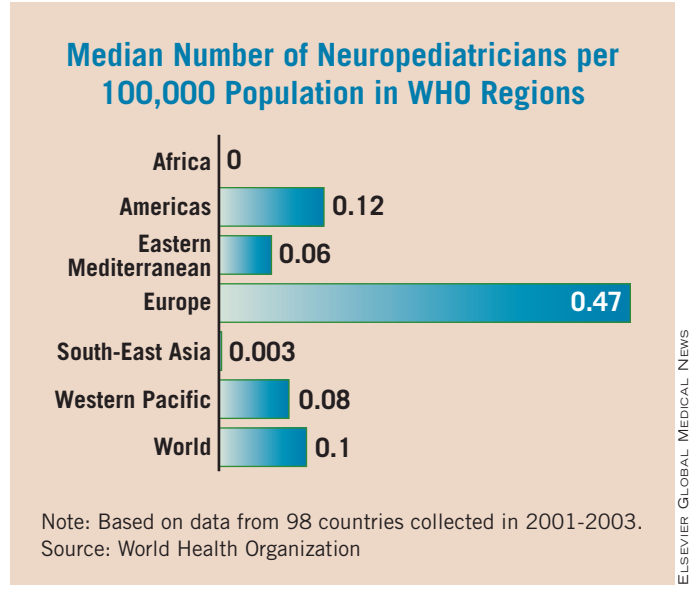

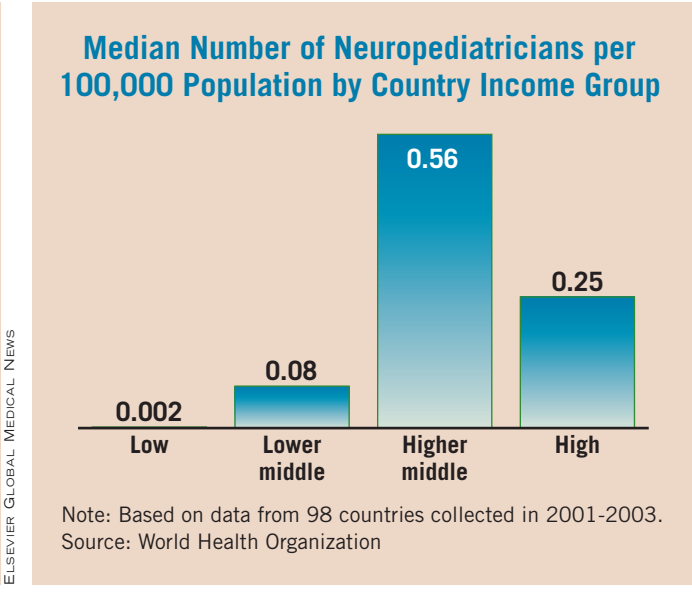

FROM THE JOURNAL OF THE NEUROLOGICAL SCIENCES

Imaging Charts MERS2 Resolution in Children

BY ALEX TSELIS, M.D., PH.D.

Delirium is common in medical and neurological practice and has a number of causes. These include toxic metabolic, febrile, and septic encephalopathies; demyelinating and autoimmune diseases; and infections of the nervous system. Some encephalopathies are specifically associated with abnormalities in the white matter.

The most common, of course, is multiple sclerosis. Rare related diseases such as the Marburg variant of MS, acute disseminated encephalomyelitis, Schilder's disease, and Balo's concentric sclerosis are also associated with delirium.

Other apparently immune-mediated white matter diseases causing delirium are Hashimoto's encephalopathy and Susac's syndrome. The latter is particularly interesting because imaging studies show prominent involvement of the corpus callosum with little involvement of the rest of the brain, although more sensitive imaging modalities such as magnetization transfer imaging of the normal-appearing white matter show this to be abnormal as well.

More recently, a new pediatric syndrome has been described in which encephalopathy, often with seizures, is associated with imaging abnormalities in the splenium of the corpus callosum, often coinciding with various systemic infections, both bacterial and viral. Much of the experience with this entity has come from medical centers in Japan, and the paper under review here reports some interesting observations concerning this disease.

There are two main imaging types of mild encephalitis/encephalopathy with a reversible splenial lesion (MERS). MERS1 consists of an isolated splenial lesion, and MERS2 involves the whole corpus callosum as well as the surrounding white matter. It is not clear that there are distinct clinical pictures belonging to either of these patterns of white matter abnormality.

In the current paper, two patients with MERS are described and shown to have the MRI appearance of the illness evolve from a MERS2 pattern to a MERS1 pattern on serial MRI studies (J. Neurol. Sci. 2010;292:24-7).

This very interesting result suggests that the two patterns represent two points on a linear continuum and are thus not intrinsically different. In the patients reported in this paper (one aged 6 years and the other, 10), seizures and delirium followed a febrile illness. Both had normal CSFs, and both had an imaging MERS2 pattern with extensive white matter disease.

