



**University of Kentucky
Department of
Physical Medicine & Rehabilitation**

**19th Annual
PM&R Research Day
May 31, 2007**

**Cardinal Hill
Rehabilitation Hospital**



**Center of Learning
Rooms CL3 & CL4
Lexington, Kentucky**

SPEAKER PRESENTATION

“Future Perspectives on Rehabilitation Research and Care”

ROSS D. ZAFONTE, D.O.

Dr. Ross D. Zafonte, D.O. is Professor and Chairman in the Department of Physical Medicine and Rehabilitation at the University of Pittsburgh, School of Medicine. Dr. Zafonte also serves as Vice President of Clinical rehabilitation Services for the UPMC Health System and Executive Director of the UPMC Institute for Rehabilitation and Research. He has published extensively on traumatic brain injuries, spasticity, and other neurological disorders, as well as presented on these topics at conferences nationally and internationally. Dr Zafonte is the author of more than 200 peer review journal articles, abstracts and book chapters. He also serves as principal investigator on the University of Pittsburgh NIDRR TBI Model System and NIH Clinical Trials Center grant. He is a member of a standing review panels for the NIH and the CDC. In addition, he is on the editorial board of the Journal of Head Trauma Rehabilitation and the American Journal of Physical Medicine and Rehabilitation. He has received numerous awards such as “Best Doctor in America”, “Top Doctors in America”, Young Investigator of the Year from the Brain Injury Association of America and has been invited as visiting professor to several prestigious institutions. In 2006, Dr Zafonte was been selected the Walter Zeiter award and lectureship by the American Academy of Physical Medicine and Rehabilitation. Dr Zafonte is the founding chair of the Department at the University of Pittsburgh and helped to direct its tremendous growth in both the research and clinical arenas.

ORAL PRESENTATIONS

PM&R Resident Presentations

Presenter:

Abstract Presentation:

Chad Walters, D.O.

Median Nerve Injury After Endovascular Grafting of Abdominal Aortic Aneurysm Repair – A Case Report

Beth Ann Shelton, M.D.

Spina Bifida Patients with Asymptomatic Bacteriuria: Prophylactic Antibiotic Use and Resistance

Sheila Chandran, M.D.

Kinematic Biofeedback for Independent Motor Retraining

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A Clinical Center Follow-Up of Adults with Cerebral Palsy (Part A)

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The Effect of Methylphenidate on Attention, Function and Mood in Patients with Traumatic Brain Injury

Thomas Coury, D.O.

Restarting Antithrombotic Therapy Following Traumatic Intracranial Hemorrhage

ORAL PRESENTATIONS

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Presenter:

Abstract Presentation:

Lyn Tindall, MS, CCC-SLP

Videophone Delivered Voice Therapy: Comparing Outcomes to Traditional Delivery for Adults with Parkinson's Disease

Camille Skubik-Peplaski, MS, OTR/L
Lisa Tudor, MBA, BBA, BA
Chasity Paris, MS, OTR/L
Jason Hale, OTR/L

Client-Centered Approach: Contributing to Greater Satisfaction and Outcomes

PM&R RESIDENT PRESENTATION

Median Nerve Injury After Endovascular Grafting of Abdominal Aortic Aneurysm Repair

Presenter:

Chad A. Walters, D.O.

Collaborators:

Randal Schleenbaker, M.D.; Eric Endean, M.D.; David Minion, M.D.

Departmental Affiliations:

Veterans Affairs Medical Center (VAMC), Lexington, KY

University of Kentucky Medical Center, Physical Medicine & Rehabilitation

Abstract Text: (maximum of 250 words)

Open surgical repair of abdominal aortic aneurysms is associated with significant complications including renal failure, paralysis and death³. Endovascular techniques have been developed in an attempt to decrease these complications with relative success². Several techniques currently exist. Current studies have focused on endoleaks, aneurysm rupture, graft migration, renal failure, paralysis and death as primary surgical complications. This is a case of a 63 year-old male with left upper extremity weakness following elective endovascular surgical repair of an abdominal aortic aneurysm using an Endowedge and Kilt technique¹. This patient began experiencing problems immediately after surgery with numbness and tingling in his left hand. Over the next 3 weeks he began experiencing difficulty with gripping objects and buttoning his shirt. Physical Exam revealed weakness with finger flexion, wrist flexion and thumb abduction as well as sensory loss over the thenar eminence and digits 1, 2 and 3 on his left upper extremity. Electrodiagnosis performed 2 months post-operatively revealed a left axonotmetic median nerve injury with evidence of reinnervation.

