18TH ANNUAL AANS/CNS JOINT SECTION ON THE SPINE AND PERIPHERAL NERVES - ORLANDO

Orlando once again proved to be a most popular venue for the Joint Section meeting. Although temperatures dipped for a couple of days, rain held off allowing for a luxurious mix of science and resort relaxation. Disney staff went out of their way to exceed everyone's expectations. Accommodations and amenities were impeccable.

Looking out at the Boardwalk from Disney's Yacht and Beach Club Resort.

Over 1000 physicians, family members, and exhibitors enjoyed the Floridean hospitality over the 4-day venue. The meeting provided registrants with an opportunity to attend several courses including a view towards new horizons through Cutting Edge Spine Technologies (Regis Haid and Joseph Alexander), Essentials of Peripheral Nerve Surgery (Rajiv Midha), Fundamental Principles of Spine Surgery (Dan Resnick), and CPT Coding for Spine Surgeons (Greg Przbylski). Over 140 contributed papers were presented in either platform or poster format. Plenty of time was available for sometimes-heated discussions. "What's New?" sessions were

well attended, allowing for state of the art technical updates. Challenging cases were presented over breakfast Friday and Saturday mornings, just to get the days started on the right foot!

Wondering who really stole the show?……

…..The Magic Kingdom of course!…Hard at work!

2002 Clinical Science Mayfield Award

Congratulations to Dr. Ketan Ramanlal Bulsara, this year's recipient of the Clinical Science Mayfield Award! Dr. Bulsara was born in Bombay, India. In 1983, he emigrated from Zambia, Africa to the United States. He later became a naturalized citizen of the United States in 1991.

Dr. Bulsara completed high school at the age of 16, and went on to the Davidson College in North Carolina to study Biology. After graduating Magna Cum Laude from Davidson College, Dr. Bulsara moved on to medical school at Duke University School of Medicine where he graduated with honors. Currently, Dr. Bulsara is a

Neurological Surgery Resident at Duke University Medical Center.

In addition to the Mayfield Clinical Science Award, Dr. Bulsara has been honored with other awards and grants during his residency. He was previously awarded the Mayfield Basic Science Award for the identification of the first two genes for successful regeneration in the central nervous system. This work was published in the January 2001 issue of *Nature Neuroscience*. Other awards and grants include the following: the Synthes Award for Brain and Craniofacial Trauma, the Shulman Resident Award, the International Neurosurgery Foundation Grant, the Ruth K. Broad Biomedical Research Grant, Society for Neuroscience Recognition, and a Traveling Fellowship in Neurosurgery with mentor and previous Meritorious Service Award recipient, Arnold Menezes, MD.

Dr. Bulsara has also received 14 prestigious awards and grants throughout his studies as an undergraduate and in medical school. Some of these honors include being selected by faculty and peers as the Ideal Physician of the Duke Medical School graduating class of 1992, the Howard Hughes Research Fellowship, the Dana Foundation Research Grant and the Carnegie Mellow Fellowship.

Since 1996, Dr. Bulsara has been the lead author or co-author in over 40 published research articles, case studies, abstracts, and book chapters. Many of his abstracts have also been given as oral presentations at several International or National Scientific meetings. Dr. Bulsara has also had a co-author involvement in three books, including the e first electronic *Handbook of Neurosurgery*.

UNRAVELLING THE ENIGMA OF THE FILUM TERMINALE: BASIC SCIENCE AND CLINICAL EVIDENCE

Ketan R. Bulsara, MD (Durham, NC); Thomas J. Cummings, MD; Ali R. Zomorodi, MD (Durham, NC); Alan T. Villavicencio, MD (Los Angeles, CA); Timothy M. George, MD (Durham, NC)

INTRODUCTION: Predicting when fat in the filum terminale is significant poses a clinical dilemma. We hypothesized that inadequate migration of cells that form the filum terminale and conus underlies the tethered cord syndrome.

METHODS: First, novel immunohistochemical markers (H4C4, VIN-IS-53, AC4, NOT, FP3) were utilized to determine cell patterning in normal and tethered fila. Secondly, a retrospective review of 5000 lumbosacral MRI scans revealed 38 patients with fatty fila (23 patients with no neurological impairments and 15 patients with neurological impairments) who presented between 1995-2000. MRI scans were assessed for conus position, filum thickness, and distance of fat from the conus.

RESULTS: Immunohistochemical markers reveal that cellular patterning of the normal filum terminale differs from that of tethered fila. The majority of patients had normally positioned conus and that there was no statistically significant difference in filum thickness. However, the

distance of fat from the conus was significantly different (41 mm in the asymptomatic group and 13 mm in the symptomatic group ($p<0.05$).

