



THE GNI BULLETIN

Over 50 Years of Excellence

December 2009, Volume 1, Number 2

ISSN 1947-6116



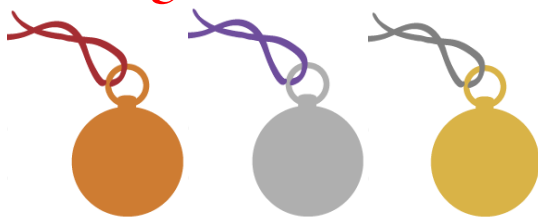
Parkinson Disease Support Group

If you, a family member, or friend is affected by Parkinson's Disease (PD), please join us at our free monthly PD support group. This interactive group is led by a team of professionals discussing topics such as cognitive rehabilitation, medical and psychosocial care, positive speech and outlook, depression, yoga therapy, helpful hints for caregivers, and much more.

We also provide information about clinical trials in PD underway involving sleep, neuroprotection, and general well being. Meetings are held on the last Thursday 3-4 PM of each month. Snacks are provided.

Address: Central Georgia Rehabilitation Hospital, 3351 Northside Dr. For more Information: 478-743-7092 ex 211.

Congratulations



The Stroke Center of the Medical Center of Central Georgia received the Bronze Medal of the American Heart Association (AHA) in December 2009. The Bronze Medal is awarded for complying with the AHA treatment guidelines for 90 days. The Stroke Center will be eligible for the Silver Medal in a few months.

A Continued Legacy



The surgeons at Georgia Neurosurgical Institute continue to provide state-of-the-art neurosurgical procedures, technologies and treatments of brain and spinal disorders, injuries and diseases including back pain, neck pain, tumors and trauma. Our surgeons keep pace with the rapid advance in neurosurgery and technology in order to provide the latest and best clinical service.

We share our experience with medical students from Mercer University and we regularly have visiting doctors from other parts of the world to shadow our physicians and gain knowledge in the surgical management of neurological patients. Our clinical research fellows conduct research projects with far-reaching implications for patient care. Their papers and presentations are well received at seminars and conferences. The Institute's mission is to continue this high level of commitment and achievement in the field of neurosurgery.

Neurosurgeons

Joe Sam Robinson Jr., M.D.
Kim W. Johnston, M.D.
Hugh F. Smisson, III, M.D.
Arthur A. Grigorian, M.D.
Richard A. Rowe, M.D.

Neurologist

Dichen Zhao, M.D.

Internist

M. Ajjan, M.D.

Neuropsychologist

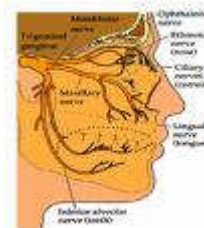
Leon A. Hyer, Jr., Ph.D.

Neurophysiologist

Induk Chung, Ph.D., DABNM

Trigeminal Neuralgia

Definition Management Current Trends in Surgical Treatment



Trigeminal neuralgia (tic douloureux) is a debilitating problem characterized by lancinating facial pain that shoots into the distribution of the trigeminal nerve. It is often aggravated by simple activities such as brushing teeth, chewing food, light touch, or cold temperatures. The current thought on the cause of trigeminal neuralgia is that it is due to a blood vessel lying against the nerve at the root entry zone of the brainstem. This arterial pressure against the nerve rubs the nerve and causes it to demyelinate at that area locally, causing the nerve to short-circuit.

Richard A. Rowe, MD

Medical management is the mainstay for trigeminal neuralgia as most patients are adequately treated with medications such as Tegretol or Neurontin. However, in some patients, this medical management is ineffective in treating their pain in spite of aggressive attempts to control it with combinations of medications. In other patients, the medications are poorly tolerated as patients complain of side effects such as drowsiness. When medical management is no longer a reasonable option, then neurosurgical intervention can play an effective role in treating trigeminal neuralgia.

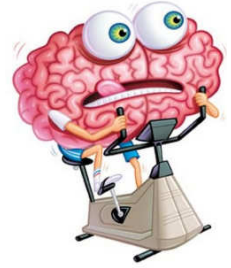
Current mainstays of surgical management include trigeminal rhizotomy, microvascular decompression, and Gamma knife stereotactic radiosurgery. Trigeminal rhizotomy is a procedure that has been available for years. This is performed by introducing a needle through the foramen ovale next to the trigeminal ganglion. In the past, alcohol was oftentimes used to numb the nerve; however, more recently an electrode filament is used to heat the nerve to create a dermatomal distribution of numbness in the V1 or V2 distribution of the trigeminal nerve. The success rate for the rhizotomy is good and it will generally provide approximately three years of relief before symptoms start to recur.

