The cause of nodding syndrome, a progressive seizure and developmental disorder of unknown cause affecting children and teenagers, has remained elusive since the condition was first described in a remote mountain region of Tanzania in the early 1960s, then decades later in northern Uganda and what is now South Sudan, but recent efforts have begun to narrow down the possibilities.

Mental retardation and generalized or complex partial seizures are among the most frequent abnormalities reported along with involuntary head nodding, which starts in children aged 5-15 years. Few children are known to have recovered from nodding syndrome, although antiepileptic medications have been shown to help reduce seizures in some cases.

In 2005, a multinational team working in Tanzania documented impaired consciousness and other supportive signs of epileptic seizures and EEG-confirmed epileptic activity with head nodding (Epilepsia 2008;49:2008-15). And in 2010, the US-based Centers for Disease Control and Prevention (CDC) documented that head nodding in northern Uganda was a manifestation of seizures that cause brief lapses in muscle tone due to alterations in brain function. In a Jan. 27 report on a 2011 case-control study from two communities in South Sudan, CDC investigators found, based on physical and neurological examinations; clinical, family, and epidemiologic histories; and laboratory investigations, that the syndrome there is, in fact, the same as that observed

See Nodding Syndrome • page 12

WFN Looks at e-Learning, Telemedicine Options

A survey by the World Federation of Neurology (WFN) to assess e-learning needs and capabilities for distance learning using electronic technologies found that there is significant support for online learning (e-learning) and telemedicine among member societies. However, although there is good access to online distance learning technology, cost and time constraints might be a hindrance to some societies going online.

The survey was organized by the eLearning Task Force of the WFN Education Committee. The task force is cochaired by Dr. Morris Freedman and Dr. Riadh Gouider, WFN delegates from Canada and Tunisia. Tim Patterson (Canada) serves as a consultant to the task force. Fifty-four of the WFN’s 113 member societies responded (response rate, 47.8%). The distribution of society responses by geographical region was: Asia, 18 societies; South America, 6; Europe, 18; North America, 4; and Africa, 8.

The response rates for developing countries was almost double that of developed countries at 56.5% and 29.5%, respectively. This observation requires further study, but it raises the possibility that representatives from developing countries perceive a greater need than those from developed countries for increased CME using distance learning technologies. In addition, WFN member societies support e-learning and telemedicine, with the survey showing that 62% of member societies strongly encourage online distance learning. Twenty-eight percent somewhat encouraged this. Other key findings are discussed on page 8.
Web Access Trumps Physical Barriers

2012 Junior Travelling Fellowships

This year, the World Federation of Neurology’s Education Committee has evaluated the desirability and capability of e-learning. There is considerable interest in this, especially from neurologists in developing countries. The advantages of e-learning programs are considerable. Materials can be developed and used repeatedly at times that are convenient to each person. Electronic resources are not yet widespread, but their accessibility is certainly increasing rapidly, including in developing countries. Cost continues to be a barrier in some locations, but in the long run, online learning will likely be a more efficient, less costly form of education. Neurologists in Canada and Tunisia have organized joint behavioral neurology rounds through teleconferencing. This is an excellent use for the methodology as well as telemedicine, allowing for patient cases to be presented remotely from selected centers and for participating neurologists to assess and discuss the cases and recommend medical care. There appear to be no barriers to neurologists interacting no matter where they are. This is a great area for the WFN to take the lead and to promote high-quality education and patient care worldwide.

It’s WFN Dues Time

The World Federation of Neurology 2012 annual fees for your member society are now due. The subscription is unchanged at £3.00 per individual neurologist.

It is very important the WFN maintains an up-to-date list of all of our members. If there are any changes to your officers or members and/or their contact details, please advise us as soon as possible.

If you did not send a complete list of all of your members last year, please do so now. The list should include the following:

► Names,
► E-mail addresses, and
► Full mailing addresses.

The information is for the sole use of the WFN, such as mailing WORLD NEUROLOGY, and will not be made available to any third party.

For further information, contact Keith Newton or Laura Druce at info@wfneurology.org.

To apply for a fellowship should send us:

► A CV and bibliography,
► A letter of recommendation from the head of their department, and
► An estimate of expenses, to a maximum of £1,000.

If the applicant plans to present a paper or poster at the meeting, then an abstract should be included in the application materials.

Applications should be sent to:

► The World Federation of Neurology, Hill House, Heron Square, Richmond, Surrey, TW9 1EP United Kingdom;
► E-mailed to info@wfneurology.org;

Applications must be received at the WFN office no later than Friday, March 23, 2012. The awards will be announced as soon as possible thereafter.

In past years, WORLD NEUROLOGY has invited travelling fellows to write brief reports on their experiences and lessons learned at the meetings they attended. Among the highlights for the most past fellows have been the opportunities to attend presentations by renowned experts, to learn about current therapies and advances in neurology, and to meet neurologists from other countries. On page 6 of this issue, B.K. Bajaj of India reports on going to the Asia Pacific Stroke Conference.

MARK HALLETT, MD

M y farewell editorial in 2007 as Editor-in-Chief of the Journal of Clinical Neurophysiology was titled, “Editing the journal in a time of revolution.” In it, I described the transition, common around that time, from a paper-based manuscript submission process to an online submission system. Although that was not too long ago, it is almost difficult to remember working with those paper manuscripts. The revolution continues in many ways. People communicate by Facebook and Twitter as well as e-mail. Landline telephones are becoming unnecessary, replaced by cell phones. And the cell phone itself is gradually morphing into the “smart phone.” Faxing is on the decline and will likely disappear. Soon, everyone will have their medical histories and whole genome recorded in a small chip embedded in their forearms. And so on.