Serial MRIs showed rapid evolution of the MERS2 pattern to MERS1, within a day or so, and then complete resolution in less than a week, along with clinical resolution. This suggests that these lesions are nondestructive, because otherwise residual disease would remain on the final MRIs. It is not known whether the lesions are a result of demyelination and are a variant of acute disseminated encephalomyelitis, or a result of the effects of localized blood brain barrier breakdown, and thus of some type of "toxicity."

It would be interesting to follow such patients and observe for risk of developing multiple sclerosis, which would make an inflammatory demyelination. It would also be interesting (and important) to know whether MERS is related to other entities involving the subcortical white matter.

One such is acute necrotizing encephalopathy (ANE), which is seen in infants and very young children who have an upper respiratory illness, and which runs a fulminant (and untreatable) course. In both ANE and MER, the neurological illness follows a febrile prodrome and affects the white matter, although this is destructive in the former, but not the latter. Both involve children and seem to be more common in Japan than in North America. (It should be mentioned that the first author, Dr. Jun-ichi Takanashi, first came across this pattern in San Francisco, where he trained.)

Another illness causing prominent white matter disease, especially involving the corpus callosum and manifesting clinically as a delirium, is Susac's syndrome. This resembles MERS, although the disease is seen in older individuals, in the West, and is often irreversible. This illness appears to be an endotheliopathy and occasionally muscle biopsy can show perivascular infiltrates, which resemble those seen in dermatomyositis (another "endotheliopathy"). It would be interesting to see if similar abnormalities can be demonstrated in MERS.

MERS is not a demyelinating disease, but rather involves intramyelinic edema, possibly as a toxic effect.

DR. TAKANASHI

Dr. Takanashi did his fellowship in neuroradiology under Prof. A. James Barkovich at the University of California at San Francisco, and became familiar with MRIs that showed a reversible splenial lesion. When he returned to Japan, he was able to gather a total of 70 cases and personally evaluated 10 of them. The disease is mostly seen in infants with influenza encephalopathy, and although many of them have been seen in Japan, such cases occur in other countries as well. He said he does not think that this is a demyelinating disease, but rather involves intramyelinic edema, possibly as some sort of toxic effect.

Dr. Takanashi's research interests focus on white matter diseases, and he is especially interested in neuroimaging, such as MRI and MR spectroscopy in patients or model mice with leukoencephalopathy. ■

DR. TSELIS *is associate professor of neurology at Wayne State University in Detroit, USA, and book review editor for the Journal of the Neurological Sciences.*

BOOK REVIEW

Bridging the 'Two Solitudes'

Diabetes and the Brain
Edited by Geert Jan Biessels and José A. Luchsinger (New York: Humana Press, 2009)

The editors of this work have put together the first comprehensive textbook on diabetes and the brain, an important but much-neglected field.

A well-known Canadian novel by Hugh MacLennan, *Two Solitudes*, highlights the disparate lives of Franco and Anglo Canadians in the early 20th century, a parallel existence not unlike that of diabetologists and neurologists.

Although they are cordial and collegial, these specialists only occasionally combine their clinics and patient loads. Neurologists less often focus on diabetic complications, whereas diabetologists have large busy clinics and may not have time to perform a neurological evaluation on most of their patients.

Clearly, a bridge between these solitudes is required, and *Diabetes and the Brain* is an excellent beginning. Both neurologists and diabetologists would benefit from reading this work. The early chapters are targeted at these two audiences, offering basic reviews of each other's fields.

BY DOUGLAS W. ZOCHODNE, M.D.

Dr. Zochodne is a professor in the department of clinical neurosciences and the Hotchkiss Brain Institute, University of Calgary.

This text is important for several reasons. First, although the neurological complications of diabetes attract less attention than do other neurological problems in both the clinical and research spheres, they are generally underappreciated or may not be understood.

Second, it is now known, based on the seminal work of Geert Biessels, Cory Toth, Anders Sima, and others, that diabetes targets the brain directly. Indeed, it is potentially a very serious issue given the rise in the global burden of type 2 diabetes.

Diabetes and the Brain provides several comprehensive chapters that address cognitive complications of type 1 and 2 diabetes.

Third, it also addresses issues such as stroke in diabetes and hyperglycemia in acute stroke, reviewing and putting into perspective a number of clinical trials that have addressed these issues. Some of the authors point out that stroke units have not yet found adequate clinical trial evidence and guidance for how tightly to control hyperglycemia in the first few hours after stroke.

The book is multiauthored but reads well and is generally accessible. However, in some chapters, it is a challenge to extract the conclusions, and in my print copy, the type size in some important treatment alogorithm figures covering ketoacidosis was too small to read—though I expect this is not an issue in an electronic version. Nevertheless, these are very worthwhile tables. Finally, the book does not address complications of the peripheral nervous system but instead focuses on brain complications.

Most of the relatively few investigators who focus on diabetic neurological complications have struggled with editors and reviewers of prominent neuroscience journals to give this area of research its due.

The neurological complications of diabetes dwarf, by a factor of 10, the combined prevalence of multiple sclerosis, Parkinson's disease, and amyotrophic lateral sclerosis. This text is an excellent step in raising the profile of this terribly important problem. ■

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