Microvascular decompression is a procedure that has been popularized in the last 25 years. This procedure involves visualizing the nerve next to its entry into the brainstem and placing a Teflon cushion between the offending artery and the nerve. This is a routine procedure that has been proven to be the most effective procedure for treatment of trigeminal neuralgia. The success rate is very high and the results last approximately 10 years before patients start to have recurrence of their symptoms. Finally, Gamma knife stereotactic radiosurgery is an option for treating trigeminal neuralgia. This method has been available in the U.S. for approximately 15 years. This procedure involves focusing multiple beams of radiation on the nerve after it leaves the brainstem before it reaches the trigeminal ganglion and damaging the nerve using radiation. Although there is some evidence in the literature of approximately 80% success rate with this procedure, anecdotal evidence with surgeons who do the procedure suggests that approximately 50% of the patients will improve. Although this procedure is an option for patients, it is often reserved for patients who are not otherwise a surgical candidate for rhizotomy or microvascular decompression.

Prior to joining The Georgia Neurosurgical Institute, Dr. Richard Rowe was the only faculty member at the University of Arkansas for Medical Sciences who was using all three modalities for treatment of patients with trigeminal neuralgia. As a skull base neurosurgeon, he offers his patients microvascular decompression, if appropriate. He has performed trigeminal rhizotomies for treatment of trigeminal neuralgia, and was the only neurosurgeon in the state of Arkansas credentialed to perform Gamma knife stereotactic radiosurgery procedures prior to moving to Macon. Dr. Rowe is a recognized expert in trigeminal neuralgia and is available for consultation on patients who are refractory to medical management.

Free Memory Clinic

Can you recall 10 words after looking at them for 90 seconds? The members of the Free Memory Clinic can. For the past year the team at GNI and Family Medicine at Mercer have developed and are applying a new program on memory re-training. This program teaches older adults how to best use their memory skills. It meets for six sessions, has a manual that is applied, and uses outcome measures to evaluate its effects. The group members have homework and are challenged over the six weeks. The program is accessible by invitation after an evaluation. Dr. Hyer is in charge of this group. Our next clinic is starting in January 2010. For information call, Mary Michael Atkinson at 478-743-7092 ex 211.



Traumatic Brain Injury Program

The Traumatic Brain Injury (TBI) group meets the third Tuesday of every month at the Georgia Rehabilitation Medical Center. This group includes caregivers and patients alike. The goal is to disseminate information on TBI, present on a timely topic related to TBI, and provide support for caregivers. It is led by Dr. Hyer. This group is open to the public. Call Phyllis Dorn at 478-960-2804.



International Research Cooperation

For many years, Georgia Neurosurgical Institute has prided itself on strong connections with the elite neurosurgical community. A number of projects are presently underway which involve research with overseas doctors. Among our previous international fellows, Dr. Carlos Feltes, now the director of the American Center for Neurosurgery at Asuncion, the capital of Paraguay, Dr. Kostas Fountas, currently the Head of the Department of Neurosurgery at the University of Larisa, Greece, Dr. Almozaffar Kassam, now practices in Syria. Dr. Erminia Russo and Dr. Antonino Albanese from Italy and Dr. Monica Quiroga from Costa Rica worked in clinical research at our institute during 2008-2009. Currently Dr. Mazin Sanoufa from Syria is shadowing our physicians. In addition, a member of our medical staff, Dr. Grigorian, is from Eastern Europe and received his clinical training at Burdenko Institute.

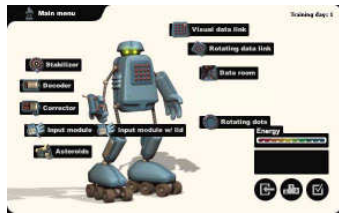
We have strong connections with other major neurosurgery centers in the United States and abroad. We regularly participate in the World Federation of Neurosurgical Societies Annual Meeting where we have meetings with delegations from all over the world. We continue to cooperate with our international colleagues on important issues concerning neurosurgical advancement, technology and availability.



Dr. Robinson with Dr. Konovalov and other members of the Burdenko Institute delegation (former colleagues of Dr. Grigorian) at the XIV WFNS World Congress of Neurological Surgery 2009, Boston, MA.

Cognitive Training Program (Cogmed) to Improve Working Memory in Older Adults

How is your memory?