The current issue of WORLD NEUROLOGY has two reports dealing with continuing progress in the electronic revolution (pages 1 and 8). The e-Learning Task Force of the World Federation of Neurology’s Education Committee has evaluated the desirability and capability of e-learning. There is considerable interest in this, especially from neurologists in developing countries. The advantages of e-learning programs are considerable. Materials can be developed and used repeatedly at times that are convenient to each person. Electronic resources are not yet widespread, but their accessibility is certainly increasing rapidly, including in developing countries. Cost continues to be a barrier in some locations, but in the long run, online learning will likely be a more efficient, less costly form of education. Neurologists in Canada and Tunisia have organized joint behavioral neurology rounds through teleconferencing. This is an excellent use for the methodology as well as telemedicine, allowing for patient cases to be presented remotely from selected centers and for participating neurologists to assess and discuss the cases and recommend medical care. There appear to be no barriers to neurologists interacting no matter where they are. This is a great area for the WFN to take the lead and to promote high-quality education and patient care worldwide.
A Call for 2012 Projects Proposals

Where the Money Went in 2011

<table>
<thead>
<tr>
<th>Project</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bringing EMG/NCV to Zambia</td>
<td>$16,290</td>
<td></td>
</tr>
<tr>
<td>Cognitive clinics worldwide</td>
<td>35,213</td>
<td>50,000</td>
</tr>
<tr>
<td>Revision of ICD-10</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Stroke survey&quot;</td>
<td>19,758</td>
<td>10,445</td>
</tr>
<tr>
<td>Pediatric neurology elect training</td>
<td>9,000</td>
<td></td>
</tr>
<tr>
<td>Neurology training for non-neurologists</td>
<td>3,000</td>
<td></td>
</tr>
<tr>
<td>Education grant for Asian neurology</td>
<td>12,755</td>
<td>12,755</td>
</tr>
<tr>
<td>Neurology training in Afghanistan</td>
<td>9,800</td>
<td></td>
</tr>
<tr>
<td>Children with epilepsy</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Training and retraining child neurologists</td>
<td>15,000</td>
<td>15,000</td>
</tr>
</tbody>
</table>

*EMG = electromyography (equipment), NCV = nerve conduction velocity (testing equipment); **Jointly funded by the WFN, World Stroke Organization*
Piecing Together Electricity’s Role in Nerve Function

Almost two years have past since I received a fish from Mr. [van’s] Gravesande, general di-rector of the Volksplanting of Isequebo; a fish that the inhabitants of the place consider a kind of eel; although basically it is a fish, called Gymnotus.

By Peter J. Koehler, MD, PhD

Dr. Koehler is a neurologist in the department of neurology at the Atrium Medical Centre, Heerlen, the Netherlands. Visit his web site at www.neurohistory.nl.

Weetenschappen Haarlem

The Leyden jar, discovered in 1745, was of fundamental importance in the medical application of electricity.

The tremble eel that Linnaeus (1766) named Gymnotus electricus is known today as Electrophorus electricus.

The effect of the fish is much stronger than that of rays: If one touches the fish, it does not give off fire or sparks, similar to the apparatus for electricity. But for everything else it is the same; yes, even much stronger, because if the fish is big and lively, the shock produced by the animal will throw anyone who touches it to the ground, without exception, and one feels it throughout the whole body.

At the time, electricity was gradually introduced for treatment of various afflications, as Allamand had reported in the Proceedings several years previously. For example, Abbé Nollet in cooperation with Sauveur F. Morand and Joseph Marie F. de la Sône at the Charité Hôpital in Paris tried to get body parts that had been affected by paralysis to move on application of an electric pulse from the Leyden jar, but were not successful (1746). A year later, the Swiss professor of experimental philosophy and mathematics, Jean Jallabert, was able to produce contractions in the arm of a person with right hemiplegia and shortly thereafter of his own, healthy, arm muscles.

Allamand wrote that clinical trials with electricity usually did not produce great medical benefits. Nevertheless, he found an exception with a young girl suffering from affectum paralytico-spasmodicum, who, after an intense terror, displayed hemiparesis, fits, and aphasia. Following electrical treatments, her speech improved, but she was not as fluent as she had been before her illness. She showed more recovery of her other impaired functions (Verhandelingen Hollandsche Maatschappye der Wetenschappen Haarlem 1754:1:485-497).

In another letter by a certain Van der Lott (1762) we read the following passage:

[A 9-year-old boy] suffered from obstruction of the nerves in such a way that his arms and legs were crooked. Each day, this gentleman threw the boy in a tub of water with a large Conger-eel of the black variety, which shocked the boy so powerfully that he crept out on all fours.

It was not easy to transport a live eel to Europe, although several dead eels had been taken to European cities, including Amsterdam, where specimens were collected and drawn for books. In the 1770s at the Royal Society in London, scientists proved that the eels did indeed discharge an electrical current after they drew a spark at the time of a living eel’s discharge, a fundamental criterion at the time. The finding endorsed the Italian scientist Luigi Galvani’s concept of animal electricity based on his findings that the legs of dead frogs would move when touched by a spark of electricity. However, due to the opposition of Alessandro Volta, an Italian physicist who was also studying electricity, and the lack of refined measuring methods, it was several decades before the nerve action potential was measured by the German physiologist Emil du Bois-Reymond in 1843.

It is apparent that during the century that elapsed between colonists’ first realization that the eel produced electricity, a great number of scientists from various countries made scientific contributions that finally led to the observation of a nerve action potential.

Further reading

Leading resources in clinical neurology!

Journal of the Neurological Sciences
Official Journal of the World Federation of Neurology

Editor-in-Chief
Robert P. Lisak, Department of Neurology, Wayne State University School of Medicine

The Journal of the Neurological Sciences provides a medium for the prompt publication of studies on the interface between clinical neurology and the basic sciences.

www.jns-journal.com

Parkinsonism and Related Disorders
Official Journal of the World Federation of Neurology Association of Parkinsonism and Related Disorders

Editors-in-Chief
R. F. Pfeiffer, University of Tennessee HSC
Z.K. Wszolek, Dept. of Neurology, Mayo Clinic

Parkinsonism & Related Disorders publishes the results of basic and clinical research contributing to the understanding, diagnosis and treatment of all neurodegenerative syndromes in which Parkinsonism, Essential Tremor or related movement disorders may be a feature.

www.prd-journal.com

ELSEVIER
C onferences and workshops are a means of updating one’s knowl-
edge, learning new skills, and con-
necting with other clinicians, scholars, and researchers. My visit to Colombo, Sri Lanka, in November 2011 to attend the
Asia Pacific Stroke Conference as a World Federation of Neurology (WFN) Junior Travelling Fellow was an academically
enriching experience that exposed me to the
diverse perspectives of my fellow neu-
rologists from different parts of the world.

I attended a preconference workshop on transcranial Doppler ultrasound. It was truly a hands-on experience for the participants. We discussed the basic tech-
niques of the test and the methods for
obtaining an accurate, functional image of the intracranial arteries. The speakers and instructors were all experts in their
fields and superb teachers. The enthusi-
asm of Dr. Vijay Sharma from National
University Hospital, Singapore, was par-
sim of Dr. Vijay Sharma from National

nisms and superb teachers. The enthusi-
asm of Dr. Vijay Sharma from National
University Hospital, Singapore, was par-
sim of Dr. Vijay Sharma from National

of Dr. N.V. Ramani’s analysis
of the evidence-based management of
malignant middle cerebral artery infarct
highly informative.