Key Words:

Aortic Aneurysm, Endovascular, Endowedge, Axonotmesis

PM&R RESIDENT PRESENTATION

Spina Bifida Patients with Asymptomatic Bacteriuria: Prophylactic Antibiotic Use and Resistance

Presenter:

Beth Ann Shelton, M.D., M.S.

Collaborators:

Richard Mier, M.D.

Departmental Affiliations:

University of Kentucky Medical Center, Department of Physical Medicine and Rehabilitation
Shriner's Hospital for Children, Lexington, Kentucky

Abstract Text:

Urinary Tract Infection is a common cause of morbidity for spina bifida patients. Complications of chronic infections include bacteremia and sepsis, hydronephrosis, renal scarring, and ultimately possible kidney damage and failure. Prophylactic antibiotics have been utilized in appropriate patients in an attempt to reduce the number of UTIs and ultimately reduce morbidity. Our study investigates whether prophylactic antibiotics in asymptomatic spina bifida patients increases bacterial resistance. To this end we performed a retrospective study by reviewing clinic notes and urine labs on pediatric patients in a spina bifida clinic. We obtained urine analysis as well as urine culture and sensitivities on each patient and reviewed the susceptibility profiles of the organisms colonizing the urine. Our study showed no significant difference in bacterial resistance between prophylactic antibiotic treated group and the non-treated group.

We did however find a relationship existed between UTI prophylaxis with specific antibiotic and colonization with bacteria with resistance to specific antibiotics. Our study showed that those patients who had been treated with TMP-SMX for UTI prophylaxis had significantly increased resistance to TMP-SMX and nitrofurantoin. We also found a relationship between prophylaxis with nitrofurantoin and increased resistance to nitrofurantoin and bactrim.

We also found that there was no difference in number of patients with UTIs over the past year if the patient catheterized himself versus having a caregiver perform this task.

Key Words:

Spina Bifida, Asymptomatic Bacteriuria, Prophylactic Antibiotics, Resistance

PM&R RESIDENT PRESENTATION

Kinematic Biofeedback for Independent Motor Retraining

Presenter:

Sheila Chandran, M.D.

Collaborators:

Sara Salles, D.O.; Eric C. Hartman, M.S.

Departmental Affiliations:

University of Kentucky Medical Center, Department of Physical Medicine and Rehabilitation

Abstract Text:

Problem: Stroke patients undergo acute rehabilitation to restore functional use in paralyzed limbs. Therapies are utilized to improve motor function at all phases of recovery. During early phase of recovery, current lower extremity techniques are not task specific, causing delay in transfer training, relearning activities of daily living (ADL) and eventual gait training. **Aim:** The SymSlide, a closed chain, partial weight bearing lower extremity exercise device, will be used in conjunction with traditional therapy in the earliest stages of rehabilitation. The device will allow patients to practice sit-to-stand movements and weight transfers. A foot plate will record kinematic measurements generated by patient, which will be visible to patient on a video display. Specific tasks will be performed testing static forces, sit-to-stand transitions, postural shifts and holds. **Hypothesis:** The use of the SymSlide to provide task specific feedback will expedite patients' progress through early phase of stroke recovery, improving ADL training, and increasing endurance. **Methods:** 10 post-stroke patients will be randomized to incorporate the SymSlide therapies as part of therapy sessions. 10 control patients will have traditional physical and occupational therapy sessions. Goal of this Phase 1 study is to test feasibility of integrating the SymSlide into acute post-stroke inpatient rehabilitation therapy.

PM&R RESIDENT PRESENTATION

A Clinical Center Follow-Up of Adults with Cerebral Palsy ~ Part A

Presenter:

Bradley S. Davis, M.D.

Collaborators:

Chester Tylkowski, M.D.; Christin Minter, MA; Ninad Karandikar, M.D.

Departmental Affiliations:

University of Kentucky Medical Center, Department of Physical Medicine & Rehabilitation
Shriner's Hospital for Children, Lexington, Kentucky

Abstract Text:

Cerebral Palsy (CP) is defined as a motor disorder occurring secondary to a static lesion in the developing brain with onset before two years of age. It is associated with excessive lower motor neuron activity that affects body movement, muscle coordination, & posture. The disease also causes a myriad of medical problems that requires of multiple medical subspecialties including: orthopedics, neurosurgery, physiatry, psychiatry, and pediatrics. Ancillary services are also required for nutrition, vocation, psychosocial, and developmental support. Meeting the various needs of these individuals is provided by specialty clinical centers such as the Shriner's Hospitals for Children (SHC). While these hospitals are undeniably successful in providing specialty care for children with CP, they only provide care until the age of 21. When there is no longer access to SHC, obtaining the appropriate care can be a challenge.

