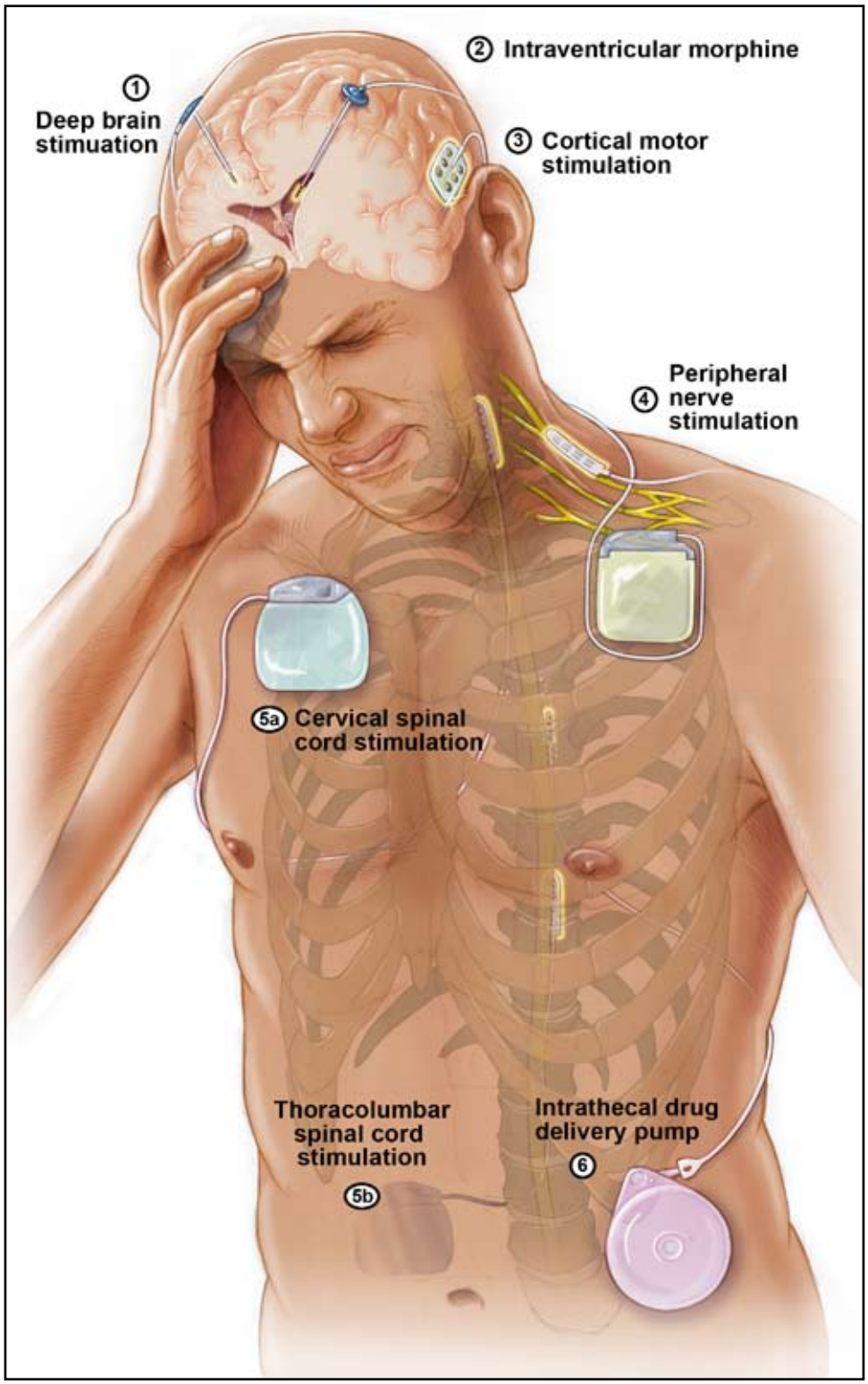
Medical College of Georgia
Neuroscience Outlook
Department of Neurosurgery Newsletter
Volume 5, Issue 1 - Summer 2008

Inside This Issue

www.mcg.edu/som/neurosurgery

MCG Neuroscience Center



Clinical Spotlight: ***The emerging role of the neurosurgeons in chronic pain therapies***

Editor-in-chief's Message

Welcome to the Summer 2008 issue of our newsletter, now in its fifth year of production. In this issue we provide an overview of the emerging role of the neurosurgeon in chronic pain therapies, with a specific focus on implantable pain therapies. Under Departmental News we highlight one of the outstanding NIH grant scores attained by one of our researchers and one of the recent distinctions achieved by the hospital. We also recognize the financial contributors to our department and review plans for expansion of the Neuro-Intensive Care Unit. In the faculty and staff update we spotlight the many accomplishments of the faculty and welcome our new neuroscience center administrator. The Residents' Corner chronicles their academic achievement and provides an update of the residency program. We are happy to report that our request for an increase in resident complement has been approved by the Residency Review Committee. Finally, in this issue we feature a new section titled "Alumni Reflections", where we present an excerpt from the thoughtful musings of one of our alumni.