The concept of separate stroke units is not new to places such as the United
States and most European countries. In
contrast, many developing Asian coun-
tries such as India do not have the most
basic neurological facilities and struggle
to provide neurological care. The non-
communicable disease burden in such
countries is significant, and financing to
provide the basic infrastructures for man-
gaging conditions such as stroke should
be considered at the global level. Many of
the tertiary-care teaching hospitals in
developing countries are not equipped
to handle stroke patients. The obstacles to
delivering the best possible stroke treat-
ment in many Asian countries are for-
midable.

In addition, there are few rehabilitation
experts in developing countries. This ab-
sence of appropriate rehabilitative mea-
sures leaves many patients with a sub-
optimal level of functional ability, which
adversely affects the quality of life of
many stroke patients.

But there are ways in which develop-
ing countries can meet the challenges of
being underresourced. Dr. Tissa Wijer-
ane from Australia suggested that a hos-
pital could start a special stroke care fa-
cility by designating a few beds for stroke
patients only and by drawing on the ex-
pertise of different medics and para-
medics without having the sophisticated
infrastructure and paraphernalia in place
first. However, some attendees disagreed
with his suggestion. They questioned
the feasibility of such an arrangement
and whether it would ever be able to
replicate the results seen in better
equipped stroke units.

It was clear that we need to look into
new ways and means of delivering ad-
vanced neurological services to under-
developed countries. This can happen
only through cooperation and exchange
between neurologists from developed
and developing countries, and the WFN
is doing much to foster this exchange in
its bid to improve neurological care and
ensure expertise in neurology in the less
developed regions of the world. I am
thankful to the WFN for awarding me a
travel grant to attend APSIC 2011 and in
helping me see things from a different
perspective.

Dr. Bajaj is associate profes-
sor of neurology in the Post-
graduate Institute of Med-
ical Education & Research
at the Dr. Ram Manohar
Lohia Hospital, New Delhi,
India.

BY B.K. BAJAJ, MBBS, MD, OM

New Experiences, Diverse
Perspectives at Stroke Conference

WFN JUNIOR TRAVELLING FELLOW

Neurosciences Training at Sudan Meeting

T he Sudanese Society for Neuro-
sciences will hold a 2-day training course
in the clinical neurosciences dur-
ing Feb. 22-23, in Khartoum, Sudan,
ahead of its 4th International SSNS Con-

The purpose of the Fourth Clinical
Neurosciences Course will be to address
the clinical and practical challenges in
delivering neurological care in Sudan and
to update participants on therapies and
the diagnosis and management of neu-
rological diseases. It will be held at the
Education, Examinations and Training
Centre at Soba University Hospital, the
teaching hospital for the University of
Khartoum’s faculty of medicine.

Among the topics covered during the
sessions are neuro-anatomy, history tak-
ing, the neurological exam, neuroradi-
ology, neurophysiology, neurology in
women, neuro-rehabilitation, pediatric
neurology, and neurological investiga-
tions. There will also be sessions on
stroke, epilepsy, peripheral neuropathies,
movement disorders, CNS infections, de-
mentia, neuron disorders, headache, and
neurosurgery.

At the end of the second day, there
will be a clinical stations session. Experienced
neurologists will be present at 18 stations
to present cases and field participants’
questions. The 10-minute demonstra-
tions will include three stations each on
pediatric neurology and clinical neuro-
physiology, as well as a “challenging
case” competition and a range of other
clinical cases, from hemiplegia, to move-
ment disorders and ataxia, and others.

The course was planned by the local
organizing committee, Osheik A. Seidi,
Mohamed Naghib, Eetidal Abu Albashr,
Sarah Misbah El Sadig, Isam Izzeldin,
Husam Abu Obeida, Muaz Abdelatif,
Mohamed Khalafalla Saeed; and its sup-
porting team, Mutakil Imam, Assim
Mamoun, and Shad Hamid.

The international faculty is Hadi Man-
ji, Mathew Pitt (London, UK), Victor
Patterson (Belfast, UK), Ashraf Ghobashy
(Cairo, Egypt), Abdelaziz Mirghani (Jed-
dah, Saudi Arabia), John Nixon (Preston,
UK), and Khalid Awad (Kuwait).

For more information, e-mail:
info@medicaluofk.net. To reserve a
space in the course, e-mail Muna El Bahi at
munaelbahyi@yahoo.co.uk, or phone
+249-915-566-1412. Placement in the
course is done on a first come, first serve
basis up to 100 participants.

BY OSHEIK ABU’ASHA SEIDI, MD

Dr. Seidi is registrar and clinical lecturer
in the department of neurology at
Sunderland Royal Hospital, UK, and
consultant to the faculty of medicine at
Soba University Hospital, University of
Khartoum, Sudan.

Calendar of International Events

2012

XIII Pan American Congress of Neurology
March 6-8
La Paz, Bolivia
www2.kenes.com/PCN2012

64th Annual Meeting of the American Academy of
Neurology
Apr. 21-28
New Orleans, USA
www.aan.com

7th World Congress for NeuroRehabilitation
May 16-19
Melbourne, Australia
wcn2012/Home

13th Asian Oceanian Congress of Neurology
June 4-8
Melbourne, Australia
www.aocn2012.com

22nd Meeting of the European Neurological Society
June 9-12
Prague, Czech Republic
www.congrex.ch/ens2012

16th Congress of the European Federation of Neurological
Societies
Sep. 8-11
Stockholm, Sweden
www.efns.org/efns2012

10th European Congress on Epileptology
Sep. 30-Oct. 4
London, UK
www.epilepsylondon2012.org

8th World Stroke Congress
Oct. 10-13
Brasilia, Brazil
www2.kenes.com/stroke/Pages/
Home.aspx

2013

XXI World Congress of Neurology
Sep. 21-26
Vienna, Austria
www2.kenes.com/wcn/Pages/
Home.aspx

www.wfneurology.org • february 2012

6 • world neurology
Annual Event Highlights Ventilatory Disturbances

The 10 Commandments of Sleep Hygiene ...

1. Fix a time for going to sleep and waking up.
2. If you are in the habit of taking naps, do not exceed 45 minutes of daytime sleep.
3. Avoid excessive alcohol ingestion 2-4 hours before bedtime and do not smoke.
4. Avoid caffeine 6-8 hours before bedtime. This includes coffee, tea, and many sodas, as well as chocolate.
5. Avoid heavy, spicy, or sugary foods 4 hours before bedtime. A light snack before bed is acceptable.
6. Exercise regularly, but not immediately before bed.
7. Use comfortable bedding.
8. Find a comfortable temperature setting for sleeping and keep the room well ventilated.
9. Block out all distracting noise and eliminate as much light as possible.
10. Reserve the bed for sleep and sex. Don’t use the bed as an office, workroom, or recreation room.