We feel there are nine essential issues that affect adults with CP that are no longer receiving services with SHC. These include exercise, women's issues, quality of available medical and dental care, nutrition, conditions that worsen with age, communication, musculoskeletal issues, psychosocial factors, and economics. Are study is to examine the above nine essential issues in relation to ten basic goals in life that are generally important to adults. These goals include: 1) real choices in all aspects of life, 2) functional skills, 3) interaction with a variety of people, 4) inclusion in generic services and activities, 5) access to community resources, 6) use of a range of community environments, 7) living in a typical neighborhood, 8) meaningful daily activity, 9) non-adversarial interactions, and 10) relationships with friends.

Methods: A set of eight questionnaires that address the nine essential issues that affect adults with CP will be administered to individuals that formerly were patients at SHC. Subjects that participate in this IRB-approved study will be asked to complete a series of questionnaires over the telephone. The results will be analyzed descriptively and statistically.

Objective: The results of this study can be used to determine the needs of the aging cerebral palsy population.

Key Words:

Cerebral Palsy, Adult, Quality of Life.

PM&R RESIDENT PRESENTATION

A Clinical Center Follow-Up of Adults with Cerebral Palsy ~ Part B

Presenter:

Ninad Karandikar, M.D.

Collaborators:

Chester Tylkowski, M.D.; Christin Minter, MA; Bradley S. Davis, M.D.

Departmental Affiliations:

University of Kentucky Medical Center, Department of Physical Medicine & Rehabilitation
Shriner's Hospital for Children, Lexington, Kentucky

Abstract Text:

Cerebral Palsy (CP) is defined as a motor disorder occurring secondary to a static lesion in the developing brain with onset before two years of age. It is associated with excessive lower motor neuron activity that affects body movement, muscle coordination, & posture. The disease also causes a myriad of medical problems that requires of multiple medical subspecialties including: orthopedics, neurosurgery, physiatry, psychiatry, and pediatrics. Ancillary services are also required for nutrition, vocation, psychosocial, and developmental support. Meeting the various needs of these individuals is provided by specialty clinical centers such as the Shriner's Hospitals for Children (SHC). While these hospitals are undeniably successful in providing specialty care for children with CP, they only provide care until the age of 21. When there is no longer access to SHC, obtaining the appropriate care can be a challenge.

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Objective: The results of this study can be used to determine the needs of the aging cerebral palsy population.

Key Words:

Cerebral Palsy, Adult, Quality of Life.

PM&R RESIDENT PRESENTATION

Comparing the Use of Bupropion Versus SSRIs in the Treatment of Post-Traumatic Patients with Complicated Mild to Moderately Severe Traumatic Brain Injury with Regard to Depression, Initiation, and Disruptive Behavior

Presenter:

Zachary M. Berry, M.D.

Departmental Affiliations:

University of Kentucky Medical Center, Department Physical Medicine and Rehabilitation
Cardinal Hill Rehabilitation Hospital

Faculty Mentors/Collaborators:

Gerald V. Klim, D.O.; Walter High, Ph.D.

Abstract Text:

Objective: To determine if a single pharmacologic agent may relieve the symptoms of depression in brain-injured patient's as well as provide a means to act as a stimulant for initiation and provide fewer tendencies for disruptive behavior. **Proposal:** Post-traumatic depression and lack of initiation are commonly encountered problems in brain injury rehabilitation. Moreover, patients with brain injury often encounter changes in personality after head injury resulting in maladaptive or disruptive behaviors once discharged from acute rehabilitation. This study aims to look at the role of anti-depressant medications in treating these symptoms. The use of various anti-depressant and neurostimulant medications have been employed in a variety of clinical scenarios, and this study would hopefully gain insight into helping the clinician select an appropriate agent. There are a number of anti-depressant medications on the market which act on one or more specific neurotransmitters. The most widely used anti-depressants are the selective-serotonin-reuptake inhibitors, which have widespread acceptance for use in the brain-injured population. Other medications that are commonly used in this population include neurostimulants such as methylphenidate, amantadine, and dextroamphetamine, which operate by stimulating dopaminergic and/or noradrenergic receptors. This study will look at comparing bupropion (Wellbutrin) to SSRIs for treatment of depression, poor initiation, inattention, and disruptive behavior. Since bupropion acts primarily to inhibit neuronal reuptake of norepinephrine and dopamine, I propose that patients may have equal or greater benefit with regard to depression as well as the common sequelae of lack of initiation and/or disruptive behavior. **Methods:** Inclusion criteria would include patients age 12-64 with complicated mild to moderately severe TBI as determined by their level of injury assessed by such scores as the Rancho LCFS, GOAT, and Disability Rating Scale. Patients must also score in the depressed range on the Beck's Depression Inventory and/or meet criteria for major depression as outlined by the DSM-IV. Patients will be randomly assigned to receive either Wellbutrin XL at appropriate starting doses or an SSRI (Celexa or Lexapro) and continued through a six-month period for the purposes of this study. We will record scores on the Beck's Depression Inventory, Vigil Continuous Performance Test (if available), the Anger Expression Scale, FIM scores, and DRS scores and compare them to follow-up scores at discharge, three-month, and six-month follow ups. Those excluded from the study would include those with documented post-traumatic seizures or those with abrupt discontinuation of alcohol or benzodiazepines, as bupropion is contraindicated in this patient population.