Cargill H. Alleyne, Jr., M.D.
Associate Professor and Allen Distinguished Chair
Director, Cerebrovascular Service
Director, Department of Neurosurgery Residency Program

Department News

MCG Researcher receives "outstanding" NIH score

Dr. Kirov

Sergei Kirov, Ph.D., received an outstanding priority score of 125 for an NIH R21 grant entitled, "*Neuroprotection in the Human Brain Tissue Model of Stroke*." This priority score places it in the top 3-4 percentile. The Human Brain Lab was established in our Department to develop living tissue models of diseases like epilepsy and stroke. This translational project is designed to assess stroke injuries in real time at the cellular level and utilizes unique 2-photon imaging techniques.

MCG named again to "Top 100 Hospitals" list

MCG health was one of 15 major teaching hospitals to be named one of the Thompson 100 top hospitals (formerly Solucient 100 top hospitals) in 2007. This study objectively identifies the 100 benchmark hospitals based on the two most recent years of data. These hospitals have higher survival rates and more complication-free patients while maintaining financial stability.

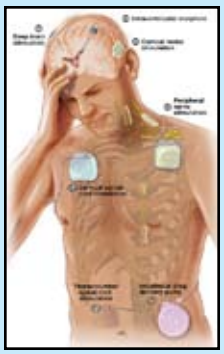
MCG Neurosurgery/Neurology unit expansion planned

Plans are well underway for an expansion in the Neurosurgery/Neurology unit. An additional 16 floor beds are to be added to the 3N wing while in the second phase of renovation, the 10 regular floor beds on 3W will be converted to universal beds (capable of housing patients with intensive care or floor status) for a grand total of 20 universal beds. Renovations are due to begin within the next several months.

Contributor acknowledgement

From January to July of 2008 we received the following very generous contributions, for which we are profoundly grateful:

- **Katie Vandenverge** donated to the HHT Foundation "in honor of Dr. Cargill Alleyne and the Gamma Knife team at MCG School of Medicine"
- **A. R. Stalcup Foundation** donated funds for brain tumor research
- **Robert & Patricia White** donated funds to the department
- **Biometric Microfixation** donated funds to the department
- **Medtronic** donated funds to the department



This issue's cover illustration is a composite of several of the interventions that can be used to treat intractable pain in patients with whom invasive surgery is not an option, or was unsuccessful. See the article, "Intractable pain: the emerging role of the neurosurgeon in chronic pain therapies," by John R. Vender, M.D. on page 3. The illustration is by Michael Jensen, M.S.

Clinical Spotlight

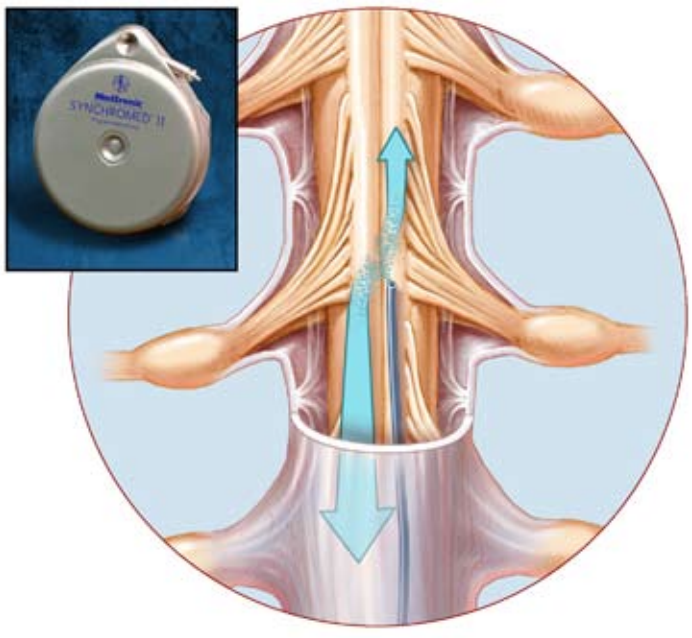
Intractable pain: the emerging role of the neurosurgeons in chronic pain therapies

It is estimated that over 10 million Americans suffer from chronic pain of the head and neck, axial skeleton, and/or extremities. Most are not candidates for corrective neurosurgical intervention and have failed most other non-surgical pain therapies. Implantable pain therapies represent a last chance for many of these chronic pain sufferers. The technology, available for decades, has undergone multiple revisions. Advances in computer technology and materials science have enabled the development of highly complex pump and stimulator devices. Most technologies offer highly individualized programming options, thus providing "titrateable", non-ablative, patient-specific treatment. It is critical for the neurosurgeon to be involved in the management of these conditions and be familiar with these devices and their capabilities. The concept of a comprehensive pain management approach to the chronic pain patient relies on a collaboration and close coordination between the pain management physician and the neurosurgeon. The neurosurgeons' role is both to screen the patients for other, correctable pathology as well as to be involved in the implant of the device, post-operative wound management, device troubleshooting, and repair/revision procedures.