... and Healthy Sleep for Children

1. Make sure your child gets enough sleep by setting an age-appropriate bedtime and wake time.
2. Set consistent bedtime and wake-up times on both weekdays and weekends.
3. Establish a consistent bedtime routine that includes “quiet time.”
4. Encourage your child to fall asleep independently.
5. Avoid bright light at bedtime and during the night (including light from television or computer screens) and increase light exposure in the morning.
6. Keep all electronics, including televisions, computers, and cell phones, out of the bedroom and limit use of electronics before bedtime.
7. Maintain a regular daily schedule, including consistent mealtimes.
8. Have an age-appropriate nap schedule.
9. Ensure plenty of exercise and time spent outside during the day.
10. Eliminate foods and beverages containing caffeine.

Visit www.worldsleepday.org for translations in different languages.
Canada, Tunisia Link Up for Long Distance Education

BY TIM PATTERSON, BA, RIADH GOUIDER, MD, MORRIS FREEDMAN, MD

The first telecast of the Canada-Tunisia Telehealth program was held in late May 2011 – 2 weeks into the Arab Spring Uprising – as part of the weekly City-Wide Behavioural Neurology Rounds, sponsored by University of Toronto’s division of neurology, and cochaired by Dr. Morris Freedman and Dr. Sandra Black.

The program was initiated by the e-Learning Task Force of the World Federation of Neurology’s (WFN’s) Education Committee. It is cosponsored by WFN delegates Dr. Riadh Gouider (Tunisia) and Dr. Morris Freedman (Canada), and I am their e-health and production consultant.

Two presenting sites, Razi Hospital in La Manouba, Tunisia, and Baycrest, a Toronto, Canada-based institute that specializes in age-related care and research, were featured in the telecast, which was titled “Canada-Tunisia Frontotemporal Dementia Case Conference.” After each presentation, Dr. Tiffany Choy, Dr. Naati Amira, Dr. Mouna Ben Djebara, Dr. Gargouri Amira, Dr. Hamza Yere, Dr. Othmane Gharbi, Dr. Black, and Dr. Freedman were discussants for the case. Later, the discussions opened to participants from 14 other Canadian sites.

This successful experience, based on the positive feedback from the participants, encouraged us to schedule other rounds.

From a programming point of view, the Tunisian round was based on two international neurology series initiated in 2005 and 2009. Each series involves a program scripting process, production techniques, and a minimum of two videoconferencing bridges to accomplish the telecast. Each site has a videoconferencing codec with connectivity either in the form of IP or ISDN that connects to the bridges, allowing for synchronous dialogue among sites.

The first international behavioral neurology round was hosted at Baycrest in 2005 under the auspices of the Peter A. Silverman Global eHealth Program and the Canada International Scientific Exchange Program (CISEPO), with sponsorship from the division of neurology, University of Toronto. The rounds have recently also been placed under the auspices of the Canadian Neurological Sciences Foundation, American, Argentinean, Brazilian, Canadian, Chilean, Cuban, Israeli, Jordanian, Palestinian, Russian, South African, Spanish, and Swiss (WHO) hospitals have participated.

The audiences and presentations are multidisciplinary and include neurologists, psychiatrists, geriatricians, family physicians, nurses, social workers, occupational therapists, and psychologists, as well trainees in various health care disciplines.

Each international round lasts 75 minutes, consisting of a review of case presentations, originated from any of the participating sites. Past topics have included “Corticobasal Degeneration: Beyond the Alien Limb” (led by Dr. Alexander Pantelis), and Dr. Murray Grossman of the University of Pennsylvania, Philadelphia and “Black and White Spots and Bloches: What Do They Mean on Brain MRI in Aging and Dementia” (Dr. Black). The participants evaluate the telecasts, which are accredited under the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.

Neurology residents are the target audience for the second series, which was started in 2009, also under the auspices of the Peter A. Silverman Global eHealth Program and CISEPO. The Neurology International Residents Videoconferencing Exchange is hosted by St. Michael’s Hospital in Toronto. The presenting sites rotate among Brazil, Canada, Jordan, and Russia, where neurology residents present their cases and their fellow residents discuss them. Topics have included “Cerebral Arterial Dissection” (presented by Dr. Anna Smirnova, St. Petersburg State Pavlov Medical University, Russia) and “Juvanile Myasitis Gravis” (Dr. Camila Exposto, Fundacao do ABC, Sao Paulo, Brazil).

A rewarding outcome of the telecasts is that it allows residents and experts to come together using health care as a common language and exchange knowledge in a way that is beneficial to their respective societies.
COMING IN MARCH!

Clinical Neurology News

News and Views that Matter to Neurologists

- Specialty news and commentaries in real time
- Galleries of clinical images, videos, and podcasts
- Blogs and interactive features
- Topic-specific newsletters
- And much more

www.clinicalneurologynews.com
New Guideline for Comorbid Epilepsy, HIV Care

BY GRETCHEN L. BIRBECK, MD, MPH, DTMH.

A n evidence-based guideline that addresses the potential risk of drug interactions for people with comorbid HIV and epilepsy was released in early January. The guideline was developed by a joint committee of the American Academy of Neurology and the World Health Organization through the International League Against Epilepsy and was endorsed by the American Epilepsy Society. It promises to highlight a problem that can likely be ameliorated in developing regions through better communications between specialist physicians and increased patient awareness.

Seizures requiring treatment occur in about 11% of people with HIV; other conditions that may warrant treatment with an antiepileptic drug (AED), such as peripheral neuropathies, are also very common. But the potential pharmacokinetic interactions between AEDs and antiretroviral agents (ARVs) are complex and varied.

Enzyme-inducing AEDs (EI-AEDs; phenobarbital, carbamazepine, and phenytoin) are especially problematic because they may cause more rapid metabolism of protease inhibitors and/or nonnucleoside reverse transcriptase inhibitors resulting in ARV failure, progression to AIDS, and the development of ARV-resistant strains of HIV. AED-ARV combinations can also result in subtherapeutic AED levels. Interactions may also increase the toxicity of either or both AEDs and ARVs. For example, the combination of AZT and zidovudine (AZT) can result in fatal anaemia presumably from toxic levels of AZT.

Based on available data, no clear recommendations are made regarding which AED-ARV combinations are optimal, though there are some data for combinations that have not been shown to interact pharmacologically. Unfortunately, there were no published reports on the use of levetiracetam or gabapentin with ARVs, which, given their relative lack of interactions with other medications, are possibly the best options.