CONCLUSIONS: This is the first immunohistochemical blue print to differentiate a normal filum terminale from that associated with the tethered cord syndrome. The immunohistochemical differences arise from molecular alterations that may result in aberrant migration. This concept is consistent with the finding that patients who have fat in the filum within 13 mm of the conus become symptomatic.

2002 Basic Science Mayfield Award

The recipient of the 2002 Mayfield Basic Science Award is Edward R. Smith, MD, for his work focusing on stem cells and spinal cord injury, titled "Increased Frequency of Cells Expressing a Neuronal Phenotype in the Injured Spinal Cord after Intravascular Transplantation with Bone Marrow Cells." This work was presented for the first time at the 2002 AANS/CNS Section on Disorders of the Spine and Peripheral Nerves Annual Meeting in Orlando, Florida. Congratulations Edward!

Dr. Smith is currently a sixth-year resident in neurosurgery at Massachusetts General Hospital and performed his research in the laboratory of E.A. Chiocca, MD. Dr. Smith's research efforts, funded in part by an American Brain Tumor Association grant, have involved the investigation of oncolytic viruses and hematopoetic stem cells. Dr. Chiocca's laboratory has a long-standing history in oncolytic viral therapy and has been developing an expanding interest in the process of stem cell transdifferentiation.

Dr. Smith was raised in Massachusetts, obtained his undergraduate degree at Dartmouth College in Hanover, New Hampshire and his M.D. at the College of Physicians and Surgeons of Columbia University in New York, New York. He has one year of residency remaining at Massachusetts General Hospital, with an expected graduation date of June 2003.

INCREASED FREQUENCY OF CELLS EXTPRESSING A NEURONAL PHENOTYPE IN THE INJURED SPINAL CORD AFTER INTRAVASCULAR TRANSPLANTATION WITH BONE MARROW CELLS

Edward R. Smith, MD; Tao Cheng, MD' David Scadded, MD; E. Antonio Chiocca, MD, PhD (Boston, MA)

INTRODUCTION: Spinal cord injury (SCI) is a significant source of morbidity and mortality, with an estimated 250,000 Americans currently affected and 11,000 new cases reported yearly.

Multipotential stem cells are actively being investigated as potential therapeutic agents for SCI. For instance, bone marrow derived cells (BMC) have exhibited the capacity to differentiate into a variety of CNS cells, including neurons. However, this capacity has not been shown yet for the spinal cord in the setting of injury.

METHODS: BMCs from beta-galactosidase-expressing male ROSA mice were transplanted intravascularly into lethally irradiated normal adult female hosts. These transplanted animals then received a contusive SCI. Tissue was examined for coexpression of transplanted BMC markers (beta-galactosidase and the Y chromosome) and markers of neuronal phenotype (morphology, location and neuro-specific antigens such as NeuN).

RESULTS: At one month post injury (12 weeks post-transplant), 10.8% (s.d. = 15.6) of NeuN-positive cells also co-expressed beta-galactodisase. In comparison, in the transplanted/non-injured group, only 0.3% (s.d. = 1.3) of NeuN-positive cells co-expressed beta-galactosidase ($p < 0.05$). this analysis thus showed that BMC-derived cells can express a neuronal phenotype, and that the frequency of this phenomenon is significantly increased in the context of spinal cord injury.

CONCLUSIONS: The demonstration that adult bone-marrow derived cells have the potential to exhibit neuronal phenotypes in the spinal cord, and the finding that this response is enhanced in the setting of injury, suggests their utility as a possible therapy in spinal cord injury.

2002 Cloward Fellowship Award

1991, Dr. Holly returned to Los Angeles when he enrolled at the UCLA School of Medicine, and received his medical degree in 1995. While in medical school, he was Langston Holly, MD, was born in Columbia, Missouri and moved to his present home of Los Angeles, California at two years of age. While in high school he divided his time evenly between academic and athletic pursuits. He was a National Merit Scholarship Finalist as well as a three sport athlete who garnered First-Team All-League Honors in football. He also served as captain of the rugby team that played in the national high school championship tournament, and competed internationally in Jamaica and New Zealand.

Dr. Holly attended the University of California, Berkeley, where he focused mainly on his academic and community service activities. He majored in Molecular and Cell Biology and worked as a organic chemistry tutor. He participated in the Big Brother Program, worked at a food kitchen, and was a guest speaker for several local high schools.

In 1991, Dr. Holly returned to Los Angeles when he enrolled at the UCLA School of Medicine and received his medical degree in 1995. While in medical school he was honored with several prestigious awards such as the National Medical Fellowship in Academic Medicine, the William G. Figueroa Award, and the Ralph Ellison Memorial Prize. Following graduation from medical school, Dr. Holly entered the UCLA neurosurgery residency program. During his neurosurgery training, Dr. Holly developed a keen interest in spine surgery. He has been greatly influenced by Ulrich Batzdorf, MD, Iand Patrick Johnson, MD, and has published a number of manuscripts in the fields of syringomyelia and spinal instrumentation. He recently completed his residency in December 2001, and started a spine fellowship with Kevin Foley, MD, at the University of Tennessee in January 2002.