Implantable pain therapies represent a last chance for many of these chronic pain sufferers.

Intrathecal Drug Delivery Pump

The introduction of the intrathecal pump delivery system in the early 1980s heralded the onset of intrathecal drug delivery. Though initially plagued by multiple complications and equipment problems, in recent years the devices have become highly reliable and are increasingly accepted as a cost-effective option in the treatment of pain and spasticity. Intrathecal drug delivery pumps provide titrateable drug delivery options directly into the ventricular or spinal subarachnoid spaces of the CNS, thus avoiding systemic toxicities. In most cases, spinal delivery is adequate and much safer. Opioid as well as non-opioid drug options exist for pain and painful spasms related to spasticity. Delivery rates can be programmed to vary throughout the course of a day to meet the patient's specific pain needs. Programming and percutaneous refills are straightforward and require very little time of the patient.

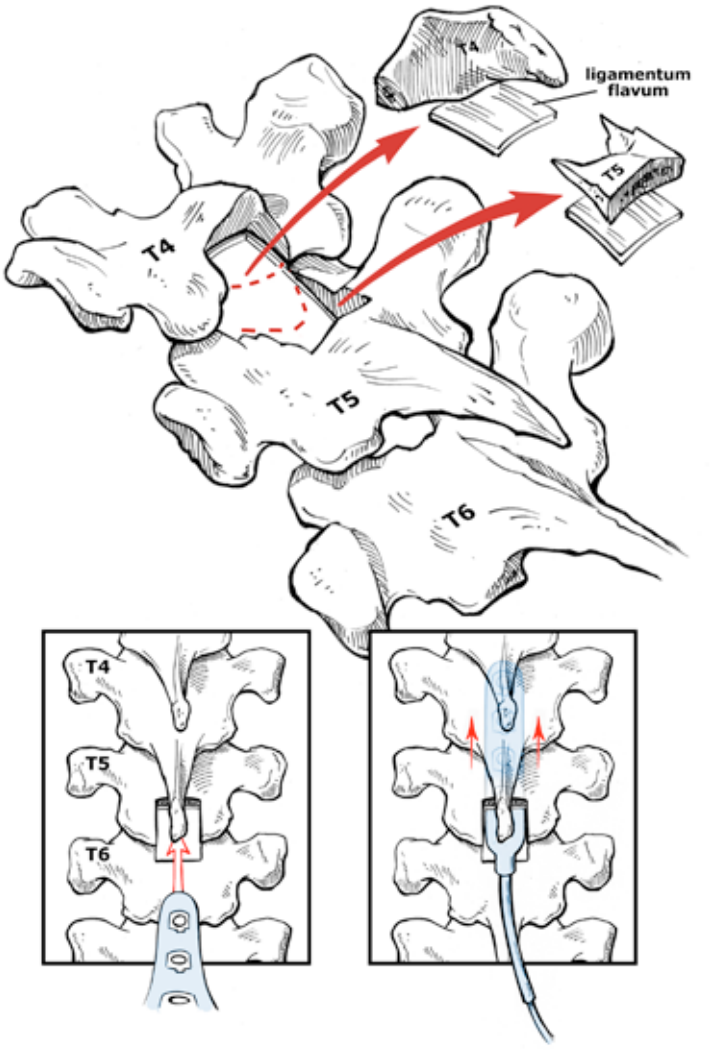


Stimulators

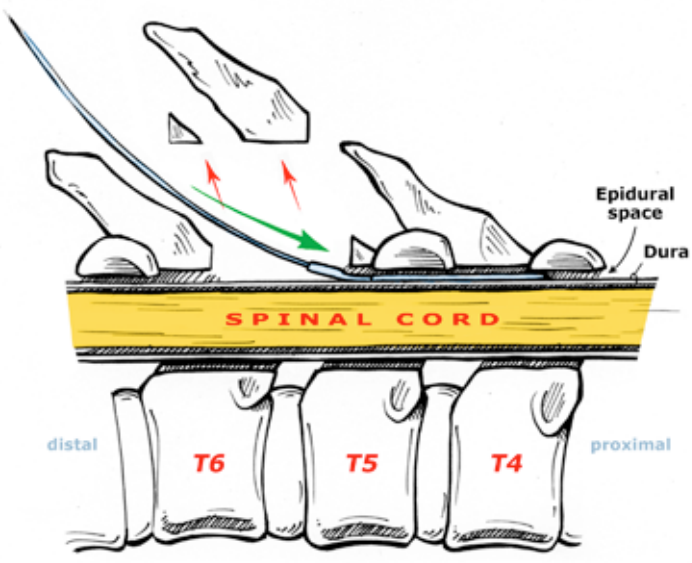
Pulsed stimulation of the nervous system--brain, spinal cord, and peripheral nerve--has been around for decades. **Deep brain stimulators** are available to treat refractory head and neck pain syndromes, although their role has been supplanted in many cases by the use of the safer occipital nerve stimulator. Other studies relating to a role for DBS in axial and extremity pain are underway. **Cervical and thoracolumbar epidural spinal stimulators** are gaining wider acceptance for axial pain and extremity pain with new research supporting their cost effectiveness, safety, and clinical value when compared to patients undergoing reoperation for failed spinal surgery. New insights into the mechanism of action of these devices reveals a direct physiological effect on spinal cord tissue resulting in the alteration of endogenous opioid release as a mechanism of pain modulation. Electrode paddles are replacing the tra-