The recommendations for the treatment of comorbid HIV and epilepsy are:
- Patients receiving phenytoin may require a lopinavir/ritonavir dosage increase of about 50% to maintain unchanged serum concentrations.
- Patients receiving valproic acid may require a zidovudine dosage reduction to maintain unchanged serum zidovudine concentrations.
- Coadministration of valproic acid and efavirenz may not require efavirenz dosage adjustment.
- Patients receiving ritonavir/atazanavir may require a lamotrigine dosage increase of about 50% to maintain unchanged lamotrigine serum concentrations.
- Coadministration of raltegravir or atazanavir and lamotrigine may not require lamotrigine dosage adjustment.
- Patients may be counseled that it is unclear whether dosage adjustment is necessary when other AEDs and ARVs are combined, and
- It may be important to avoid EI-AEDs in people on ARV regimens that include PIs or NNRTIs, as pharmacokinetic interactions may result in virologic failure, which has clinical implications for disease progression and development of ARV resistance. If such regimens are required for seizure control, patients may be monitored through pharmacokinetic assessments to ensure efficacy of the ARV regimen.

What does this mean for most patients suffering from both HIV and epilepsy? Although ARV treatment options are expanding in low-income countries, AED availability remains limited in general and in the public sector includes primarily enzyme-inducing AEDs. Furthermore, such regions generally have no capacity for monitoring AED levels or ARV levels.

Perhaps a particular African proverb accurately describes the scenario: “When two elephants fight, the one that suffers most is the grass.” In other words, unless or until the donor community, ministries of health, and nongovernmental organizations come together over the issue of epilepsy care in HIV endemic regions, the two elephants of AEDs and ARVs will likely continue to “fight,” and people with epilepsy and HIV will continue to be the primary victims of suboptimal AED-ARV regimens. But the potential public health consequences of ignoring this problem should also be of great concern.

References

DR. BIRBECK IS THE DIRECTOR OF THE EPILEPSY CARE TEAM, CHIKANKATA HOSPITAL, MZABUKA, ZAMBIA, AND PROFESSOR AND DIRECTOR OF THE INTERNATIONAL NEUROLOGIC AND PSYCHIATRIC EPIDEMIOLOGY PROGRAM, MICHIGAN STATE UNIVERSITY, EAST LANSING, USA.

Comorbid ADHD Affects Cognition in Epileptic Children

BY HEIDI SPLETE

BALTIMORE – Comorbid attention-deficit/hyperactivity disorder persistently affected the cognitive development of children with epilepsy up to 5 or 6 years after the onset of seizures in a prospective case-control study.

Connie Sung, a doctoral student at the University of Wisconsin, Madison, USA, and colleagues conducted cognitive assessments of 75 children with epilepsy and 62 of their healthy first-degree cousins as controls. They gave the children a comprehensive battery of neurological tests at baseline and at 2 and 5-6 years' follow-up. Average age at last follow-up was 13 years. At baseline, ADHD and academic performance were significantly associated with neuropsychological impairment across all cognitive domains, but children with epilepsy and no ADHD or academic performance problems had “entirely normal” cognition, compared with controls, Ms. Sung said in a poster at the American Epilepsy Society annual meeting.

The trends persisted after 2 and 5-6 years. Full-scale raw IQ scores after 2 years were about 88 for controls and children with epilepsy without comorbidities, compared with 76 in those with epilepsy and academic performance problems and 68 in those with epilepsy and comorbid ADHD.

The researchers said they had no relevant financial disclosures.
Announcing the launch of
MULTIPLE SCLEROSIS
AND RELATED DISORDERS

Register for a FREE one-year subscription!*  

Chief Editors  
Dr. Brenda Banwell, Prof. Gavin Giovannoni,  
Prof. Christopher H. Hawkes, Prof. Fred D. Lublin

Multiple Sclerosis and Related Disorders — New title published by Elsevier

This quarterly published journal will start its official publication in January 2012.

Register for a FREE one-year subscription for this journal today!*  
Submit your registration form online at: http://bit.ly/ndCw9W

Multiple Sclerosis and Related Disorders is a wide ranging international journal supported by key researchers from all neuroscience domains that focus on Multiple Sclerosis and associated disease of the nervous system. The primary aim of this new journal is the rapid publication of high quality original research in the field. Important secondary aims will be timely updates and editorials on important scientific and clinical care advances, controversies in the field, and invited opinion articles from current thought leaders on topical issues.

With your annual subscription, you will receive…
• Four print issues of MSARD covering the very latest high quality original research, review articles and commentaries in the field  
• Searchable online access to the full text content resource of all current and past issues  
• Clinically relevant original articles, abstracts, and more

Register for FREE One-year subscription today!  
Scan the code with your smart phone  
Need a code reader for your phone? www.getneoreader.com

*Limited number of free subscriptions available.
EM sleep behavior disorder proved to be significantly associated with cholinergic system degeneration in a cross-sectional, PET imaging study of patients with Parkinson’s disease. Parkinson’s disease patients with a history of REM sleep behavior disorder (RBD) demonstrated decreased neocortical, limbic cortical, and thalamic cholinergic innervation relative to those without the parasomnia. The results provide more evidence to suggest that these cholinergic systems are important in the pathophysiology of RBD in Parkinson’s disease, according to Dr. Vikas Kotagal of the University of Michigan, Ann Arbor, and his colleagues (Ann. Neurol. 2011 Dec. 9 [doi:10.1002/ana.22691]).

Previous studies have identified RBD and cholinergic system degeneration as independent risk factors for cognitive impairment in Parkinson’s disease, but the current findings raise the possibility that the presence of basal forebrain cholinergic dysfunction may represent a pathological mechanism contributing to the development of dementia in patients who suffer from idiopathic RBD.

The researchers found that the degree of neocortical cholinergic degeneration in patients with RBD was “approximately intermediate” between levels seen in Parkinson’s patients with and without dementia. A decreased performance in patients with RBD on the verbal-learning test was the only significant difference in cognitive test performance between the groups, which is consistent with previous findings that showed an association between hypomnesia in Parkinson’s disease, poor performance on verbal-learning test, and neocortical and limbic cortical cholinergic degeneration (Brain 2010;133:1747-54).

The investigaters performed MRI and PET imaging with radiopharmaceuticals for measuring nigrostriatal dopamine, serotonin, and acetylcholine nerve terminals on verbal-learning testing, and neocortical and limbic cortical cholinergic degeneration (Brain 2010;133:1747-54).