The GNI team has been looking at a new cognitive retraining program with older adults. Cogmed, a new form of cognitive retraining, is being studied on a sample of older adults. In the past there is scant evidence that training-induced changes occur in brain-activity as well as brain biochemistry and that there are transfer of training effects to tests of attention, reasoning and problem solving, and to symptom ratings. Our team investigated the effects of Cogmed against a sham program on a sample of older persons with cognitive problems ranging from normal age-related memory impairment to mild cognitive impairment (MCI). We provide an “early look” at a two arm, double blind, clinical trial on 40 patient-caregiver dyads in a Continuing Care Retirement Community (CCRC).

Method

All participants were recruited from a CCRC. All had memory complaints and showed memory impairment on screening, but had normal ADLs/IADLs and a normal mental status (MMSE >24). Other neuropsychological domains were generally in the average range. Some participants were taking ChEIs or Memantine prior to the study. Each S was randomly assigned to one of the two groups, Cogmed or a sham cognitive program. Pre-intervention, post-intervention, and 3 month follow-up neuropsychological testing served as the outcome data points.

Intervention: Cogmed trains working memory by targeting the ability to hold and manipulate information for short periods of time. All tasks involve: (1) maintenance of multiple stimuli at the same time, (2) short delays during which the representation of stimuli should be held in working memory, (3) unique sequencing of stimuli order in each task, and (4) changing difficulty level as a function of individual performance. Due to this *adaptivity*, participants always trained at the peak of their performance ability. Training performance was continuously recorded and feedback via telephone was provided weekly.

The comparison condition involved training with the same software, but the difficulty level remained constant across the intervention period (no *adaptivity*). The comparison group also received feedback once a week. To assure blindness to condition, we removed all brand names from the training software.

Outcome Measures: Primary cognitive measures reported in this poster are the WAIS-III Digit Span, Coding, and Matrix Reasoning subtests, plus the WMS-III Span Board, as well as Trails A and B. IADLs were measured using the Functional Assessment Questionnaire (FAQ).

Results

To date, there were no significant differences between groups, except for Spatial Span Backward. More than any other measure, this variable has been associated with nonverbal working memory. Both Cogmed and Sham groups improved on Trails A and B, as well as Digit Span Backward and Span Board (Forward and Backward); Cogmed made positive changes in Coding and Sham on Matrix Reasoning. Both groups performed about the same on FAQ.

Conclusion

These early results of the Cogmed intervention show only one statistically significant change between the intervention versus sham groups to date. That said, the Cogmed group did improve on virtually all outcome measures. This study has approximately one year of data collection remaining. Limitations include small sample size and a mix of Ss who qualify for an MCI diagnosis, which may be less amenable to cognitive rehabilitation, and normal age-related memory decline. Indeed, data on memory improvement in MCI is limited. Regardless, Cogmed did make gains in all cognitive areas.

For information on the study, call Mary Michael Atkinson at 478-743-9072 ex 211.

Trials in Process

For more information call Ciera Scott at 478-743-7092 ex 254



Several trials are being conducted at Georgia Neurosurgical Institute in different fields of neurosurgery. The following studies are recruiting patients for voluntary participation in the research program:

A Double-Blind, Placebo-Controlled Trial of Ramelteon for Disturbed Sleep, Behavior, Cognition, and Neuroprotection in Synucleinopathic Dementia

Primary Investigator: Dr. Leon A. Hyer and Dr. Sam Shillcutt

Impact of Cymbalta on Pain in Perioperative Spine Patients

Primary Investigator: Dr.. Mohammed Ajjan and Dr. Leon A. Hyer

CogMed Working Memory Training.

AIM Grant on Neurodegenerative Diseases for Memory Problems

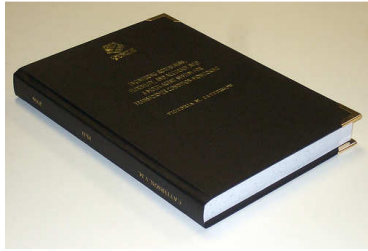
Primary Investigator: Dr. Leon A. Hyer

.....
The recruitment for the following study is temporarily on hold for interim analysis:

An international, double-blind, randomized, multi-center, parallel group, historical-control conversion to monotherapy study to evaluate the efficacy and safety of brivaracetam in subjects (≥ 16 to 75 years old) with partial onset seizures with or without secondary generalization

Primary Investigator: Dr. Dichen Zhao

Publications



The following papers have been published since our last newsletter:

Wang Z, Kong L, Kang J, Morgan JH 3rd, Shillcutt SD, Robinson JS Jr, Nakayama DK. **Thrombin stimulates mitogenesis in pig cerebrovascular smooth muscle cells involving activation of pro-matrix metalloproteinase-2.** Neurosci Lett. 2009 Feb 27;451(3):199-203.