AP and lateral views of thoracic level epidural spinal stimulator (electrode paddle) with associated pulse generator in upper buttock subcutaneous pocket

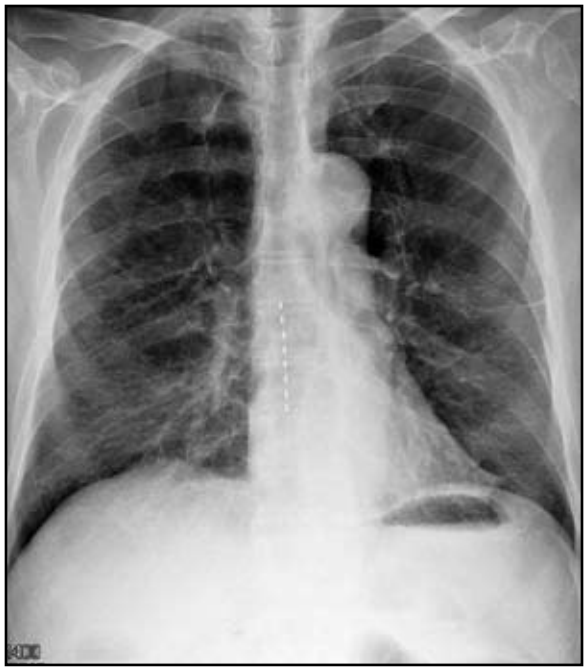
Clinical Spotlight *(continued)*



Illustrations (above, below) depicting the surgical approach to treatment of intractable pain via thoracic epidural spinal stimulator paddle electrode



Frame from an MCG animated sequence depicting the proper paddle insertion technique into the thoracic epidural space



AP chest x-ray demonstrating 8-contact epidural electrode wire in place

ditional electrode wire due to their superior ability to control axial pain, their greater reliability and their lower energy usage. Paddles must be placed via laminotomy, requiring the assistance of a spinal surgeon. Minimally-invasive spinal techniques can be used for the implantation, particularly in the cervical region, thereby reducing tissue disruption and subsequent perioperative discomfort. **Peripheral nerve stimulators** can be placed on a variety of peripheral nerves based on distribution of pain. In many cases their use has been supplanted by the use of spinal stimulators. However, peripheral nerve stimulation has an emerging and promising role in the management of occipital neuralgia and other chronic headache syndromes. Rechargeable pulse generating units are also now available for use in patients who are able and willing to perform the recharge procedure.

Emerging Treatment Options

Cortical motor stimulation is an exciting and new method to address medically refractory head and neck pain. This novel treatment option brings a number of the contemporary neurosurgeon's tools to bear on eradicating pain. Success requires the use of functional MRI to localize the region requiring stimulation followed by a stereotactically-directed craniotomy for epidural placement of a stimulator paddle with intraoperative neurophysiologic confirmation.

The increasing availability, greater reliability, and wider acceptance of these emerging technologies and techniques create a greater and more critical role for the neurosurgeon in the management of previously "non-surgical" pain syndromes. Patient selection and meticulous attention to preoperative, intraoperative, and postoperative detail remains critical to minimize complications and maximize patient results.

John R. Vender, M.D.

Faculty/Staff Update

Accomplishments and Recognition


Sergei Kirov, Ph.D.

In addition to achieving the NIH grant as mentioned in Department News, **Sergei Kirov, Ph.D.** received notification of continued funding for his RO1 grant titled "Activity and dendritic structural rearrangements in the mature brain". In addition, he was invited to be an ad hoc reviewer on the NIH Neurodifferentiation, Plasticity, and Regeneration Study Section and the Intramural Grants Program (IGP) Review Committee.


John Vender, M.D.

John Vender, M.D. served as a guest examiner at the May session of the Oral Board examinations in Houston, TX. John also served as President of the Georgia Neurosurgical Society at the Spring meeting of the GNS in Sea Island, GA.