The researchers reported that the pathology of Parkinson’s disease and RBD are potentially related, as the severity of symptoms of Parkinson’s disease correlates with the severity of symptoms of RBD, while the duration of motor disturbance and the age at diagnosis are greater in patients who had RBD as a comorbidity. The extent of cholinergic involvement in the brain regions associated with the symptoms of Parkinson’s disease is strongly correlated with the severity of these symptoms, indicating a potential link between the two conditions. The study was funded by grants from the National Institute of Neurological Disorders and Stroke, the Michael J. Fox Foundation, the Department of Veterans Affairs, and the National Institutes of Health. The authors disclosed potential conflicts of interest with multiple companies, including Pavid Medical, Arena Pharmaceuticals, Guidepoint Global, OrbiMed Advisors, Philips Respironics, Fisher Paykel, K.A.F. Avide Radio-pharmaceuticals, MIMvista, and General Electric.

IN TANZANIA, AS EARLY AS THE 1960S, PEOPLE KNEW THAT CHILDREN WHO HAD HEAD NODDING WOULD SOONER OR LATER HAVE EPILEPSY.

Dr. Jilek-Aall retired to Canada after 5 years in Tanzania. Dr. Jilek-Aall said in an interview that the clinic steadily supplies. Because the clinic, Dr. Winkler said, “I think the situation [in Tanzania] is quite exceptional – you can’t compare it with what is going on in Uganda or Sudan at the moment.”

Teams Working to Find Origins

Nodding Syndrome • from page 1

in northern Uganda (MMWR 2012;61:92-4). There is still insufficient evidence to establish whether the Tanzanian cases, which are clinically very similar to those in Uganda and South Sudan, represent the same syndrome.

Nodding syndrome “is devastating for both the children and the caregivers,” said Dr. James Sejvar, a CDC neuroepidemiologist who led the field investigations in Uganda and South Sudan, in an interview. “We want to do everything we can to try to determine what’s causing it and how best to manage it.”

Isolating causes and identifying treatments are especially urgent concerns as cases are reportedly increasing in Uganda and South Sudan, with an estimated 3,000 in Uganda, according to recent media reports there, and 8,000 in South Sudan, according to Dr. Abdnasir Abubakar, a communicable diseases specialist with the World Health Organization in Juba, South Sudan, who is working closely with the CDC investigators. Cases are not reported to be increasing in Tanzania.

Dr. Abubakar said in an interview that although the syndrome is known to have existed for some time in South Sudan, the recent spike in reported cases could only partially be explained by wider awareness and better surveillance. “It’s not only local authorities but local ‘mothers’ who are saying that more children have been affected,” he said. Particularly striking, he said, is that in South Sudan “there are a number of displaced people from another

cause infants to have seizures and that can be corrected by supplementing with vitamin B6. The CDC, whose field team for nodding disease includes nutrition specialists along with neurologists and infectious disease experts, is still awaiting results of laboratory testing for vitamins A, B6, and B12; heavy metals; and genetic markers from its South Sudan field study. The CDC plans to conduct additional investigations there in February or March.

That genetic factors might be at play would be no surprise to Dr. Louise Jilek-Aall, founder of the Mahenge epilepsy clinic in rural Tanzania and the researcher who originally described head nodding syndrome in 1965. Dr. Jilek-Aall published extensively on epileptic syndromes in rural Tanzania through 2009. Her work helped demonstrate an unusually high background rate of epilepsy in the Mahenge region, along with evidence of familial clustering among nodding cases, and provided the basis for Dr. Winkler and colleagues’ continuing research in Tanzania.

Dr. Jilek-Aall said in an interview that she was first made aware of head nodding in the beginning of 1960 by the mothers of children with the disorder. “The mothers came with small children of about 4 or 5 [years] and said, ‘can you tell me what to do because this child will get epilepsy.’ The children did not show any symptoms of having epilepsy, but the mothers would say the child had been ‘nodding the head.’ The people knew then that the children who had head nodding would sooner or later have epilepsy, or ‘kifafa.’ After a few years indeed some of them would begin to get grand mal seizures,” she said.

Dr. Jilek-Aall retired to Canada after 5 decades in Tanzania, but her epilepsy clinic, still thriving today, is where Dr. Winkler and colleagues in 2005 recruited their original cohort of 62 patients with head nodding, of whom 53 are still known to be alive. Most of the surviving patients are on antiepileptic medications that the clinic steadily supplies. Because of the clinic, Dr. Winkler said, “I think the situation [in Tanzania] is quite exceptional – you can’t compare it with what is going on in Uganda or Sudan at the moment.”

wWw.WFNEUROLOGY.org • FEBRUARY 2012

New Clues to Cause of REM Behavior Disorder in Parkinson’s

BY DIANA MAHONEY
Elisevier Global Medical News

"The relationship between cholinergic degeneration and RBD symptoms in the study represents a strong correlation, although it does not represent proof of causation," they wrote. "For example, subjects with RBD symptoms in our cohort may have underlying brain changes consistent with a preclinical state, which conceivably could confer a stronger association with symptoms of RBD than does the cholinergic deficit that is associated with such a preclinical state."

Despite the limitations, the data suggest that “changes in the cholinergic nervous systems within the brainstem and basal forebrain may play a vital role in the pathophysiology of RBD,” the authors noted. "We have the potential to offer insight into the underlying heterogeneity of a number of neurodegenerative diseases. Longitudinal observational studies are necessary to further investigate the cause of RBD in [neurodegenerative diseases],” they wrote.
ELSEVIER presents

...titles from our NEUROLOGY portfolio

For more information please visit: www.journals.elsevierhealth.com
Movement Disorder Seen in Children With New Narcolepsy With Cataplexy

Authors hope narcolepsy with cataplexy will be added to the differential diagnosis of movement phenomena.

BY DENISE NAPOLI
Elsevier Global Medical News

Childhood narcolepsy with cataplexy frequently presents with a movement disorder that comprises both “active” and “negative” motor disturbances, including tongue protrusion, head and trunk swaying, facial grimacing, and chorea.

However, this constellation of motor phenomena seems to be transient, with the age of disease onset and disease duration both inversely related to motor composite scores, according to Dr. Giuseppe Plazzi and colleagues (Brain 2011; 134:3480-92).

“Our description is of a new clinical picture of childhood narcolepsy with cataplexy close to disease onset,” Dr. Plazzi wrote in an e-mail interview.

“The clinical picture (of narcolepsy) is easily misunderstood for a movement disorder, muscle disease, epilepsy, malingerings, or a psychiatric disorder. We hope that our description will help specialists to consider the potential role of sleepiness symptoms in the evaluation of such cases, thus adding… narcolepsy with cataplexy to their differential diagnosis,” he added.