Albanese E, Russo A, Quiroga M, Willis RN, Mericle RA, Ulm AJ. **Ultrahigh-dose intraarterial infusion of verapamil through an indwelling microcatheter for medically refractory severe vasospasm: initial experience.** J Neurosurg. 2009 Oct 30.

Hyer LA, Walid MS, Brooks AM, Darmohray DM, Robinson JS Jr. **Interaction of age and opioid dependence on length of hospital stay for spine surgery patients.** Psychol Rep. 2009 Oct;105(2):361-4.

Walid MS, Johnston KW. **Successful treatment of a brain-metastasized renal cell carcinoma.** Ger Med Sci. 2009 Oct 21;7:Doc28.

Walid MS, Newman BF, Yelverton JC, Nutter JP, Ajjan M, Robinson JS Jr. **Prevalence of glycosylated hemoglobin (HbA1c) in spine surgery patients and impact on length of stay and total cost.** J Hosp Med. 2009 Sep 14.

Walid MS, Osborne TJ, Robinson JS. **Primary brain sarcoma or metastatic carcinoma?** Indian J Cancer. 2009 Apr-Jun;46(2):174-5.

The following papers have been accepted since our last newsletter:

Barth ACM, Walid MS, Mancin KF, Faircloth LR, Robinson JS. **Efficient Patient Discharge: Successes and Challenges in Stewardship Healthcare Resources.** Accepted by AANS Neurosurgeon.

Walid MS, Sanoufa M, Robinson JS. **Can Pseudotumor Cerebri predispose to Placental Abruption?** Accepted by the Southern Medical Journal.

Latest News



August 2009: Dr. Robinson was elected chairman of the Georgia Board for Physician Workforce, the state agency responsible for advising the governor and General Assembly on physician workforce and medical education issues.

September 2009: Dr. Robinson presented "Computational Model for Determining Hemodynamic Influence of Vasospasm Diameter of Middle Cerebral Artery and Efficacy of HHH Therapy with Respect to Increasing Blood Pressure and Decreasing Hematocrit" and Dr. Grigorian presented "Correlation between clinical symptoms, operative approach and intraoperative electrophysiological changes in patients with cervical spondylotic myelopathy (CSM)" at the World Federation of Neurosurgical Societies meeting in Boston, MA.

October 2009: Dr. Robinson and Dr. Walid presented a Top Ten paper titled "Impact of Postoperative Fever on Length of Stay and Hospital Cost in Spine Surgery Patients" at the World Congress of Neurological Surgeons in New Orleans, LA.

November 2009: Dr. Hyer presented "MBMD Treatment Prognostics and Stress Moderators among Older Adults with mild Cognitive Impairment" at the 62nd Annual Scientific Meeting of the Gerontological Society of America, Atlanta, GA.

February 2010: Dr. Robinson will present "How does age and body mass index impact length of stay and hospital cost in spine surgery?" and "Comparison of outpatient and inpatient spine surgery patients regarding obesity, comorbidities and readmissions for infection" at the AANS/CNS Spine Section meeting in Orlando, FL.

May 2010: Dr. Robinson will present "Comorbidities in spine surgery patients and impact on length of stay and hospital cost" at the American Association of Neurological Surgeons Annual Meeting, Philadelphia, PA.

Select Abstracts



Interaction of age and opioid dependence on length of hospital stay for spine surgery patients

*Hyer LA, Walid MS, Brooks AM, Darmohray DM, Robinson JS Jr.
Psychol Rep. 2009 Oct;105(2):361-4.*

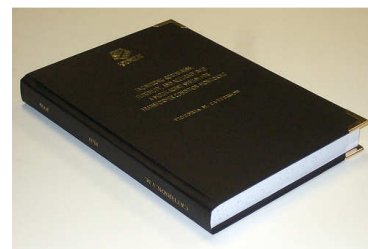
Clinical information suggests that opioid dependence is a major contributor to poor outcomes involving health status and to increased length of stay in hospital settings. Before spine surgery, 150 patients who were using an opioid medication for pain relief were interviewed using the six World Health Organization (WHO) guidelines for the diagnosis of opioid dependence. Three groups were defined: opioid-dependent, nonopioid-dependent, and a subclinical group. Results revealed an average of 20% of patients (N = 30) who met the WHO criteria for the diagnosis of opioid dependence. There were significant positive correlations between age and number of positive WHO criteria, length of stay, and time under surgery. Length of stay was significantly higher for the older age group (> 55 yr.). ANCOVA analysis using two opioid dependence groups (+ and -) and age group as independent variables affecting length of stay, after controlling for type of surgery, pain intensity, and number of previous spine surgeries, revealed that effects of opioid dependence status and age were significant but their interaction was not. Age did add length of stay independently of opioid dependence status; older adults remain in the hospital longer for various reasons probably associated with comorbidities.