S. Dion Macomson, M.D. took and passed the Oral Board examinations in May. We congratulate Dion on achieving Neurosurgery Board certification.


Dion Macomson, M.D.

Haroon F. Choudhri, M.D. was visiting professor at the Department of Orthopaedic Surgery at Al-Razi Hospital in Kuwait in February 2008 and at Department of Neurosurgery, Ibn Sina Hospital, Kuwait June 2008. He was also the meeting chairman and the First Stryker Spine Middle East/Africa Symposium in Dubai in March 2008.


Haroon Choudhri, M.D.

Cargill H. Alleyne, Jr., M.D. and **Mark R. Lee, M.D.** were cited in the May/June 2008 edition of the Augusta magazine as two of the "Best Doctors in America".

Transitions

Mr. Bill Hamilton, our former Neuroscience Administrative director recently ventured into the private sector to devote more time to REACH Call, Inc., an innovative telemedicine company founded in the Department of Neurology At MCG. We are indebted to Bill for his many years of service and wish him all the best.

Mr. Chris Bonham joined us in July as the new Administrator of the Neuroscience Center of Excellence. Mr. Bonham carries an M.B.A. from Emory University and has over 12 years of experience in the healthcare industry with over 5 years in the role of hospital CEO. His most recent job was CEO of Mountain Lakes Medical Center in Clayton, Georgia, a post he held since August 2006. Mr. Bonham's impressive credentials make him uniquely qualified to help lift the MCG Neuroscience Center to the next level.


Christopher Bonham, M.B.A.

Residents' and Fellows' Corner

Accomplishments and Recognition


Scott Rahimi, M.D. (right) accepts diploma from Cargill Alleyne, M.D.

Scott Rahimi, M.D. graduated from the MCG residency program in June 2008. Scott commenced a two-year fellowship in Interventional Neuroradiology at Emory University in Atlanta in July. In addition, we congratulate Scott on winning the CSNS Resident Award for the paper entitled, "*Post-Operative Pain Management Following Craniotomy Using Atypical Analgesics: Evaluation and Cost Analysis*". This paper will be presented at the upcoming Annual Meeting of the CNS in Orlando, FL. Scott also received the award for best clinical case presentation at the 2008 Brainlab Residency Program meeting in Munich, Germany. His presentation was entitled, *"Brainstem compression from kissing vertebral arteries: Case report and review of the literature."*

Ahmed Shakir, M.D. passed the written portion of the Neurosurgery Board Examination in March 2008. Congratulations!


Ahmed Shakir, M.D.

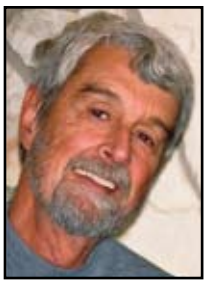
Residency program update

A year ago in July 2007 we underwent our RRC review. Based on this review we received notification early this year that our residency program received continued accreditation with the next review due in 2010. In addition, our request to increase the resident complement from one a year to one alternating with two residents a year was granted in June 2008 after review of our progress report. This increase in resident complement will enable our residents to take full advantage of an increasingly complex clinical volume which includes procedures such as endovascular interventions and stereotactic radiosurgical cases.

This summer we welcomed our new PGY-1 resident **Bashir Shakir, M.D.** Bashir completed his medical training at University of Oklahoma. We wish him all the best as he embarks on his neurosurgical training.


Basheer Shakir, M.D.

Alumni Reflections



"One Second"

Four hundred or so years ago a woman was working in a field in England. She was using a scythe and seemed engrossed or at least fully engaged in her work when she was distracted by a colorful bird. It startled her, not only by virtue of its brightness but also by the unusual pattern of color which she couldn't recall having seen before. As you see, she was arrested in her work and spent several seconds watching the beautiful creature before it flew away. She returned to her scything but the fifteen or so seconds she spent watching the beautiful creature was fifteen seconds she would never regain and was consequently late by that much for the rest of her life in every experience which came her way!

Some two hundred or so years later one of her descendents, managed to book passage to America and landed at Wilmington North Carolina. This man was a minister and did not stay long in North Carolina but moved to south central Georgia where he preached and farmed. He had three sons.

When the Civil War broke out all three of the young men enlisted and were placed in a Georgia Artillery Battalion. The three young men from Georgia were manning a twelve pound Napoleon when a Union round found them. Two were killed instantly and the third miraculously was unscathed. He continued to serve with Lee until the Confederate surrender on April 9, 1865. With the surrender, so family legend has it, this young man walked from Appomattox, Virginia to Montezuma, Georgia where he married my great grand mother. One of their children was Aubin Burnham Fokes who married Minnie McClendon who bore him nine children, one of whom died in infancy allegedly from eating a green pear, so the story goes.