Dr. Plazzi, a professor of neurology at the University of Bologna, Italy, made video recordings of 39 patients (19 girls) aged younger than 18 years who were newly diagnosed with narcolepsy with cataplexy. These videos were then compared with videos of 25 matched, healthy controls. The recordings included several minutes of “baseline recording” and then up to 30 minutes of the patient watching a funny video.

Two neurologists independently reviewed the recordings and noted the subjects’ movements, classifying them as either “active” or “negative” in nature, and noting whether they occurred at baseline or only in response to emotional stimuli (in this case, the funny video).

“Negative” motor phenomena were classified as paroxysmal head drops and falls, persistent eyelid narrowing and tongue protrusion, persistent facial hypotonia, and persistent generalized hypotonia.

“Active” movements included eyelid rashes, perioral and tongue movements, facial grimaces; head and/or trunk swaying, stereotypic motor behavior, and dyskinetic dys tonic movements.

The patients’ mean age was 11.5 years, and the mean age of symptom onset was 9.3 years. There was a mean diagnostic delay of 1.8 years, ranging up to 9 years. All “negative” motor phenomena and the composite score evaluated at baseline and during emotional stimuli were significantly more common in the patients, the authors wrote.

Patients and controls obtained a mean score greater than or equal to 1 in the following percentages at baseline and during emotional stimuli, respectively: head drops and falls, 18% (baseline) and 82% (emotional stimuli) for patients vs. 0% and 4% for controls; ptosis and tongue protrusion, 51% (baseline) and 82% (stimuli) for patients vs. 0% and 0% for controls; facial hypotonia, 39% (baseline) and 71% (stimuli) for patients vs. 0% and 0% for controls; hypotonia.

Similarly, all “active” phenomena except facial grimacing were significantly more prevalent in patients.

Patients and controls had a mean score greater than or equal to 1 in the following: eyebrow raising, 23% (baseline) and 76% (stimuli) in patients vs. 0% and 36% for controls; facial grimaces, 10% (baseline) and 82% (stimuli) for patients vs. 0% and 36% for controls; and dyskinetic dystonic movements, 10% (baseline) and 53% (stimuli) for patients vs. 0% and 8% among controls.

Two additional abnormal complex behaviors could not be simply classified as “active” or “negative” motor phenomena, the authors wrote. One was a “neck extension viewing” posture (characterized by neck extension and eyelid ptosis with eyebrow raising while the patient watched videos), which was observed exclusively in nine patients (24%). The other was puppet-like movement (characterized by a rapid and rhapsodic set of choreic movements of the whole body, and limbs with hypotonia, which was observed exclusively in five patients (13%).

Dr. Plazzi and his associates then sought to determine which clinical and demographic factors were associated with the observed motor phenomena.

“We found that the age at narcolepsy with cataplexy onset was inversely related to ‘negative’ composite scores, and that disease duration was inversely related to both ‘negative’ and ‘active’ composite scores, the latter reaching statistical significance only during emotional stimulation,” the investigators wrote.

They did not find any correlations between sleep latency and sleep-onset REM (rapid eye movement) periods on the Multiple Sleep Latency Test, or with baseline hypocretin-1 levels.

Finally, the authors assessed whether dopaminergic abnormalities and the transient imbalance of basal ganglia and cortical networks may give rise to the disorder.

**VITALS**

**Major Finding:** Children with new-onset narcolepsy with cataplexy had significantly more negative motor phenomena (falls, head drops, ptosis, tongue protrusion, and facial hypotonia) and positive motions (eyebrow raising, facial grimaces, and dyskinetic-dystonic movements) during emotional stimuli than did healthy control children, but the movement disorder faded over time from diagnosis.

**Data Source:** A prospective study of 39 children who were newly diagnosed with narcolepsy with cataplexy.

**Disclosures:** The study was funded by a grant from nUrope. The authors stated that they had no conflicts to disclose in relation to this study.

**DOPAMINERGIC ABNORMALITIES AND THE TRANSIENT IMBALANCE OF BASAL GANGLIA AND CORТИCAL NETWORKS MAY GIVE RISE TO THE DISORDER.**

The active movements described by Dr. Plazzi and his colleagues “cast a new light on the pathogenesis of the disease and on the interaction between increasing hypocretin deficiency and dopaminergic mechanisms. In spite of their temporary character, the description adds to our knowledge of cataplectic attacks in young kids, thus helping us to diagnose new cases,” Dr. Sona Nevsimalová wrote in an e-mail interview.

She praised her colleagues’ work in offering up new clues to a correct diagnosis in the setting of childhood narcolepsy with cataplexy.

“Narcolepsy is frequently underdiagnosed, particularly in children,” she wrote, adding that a diagnostic delay can extend until adulthood in some cases.

“Therefore, a clinical description of childhood symptoms is extremely important, and so is awareness of the disease, both in the medical profession as well as in the general population.”

Since 2009, European Narcolepsy Day has been celebrated in many countries with a huge media campaign to draw attention to this morbidity. The third European Narcolepsy Day will be held this year in Bologna, Italy, on March 17 under the auspices of the European Narcolepsy Network.”

Dr. Nevsimalová is a neurologist at Charles University I, Prague. She wrote that she has no conflicts to disclose in relation to her comments or this study.

**COMMENTARY**

**NARCOLEPSY IS EASILY MISTAKEN FOR A MOVEMENT DISORDER, MUSCLE DISEASE, MALINGERING, EPILEPSY, OR PSYCHIATRIC DISORDER.**

The active movements described by Dr. Plazzi and his colleagues...
BOOK REVIEW

An Exploration of the Neuropsychological Borderland

By Siri Hustvedt
Henry Holt and Co., New York, 2010

F rom time to time, what I need as a physician is not a picture but a thousand words. There are few materials that are both factual and reassuring, insightful, and practical that one can draw on to educate medical students or help patients feel less alone. As a third-year medical student, I spent 6 weeks at a tiny psychiatric hospital on an island off the coast of Georgia. When I arrived, the enigmatic psychiatrist immediately handed me a copy of An Unquiet Mind, psychiatrist Kay Redfield Jamison’s account of living with bipolar disorder. Over the next couple of hours I saw him reach into a box and hand another copy to a patient, newly diagnosed with bipolar disorder. He would also sometimes give out Dale Carnegie’s How to Win Friends and Influence People, never specifying why. I later noticed a sign to educate medical students or help patients with neglect.