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Mark your calendars now!!!

PRACTICE GUIDELINES

The AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves has recently published several guidelines pertaining to spinal column and spinal cord injury, as the March supplement to **Neurosurgery**. Many thanks to Dr. Mark N. Hadley, Dr. Beverly C. Walters, Dr. Paul A. Grabb, Dr. Nelson M. Oyesiku, Dr. Gregory J. Przybyslki, Dr. Daniel K. Resnick, and Dr. Timothy N. Ryken for their outstanding work and meticulous evidence-based reviews. They have provided insight into these topics that most of us would never have time to gain on our own. The document they have prepared entitled **Practice Guidelines in the Treatment of Cervical Spine and Spinal Cord Injury**, will provide an important reference for spinal surgeons all over the world. We will publish abstracts for each of the chapters sequentially in upcoming issues of this newsletter.

The Joint Section would like to acknowledge the contribution of four of our partners in industry who "stepped up to the plate" during a time of need. These colleagues awarded the AANS/CNS Spine Section educational grants to help offset the cost of publication of this important document. In alphabetical order please share in our thanks to:

Carl Zeiss, Inc.
Medtronic Sofamor Danek
Spinal Concepts
Synthes Spine

AWARDS

RESEARCH FUNDING: The AANS/CNS Joint Section on Disorders of the Spine and Peripheral Nerves has established two Research Grants: the ***Larson Award*** and the ***Sonntag Award***. They are intended to establish funding for clinical projects related to the spine and peripheral nerves, and to provide a means of peer review for clinical research projects to help improve the quality of the proposal and therefore, enhance competitiveness for National Institutes of Health (NIH) funding. The awards are also meant to provide continued funding on an annual basis to establish the AANS/CNS Spine Section as a known source for quality clinical research aimed at answering questions pertaining to the treatment of disorders of the spine and peripheral nerves.

The awards range from $15,000 - $30,000 and are intended for primary investigators of planned clinical studies requiring national level funding to support the preparation of grant proposals and external consultations and to assist in the development of the proposal, planning meetings, and the collection of pilot data. Work that can be completed without such support (such as literature review and preliminary protocol design) should be completed before applying for the Larson or the Sonntag Awards.

The format of the proposal should follow that of the NIH grant package. Specifically, applications should not exceed five single-spaced pages. The applicants should address their specific aims, pertinent literature review and previous studies review, include a brief summary of the proposed study, and a plan for utilization of the funds, as well as a detailed budget and budget justification. The budget should not include salary support for the primary investigator or co-investigators.

Application details for research grants are available from James D. Guest, MD, PhD, Columbia – Presbyterian Neurological Institute, 710 West 168th St. New York, NY 10032-2603 (212 305-

7096), or check out our website at www.neurosurgery.org. The application deadline for grants to be awarded for 2003 is Dec. 1, 2002.

FELLOWSHIP FUNDING: The ***Cloward Fellowship Award*** is sponsored by Medtronic / Sofamore Danek and is awarded annually to one or two U.S. or Canadian trained neurosurgical residents to provide supplemental funds for advanced education and research in disorders of the spine or peripheral nerves in the form of fellowship training. The amount of the award is $30,000.

Application information for the Cloward Fellowship Award can be acquired from Christopher Paramore, MD. E-mail: paramore@med.unc.edu. Application deadline for the 2003 Cloward Fellowship Award is Sept. 15, 2002.

RESIDENT AWARDS: The Mayfield Award is presented annually by the Joint Section on Disorders of the Spine and Peripheral Nerves to the neurosurgical resident who authors an outstanding research manuscript detailing a laboratory or clinical investigation in the area of spinal or peripheral nerve disorders. Two awards are available, one for clinical research and one for basic science research. Each award is valued at $500.00.

For further information and submission forms, please contact: Christopher Paramore MD. E-mail: paramore@med.unc.edu , or check out our website at www.neurosurgery.org

DEADLINES

- September 15, 2002: Cloward Fellowship Award
- September 15, 2002: Mayfield Awards
- December 1, 2002: Sonntag and Larson Clinical Research Grants

Comments, Submissions, or Suggestions for the Spine Section?

Please e-mail John Hurlbert at jhurlber@ucalgary.ca or contact through surface mail: Dr. R.J. Hurlbert, University of Calgary Spine Program, Foothills Hospital and Medical Centre, 1403-29th St. N.W., Calgary, AB Canada T2N 2T9