The second oldest of the children was my father Ernest Calder Fokes. He married Annie Maud (Ann) Thomas in 1926 and I was born June 6, 1936.

At age twelve I decided I would become a doctor.

Eleven years later, in 1959 I was a junior in Medical School and decided to become a Neurosurgeon. In 1962 there were basically only three textbooks of Neurosurgery: Edgar Kahn's "*Correlative Neurosurgery*", Donald Matson's "*Neurosurgery of Infancy and Childhood*", and White and Sweet's "*Neurosurgery of Pain*". I was a Clinical Fellow on the Neurosurgery Service in the National Institute of Neurological Disease and Blindness at NIH. I had read all three of these books and asked Dr. Ayub Ommaya, who was the attending Neurosurgeon, how one should go about learning Neurosurgery? His answer, "Read the classics." I did just that, and among the "classics" I read was Cushing's monograph on pituitary tumors.

I went on to do my residency in Neurosurgery at the Medical College of Georgia, completing it in 1969 and becoming board certified in 1971. Shortly afterwards I went through a period of time which I suppose could best be described as "let down". This was not outright depression but came close. It was a time when I looked back at the investment in time I had made for my chosen profession and asked myself the question, "Is this it? Is this what I made such a huge investment in time to achieve?" It was a period when I sincerely questioned the propriety of the decision I had made. I recollected the time when my father had been asked by a friend, "What is Ernest going to be when he finishes school?" and his answer was, "Old." My melancholy was relieved when I became aware that I had been given a tremendous opportunity and a foundation of information to build upon and that now it was my responsibility to continue that building program. After all, I had chosen this field as one which was "open ended" in terms of there always being something more to learn and it was now up to me to continue that learning process.

A year or so later I went to Charleston, South Carolina and heard Dr. Giles Bertrand give a presentation on his "new" approach to pituitary tumors. This was the transnasal approach which actually Cushing had done years earlier but had abandoned because of infections and also not having the advantage of using an operating microscope. I learned that procedure and began performing them. This was a time when prolactin secreting adenomas were particularly occupying the attention of pituitary surgeons. By 1975 the pituitary surgery portion of my practice had grown to the extent that I was doing two or three a month and at this time one of my nurses asked if I would see her daughter. Her daughter was seventeen or eighteen years old and had primary amenorrhea; additionally she was lactating and had an elevated prolactin level. Our CT scanner was new but the technology was such that the views of the sella region were not adequate, therefore a pneumoencephalogram was performed which showed no suprasellar mass. We had obtained tomograms of the sella and there was a double floor suggesting, at least initially, that the tumor was located in one side of the sella and had produced asymmetrical bulging of the sella floor. However, there was something about the configuration of the sella floor that, though I couldn't exactly put my finger on it, nevertheless was disturbing to me. I obtained additional tomograms and we carried them out in both the anterior-posterior and saggital planes. It was my impression that there were actually two floors to the sella and this rang a bell somewhere in the back of my mind. Therefore, I went back to the literature, especially my trusted "classics". Sure enough, Harvey Cushing had described a case such as this in which there was a double floor to the sella and the tumor was located in this "extra" compartment.

When we scheduled the surgery I explained my thoughts on the situation to the child's mother and that if I found what I anticipated, and with her approval, I would not actually open the sella floor per se but would instead stop the procedure at that point. I further explained that if I was wrong in my supposition it would mean another surgery to actually explore the contents of the sella itself. She agreed.

At surgery when I visualized the floor of the "sella" I could actually see what appeared to be a small "blister" protruding from that surface. This had a thin bony covering and when I opened it some whitish necrotic looking, almost liquid material presented. I was able to capture some of this material and took it myself to Pathology for a frozen section. There was little recognizable material present but enough to allow us to conclude that it was indeed material consistent with a pituitary adenoma.

I returned to the operating room and examined the floor of the sella closely using the operating microscope. The surface was firm and there were no openings in it that I could see. I closed the wound and after an uneventful post-operative course the young lady began to have regular periods, her prolactin levels normalized, lactation ceased and most important she was spared any supportive endocrine therapy.

Kierkegaard: "All eternity is contained in a second."

Ernest Fokes. M.D. is a graduate of the MCG neurosurgery program in 1969. He now enjoys retirement in Hayden Lake, ID.

Presentations and Publications (January 2008 - June 2008)

Presentations

Alleyne CH: Neurologic support. Fundamental Critical Care Support Course (Instructor), Medical College of Georgia, January 2008

Alleyne CH: Subarachnoid hemorrhage and management of unruptured aneurysms. Radiology Noon Conference. Medical College of Georgia, January 2008

Kirov SA, Risher WC, Andrew RD: Rapid structural plasticity of astrocytes during osmotic and ischemic stress in cortical brain slices. The 41st Winter Conference on Brain Research, Snowbird, Utah, January 2008.