Neurologists too love a good story, and our patients make for better storytellers. In my practice I refer to Olive Sacks and Vilayanur S. Ramachandran. From time to time, I feel a strong sense of connection to what these authors write. How to Win Friends and Influence People is, for instance, a book that I cannot help but recommend to patients who are struggling to communicate. Sacks and Ramachandran are, among other things, keen observers of the boundaries between medicine and the arts. Their work is a guide to a world that is often denied us by the constraints of our medical profession.

In this book, Hustvedt presents an earthy account of her own struggles with conversion disorder. She has long suffered from a series of neurological symptoms, beginning with a hearing disturbance in her late twenties. She describes her personal experience with the neuropsychological borderland. Two years after her father died, while giving a talk in his honor at St. Olaf College in Northfield, Minn., USA, she experienced uncontrollable shaking of her head. She documents her search for a diagnosis through contact with psychotherapy, psychiatry, neurology, and psychoanalysis. She senses keenly the divide between neurology and psychiatry and the artificial duality of brain and mind. She describes the gray areas between migraine and epilepsy, the similarities between patients with neglect and conversion, phenomena that keep us from being able to draw strict borders around diagnoses.

Hustvedt’s book is not entirely sure what it wants to be, perhaps reflecting the very ambiguity that haunts this subject matter. Part source book for a course on the history of hysteria and a much smaller memoir, most of the customer reviews on Amazon would indicate that the lay reader wants to hear more from her and less about history. It would most certainly benefit from chapter delineations. The story channels the patient’s frustration at not having a clear diagnosis, but will also provoke the physician’s frustration as we read with horror when, after beginning to acclaim the idea of conversion disorder, a new psychiatrist tells her that this has to be something neurological after all and puts her on the path toward more tests. All of these experiences will ring true with many conversion patients as well as the neurologists who treat them.

The Shaking Woman works as a primer on how hysteria became conversion and a view into the patient’s experience of this diagnosis. There are transformative moments in Hustvedt’s lovely prose (“blurring borders create abiding conundrums”) in which, always a reader, she attempts to make sense out of her shaking by reading and re-reading the experience in different contexts: “The search for the shaking woman takes me round and round. … My only certainty is that I cannot be satisfied with looking at her through a single window.” This is the kind of self-reflection that, although not curative (this book is proof that insight alone is not enough to halt conversion symptoms for most patients), is certainly less harmful than the search for more invasive medical procedures to discover why conversion happens. Her memoir illuminates one particular illness experience that is too often left undescribed.

Cortical Demyelination, Inflammation Found in Early MS

BY MARY ANN MOON
Elsevier Global Medical News

C ortical demyelination is common early in the course of multiple sclerosis and is inflammatory in nature, according to an analysis of brain biopsy samples containing cortical tissue.

Major Finding: A total of 53 (38%) of 138 biopsy samples of cortical tissue showed demyelination, with a high prevalence of inflammation.

Data Source: An analysis of brain biopsy samples containing cortical tissue from 138 patients early in the course of MS, often before the disease was diagnosed.

Disclosures: This study was supported by the National Multiple Sclerosis Society and the National Institutes of Health. D. Kranick’s associates reported ties to numerous companies that market and develop drugs for MS, as well as receiving research funding or travel awards from research institutions or patient advocacy organizations.

“Cortical demyelination is common early in the course of multiple sclerosis and is inflammatory in nature, according to an analysis of brain biopsy samples containing cortical tissue.”

3.5 years. MS was diagnosed in 58 (75%), and a clinically isolated syndrome was diagnosed in the remaining 19 (25%).

In 35 of the 138 samples (28%) showed cortical demyelination, the researchers reported (N. Engl. J. Med. 2011;365:2188-97). The lesions were highly inflammatory and had a high prevalence of CD3-positive and CD8-positive T-cell infiltrates as well as myelin-laden macrophages.

In addition, among patients who had sufficient meningeal tissue for analysis, meningeal inflammation was topographically adjacent to the cortical demyelination. The researchers also found concurrent subpial and leuкоcortical lesions within individual tissue sections, “suggesting that superficial demyelinating disease may contribute to the generation of deeper lesions by means of cytokine diffusion.”

In addition, “our findings of microglial activation, neuritic injury, pyknotic neurons, and reduced oligodendrocyte density ... are consonant with the findings in patients with progressive MS, underscoring the potential of cortical demyelination to cause irreversible injury, although inflammation may resolve rapidly.”

They speculated that the mechanism of MS progression might involve “myelin-laden macrophages leaving the cortex, entering the cerebrospinal fluid, and gaining access to deep cervical lymph nodes to promote epitope spreading.”

This study suggests that cortical neuronal loss “is directly associated with inflammatory demyelination, and therefore early therapeutic efforts to suppress inflammation may be neuroprotective in both gray matter and white-matter compartments,” Dr. Calabresi added.

Dr. CALABRESI is in the department of neurology at Johns Hopkins Hospital, Baltimore. He reported ties to numerous companies that market and develop drugs for MS. These remarks were adapted from his editorial comment accompanying Dr. Lucchinetti’s report.
We are pleased to announce the Impact Factor* increase for our leading titles in Neurology portfolio.

We would like to thank our readers, authors, reviewers and editors for their support and contribution to this outstanding achievement.

Alzheimer’s & Dementia
EDITOR-IN-CHIEF: Zaven Khachaturian, PhD
ISSN: 1552-5260 • www.alzheimersanddementia.com

Neurobiology of Aging
EDITOR-IN-CHIEF: P. D. Coleman, PhD
ISSN: 0197-4580 • www.neurobiologyofaging.org

Pediatric Neurology
EDITOR: K. F. Swaiman, MD
ISSN: 0887-8994 1.513 • www.pedneur.com

Seminars in Pediatric Neurology
EDITOR: John B. Bodensteiner MD
ISSN: 1071-9091 • www.sempedneurjnl.com

Sleep Medicine Reviews
EDITORS-IN-CHIEF: J. Krieger • M. V. Vitiello
ISSN: 1087-0792 • www.smrv-journal.com

Parkinsonism & Related Disorders
Official Journal of the World Federation of Neurology Association of Parkinsonism and Related Disorders
EDITORS-IN-CHIEF: R. F. Pfeiffer • Z. K. Wszolek
ISSN: 1353-8020 • www.prd-journal.com

Make an impact
Get published, get read, get cited

To learn more about Elsevier portfolio of journals in Neurology please visit www.journals.elsevierhealth.com

To submit your manuscript for fast editorial and review process please visit www.elsevier.com/authors

*2010 Journal Citation Reports®, published by Thomson Reuters, 2011