Prevalence of previously unknown elevation of glycosylated hemoglobin (HbA1c) in spine surgery patients and impact on length of stay and total cost

*Walid MS, Newman BF, Yelverton JC, Nutter JP, Ajjan M, Robinson JS Jr.
J Hosp Med. 2009 Sep 14.*

Background: Elevated levels of glycosylated hemoglobin (HbA1c) among spine surgery patients may have an impact on length of stay (LOS) and healthcare cost. **Materials and Methods:** We retrospectively reviewed the charts of 556 spine surgery patients who underwent 1 of 3 types of surgery: lumbar microdiscectomy (LMD), anterior cervical decompression and fusion (ACDF), and lumbar decompression and fusion (LDF). Information was collected about their diabetes mellitus (DM) history and HbA1c levels. We used HbA1c 6.1% as the screening cutpoint. Percentages of nondiabetic patients, those with subclinical elevation of HbA1c and those with already known DM were calculated and statistical analysis was applied. **Results:** After excluding the small group of well-controlled DM (n = 14), 72.4% of patients were nondiabetic, 14.3% were subclinical patients with previously unknown HbA1c elevation, and 13.3% were already known, confirmed DM patients. There were significant differences in the LDF group between the "No DM" and "Subclinical" groups (P < 0.05) in terms of cost and LOS (P < 0.05). Age and body mass index (BMI) were very significant predictors of total cost in spine surgery patients (P <= 0.001), in addition to the type of surgery. Univariate analysis with age, BMI, or both as covariates deprived DM-HbA1c status of statistical significance (P > 0.05) in determining cost. **Conclusions:** There is a significant segment of spine surgery patients who were unaware of their elevated HbA1c status before their preoperative visit. These patients seem to utilize more healthcare resources, which is especially evident in the LDF group. We believe that HbA1c should be considered in the routine preoperative workup of spine surgery patients.

Select Abstracts



Ultrahigh-dose intraarterial infusion of verapamil through an indwelling microcatheter for medically refractory severe vasospasm: initial experience.

*Albanese E, Russo A, Quiroga M, Willis RN, Mericle RA, Ulm AJ.
J Neurosurg. 2009 Oct 30.*

Objective: Vasospasm is one of the leading causes of morbidity and death following aneurysmal subarachnoid hemorrhage (SAH). Many patients suffer devastating strokes despite the best medical therapy. Endovascular treatment is the last line of defense for cases of medically refractory vasospasm. The authors present a series of patients who were treated with a prolonged intraarterial infusion of verapamil through an in-dwelling microcatheter.

Methods: Over a 1-year period 12 patients with medically refractory vasospasm due to aneurysmal SAH were identified. Data were retrospectively collected, including age, sex, Hunt and Hess grade, Fisher grade, aneurysm location, aneurysm treatment, day of the onset of vasospasm, intracranial pressure, mean arterial pressures, intraarterial treatment of vasospasm, dosages and times of verapamil infusion, presence of a new ischemic area on CT scan, modified Rankin scale score at discharge and at the last clinical follow-up, and discharge status. **Results:** Twenty-seven treatments were administered. Between 25 and 360 mg of verapamil was infused per vessel (average dose per vessel 164.6 mg, range of total dose per treatment 70-720 mg). Infusion times ranged from 1 to 20.5 hours (average 7.8 hours). The number of treated vessels ranged from 1 to 7 per patient. The number of treatments per patients ranged from 1 to 4. There was no treatment-related morbidity or death. Blood pressure and intracranial pressure changes were transient and rapidly reversible. Among the 36 treated vessels, prolonged verapamil infusion was completely effective in 32 cases and partially effective in 4. Only 4 vessels required angioplasty for refractory vasospasm after prolonged verapamil infusion. There was no CT scanning evidence of new ischemic events in 9 of the 12 patients treated. At last clinical follow-up 6-12 months after discharge, 8 of 11 patients had a modified Rankin Scale score <=2. **Conclusions:** Prolonged intraarterial infusion of verapamil is a safe and effective treatment for medically refractory severe vasospasm and reduces the need for angioplasty in such cases.