Andrew RD, Risher WC, **Kirov SA**: Real-time volume responses of astrocytes to osmotic and ischemic stress in vivo and in cortical slices revealed by 2-photon microscopy. The Canadian Physiological Society Meeting, Banff, Alberta, Canada, January 2008

Kirov SA: Structural plasticity of neurons and astrocytes during brain edema revealed by 2-photon microscopy. The 20th Winter Conference on Neural Plasticity, St. Lucia, West Indies, February 2008

Alleyne CH: What is Neurosurgery? "Call me Doctor" African American male initiative, National Association of Medical Minority Educators, Medical College of Georgia, February 2008

Alleyne CH: Neurosurgery. Jack and Jill Mom and Pop career day, Augusta, GA, February 2008

Alleyne CH: What is Neurosurgery? Men making a difference. Juvenile Detention Center, Augusta, GA, February 2008

Choudhri HF: Management of Patients Requiring Spine Surgery after Kyphoplasty. Grand Rounds, Department of Orthopaedic Surgery, Al-Razi Hospital, Kuwait, February 2008

Choudhri HF: Surgical Management of Cervical-Thoracic Deformity: Approach Strategies & Advanced Instrumentation Techniques. Department of Orthopaedic Surgery, Al-Razi Hospital, Kuwait, February 2008

Choudhri HF: Ventral Approaches to the Craniocervical Junction. U.S. Spine Masters Meeting, Dubai, February 2008

Choudhri HF: Posterior Atlantoaxial Fixation Techniques. U.S. Spine Masters Meeting, Dubai, February 2008

Kirov SA: Real-time volume responses of neurons and astrocytes to ischemic and osmotic stress in vivo and in cortical slices revealed by 2-photon microscopy. Seminar in Biological Sciences at the University of South Carolina, Columbia, SC, March 2008

Risher WC, **Kirov SA**: Osmotic and ischemic stress induce rapid, passive volume responses in astrocytes. GA-SC Neuroscience Consortium, Columbia, SC, March 2008

Rahimi S, Alleyne CH: Brainstem compression from kissing vertebral arteries: Case report and review of the literature. Brainlab residency program, Munich, Germany, March 2008

Choudhri HF: Cervical Spondylotic Myelopathy. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Cervical Surgery Decision Making: Anterior/Posterior/Combined. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Posterior C1,2 Instrumentation Techniques. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Complication Avoidance: Tips & Tricks for Cervical Surgery. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Management of Cervical Kyphosis. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Indications for Surgery: Degenerative Thoracic & Lumbar Pathologies. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Lumbar Revision Surgery: Indications & Options. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Choudhri HF: Advanced Deformity Correction – Sagittal Balance. First Stryker Spine Middle East/Africa Symposium, Dubai, March 2008

Alleyne CH: Who gets coils, stents, and clot retrieval in the brain? Brain and Heart Attack Course, Hilton Head, SC, April 2008

Youssef P, Alleyne CH: Aneurysm associated with an accessory MCA. Georgia Neurosurgical Society Meeting, Sea Island, GA, May 2008

Rahimi SY, Alleyne CH: Post-Operative pain management following craniotomy using atypical analgesics: Evaluation and cost analysis. Georgia Neurosurgical Society Meeting, Sea Island, GA, May 2008

Alleyne CH, Laird MD, **Dhandapani KM**: Peroxynitrite-induced glutathione depletion mediates hemin-induced necroptosis in mouse cortical astrocytes. Georgia Neurosurgical Society Meeting, Sea Island, GA, May 2008

Choudhri HF: Surgical Management of Complex Mass Lesions near the Craniocervical Junction: Ventral Approaches & Advanced Instrumentation Techniques. Department of Neurosurgery, Ibn Sina Hospital, Kuwait, June 2008

Publications

Laird MD, **Vender JR, Dhandapani KM**: Opposing roles for reactive astrocytes following traumatic brain injury. Neurosignals 16: 154-164, 2008

Vender JR, Dhandapani KM: Inhibition of NFkB decreases viability in pituitary GH3 adenoma cells in vitro. Neurosurgery 62:1122-7, 2008

(2007)

Fountas KN, **Smith JR**, Lee GP, Jenkins PD, Cantrell RR, Sheils WC: Gamma Knife stereotactic radiosurgical treatment of idiopathic trigeminal neuralgia: long-term outcome and complications, Neurosurg. Focus. 23(6):E8, 2007.

Fountas KN, **Smith JR**: A novel closed-loop stimulation system in the control of focal, medically refractory epilepsy. Acta Neurochir. Suppl. 97(2): 357-362. 2007

Fountas KN, **Smith JR**: Neuronal networks of the basal ganglia and the value of recording field potentials from them. Acta Neurochir. Suppl., 97(2): 155-161. 2007

Department of Neurosurgery
Medical College of Georgia
1120 15th Street
Augusta, GA 30912
706-721-3071

Neuroscience Outlook

To learn more about the MCG Department of Neurosurgery, please visit:
www.mcg.edu/som/neurosurgery

Conference Schedule *(August 2008 - December 2008)*

All grand rounds and conferences take place on Friday in the 3 West amphitheater.

Aug 01	NO CONFERENCE		
Aug 08	9:00 - 10:00	Case Study	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Dion Macomson	*"Brain Tumors and Chemotherapy During Pregnancy"*
	12:00 - 1:00	Case Conference	
Aug 15	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Spine	
	12:00 - 1:00	Case Conference	
Aug 21	7:00 - 8:00	Journal Club	
Aug 22	9:00 - 10:00	Neuropathology	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Hamid Shah	*"Low-Grade Gliomas, Oligos and Mixed Gliomas"* (Youmans Ch.52)
	12:00 - 1:00	Case Conference	
Aug 29	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Neuro 101: Dr. Patrick Youssef	"Malignant Gliomas" (Youmans Ch. 53)
	11:00 - 12:00	Spine	
	12:00 - 1:00	M&M	
Sep 05	9:00 - 10:00	Case Study	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Doug Hughes	*"Metastatic Brain Tumors"* (Youmans Ch. 61)
	12:00 - 1:00	Case Conference	
Sep 12	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Shakir	*"Acoustic Neuroma"* (Youmans Ch. 65)
	12:00 - 1:00	Case Conference	
Sep 18	7:00 - 8:00	Journal Club	
Sep 19	9:00 - 10:00	Neuropathology	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Spine	
	12:00 - 1:00	Case Conference	
Sep 26	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Neuro 101: Dr. Jonathan Tuttle	*"Pituitary Tumors"* (Youmans Ch. 66)
	11:00 - 12:00	Spine	
	12:00 - 1:00	M&M	
Oct 03	9:00 - 10:00	Case Study	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Cargill Alleyne	*"Subarachnoid Hemmorhage"*
	12:00 - 1:00	Case Conference	
Oct 10	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. John Vender	*"Head Injury"*
	12:00 - 1:00	Case Conference	
Oct 16	7:00 - 8:00	Journal Club	
Oct 17	9:00 - 10:00	Neuropathology	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Spine	
	12:00 - 1:00	Case Conference	
Oct 24	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Neuro 101: Dr. Dion Macomson	*"VentricularTumors"* (Youmans Ch. 70)
	11:00 - 12:00	Spine	
	12:00 - 1:00	M&M	
Oct 31	NO CONFERENCE		
Nov 07	9:00 - 10:00	Case Study	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Hamid Shah	*"Skull & Skull-based Tumors"* (Youmans Ch. 71)
	12:00 - 1:00	Case Conference	
Nov 13	7:00 - 8:00	Journal Club	
Nov 14	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. David Wang	*"Pseudotumor Cerebri"* (Youmans Ch. 82)
	12:00 - 1:00	Case Conference	
Nov 21	9:00 - 10:00	Neuropathology	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Spine	
	12:00 - 1:00	M&M	
Nov 28	NO CONFERENCE		
Dec 05	9:00 - 10:00	Case Study	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Patrick Youssef	*"Pineal Tumors"* (Youmans Ch. 56)
	12:00 - 1:00	Case Conference	
Dec 12	9:00 - 10:00	Neuroradiology Review	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Neuro 101: Dr. Doug Hughes	*"Medulloblastoma"* (Youmans Ch. 57)
	12:00 - 1:00	Case Conference	
Dec 18	7:00 - 8:00	Journal Club	
Dec 19	9:00 - 10:00	Neuropathology	
	10:00 - 11:00	Anatomy	
	11:00 - 12:00	Spine	
	12:00 - 1:00	M&M	
Dec 26	NO CONFERENCE		
Jan 02	NO CONFERENCE		

Upcoming Meetings *(July 2008 - December 2008)*

Society of Neuro-Interventional Surgery
7/31-8/1, Lake Tahoe, CA

Congress of Neurological Surgeons
9/20-25, Orlando, FL

Research Update in Neuroscience for Neurosurgeons
10/18-25, Woods Hole, MA

American Board of Neurological Surgery (Orals)
11/11-14, Houston, TX

Georgia Neurosurgical Society Meeting
11/22, Atlanta, GA

AANS/CNA Section on Pediatric Neurological Surgery
12/1-5, Spokane, WA

Credits

Editor-in-chief:
Cargill H. Alleyne, Jr., M.D.

Illustration, design and layout:
Michael Jensen, M.S.

Contributors:
Cargill H. Alleyne, Jr., M.D., John R. Vender, M.D. and Ernest Fokes, M.D.

MCG Neuroscience Center

For Information or inquiries:

please call
(706) 721-3071

or e-mail Christopher Bonham
cbonham@mcg.edu

www.mcg.edu/som/neurosurgery