KEY WORDS:

Wellbutrin (Bupropion), SSRI, TBI, Depression, Initiation, Disruptive Behavior, Neurostimulant, Dopamine, Serotonin

PM&R RESIDENT PRESENTATION

The Effect of Methylphenidate on Attention, Function and Mood in Patients with Traumatic Brain Injury

Presenter:

Kristin Caldera D.O.

Collaborators:

Walter High, Ph.D.

Departmental Affiliations:

Cardinal Hill Rehabilitation Hospital, Lexington, Kentucky

University of Kentucky Medical Center, Department of Physical Medicine and Rehabilitation

Abstract Text:

A multi disciplinary approach is needed in the acute “traumatic brain injury (TBI)” rehabilitation setting, to address the wide range of deficits and pathology present. The treating team works vigorously to help the patient progress in mobility, the ability to perform basic activities of daily living, and in cognitive domains such as communication and executive function. A reoccurring concern is that a patient’s inability to attend to a task, affects the patient’s rehabilitation progress and outcome. This study examines the effect of methylphenidate on attention, function and mood of patients with moderate to severe traumatic brain injuries, in the acute rehabilitation setting. Methylphenidate is a well known stimulant commonly used in the treatment of attention deficit disorder in children. This study attempts to expand the use of methylphenidate to improve attention, function and mood in patients with TBI during acute rehabilitation.

Key Words:

Traumatic brain injury, methylphenidate, Acute TBI Rehabilitation

PM&R RESIDENT PRESENTATION

Restarting Antithrombic Therapy following Traumatic Intracranial Hemorrhage Abstract

Presenter:

Thomas Coury, D.O.

Collaborators:

Joe E. Springer, Ph.D.

Departmental Affiliations:

University of Kentucky Medical Center, Department of Physical Medicine and Rehabilitation

Abstract Text:

Objectives: The purpose of this study will be to retroactively view a subset of patients who have sustained an intracranial hemorrhage due to a traumatic event, and who were previously on antiplatelet therapy, to determine how the timing of reinstatement of therapy affects outcomes.

Background: With the advent of drug-eluting stents in the field of interventional cardiovascular medicine, many patients now find themselves on chronic antiplatelet therapy. As patients continue to sustain intracranial hemorrhages (ICH) from traumatic events, questions have arisen about the appropriate window for re-institution of antiplatelet agents following such events. Previous studies in the neurosurgical literature have looked at the question in reference to anticoagulation, particularly in patients with mechanical heart valves.¹ A recent article in the Journal of Neurology has addressed antiplatelet therapy following spontaneous ICH.² The study did not demonstrate a benefit or risk to restarting antiplatelet agents, but did not look at any timetable in regards to re-initiating therapy, and was limited in size.

Methodology: Following approval from the Institutional Review Board at the University of Kentucky regarding patient confidentiality, a chart review of the trauma database will be performed, looking specifically at admission History & Physicals for patients who have sustained a traumatic ICH and who were previously on an antiplatelet agent and for what indication. Once this subset of patients is selected, further chart review will be performed to determine when and if antiplatelet therapy was re-initiated, as well as patient outcomes at 6-, 12-, 18-, and hopefully 24-month intervals. This can be done by cross-referencing to charts in the Cardiology & Neurosurgery departments. Cost will likely not be a significant factor, as this will be a retrospective analysis.

Expected Outcomes: We hope to demonstrate a risk vs. benefit analysis of when to restart antiplatelet therapy following traumatic ICH. At the very least, this data will contribute to the global data pool in regards to this question.

Key Words:

Antithrombics, Intra-Cranial Hemorrhage

OTHER PRESENTATIONS

Videophone Delivered Voice Therapy: Comparing Outcomes to Traditional Delivery for Adults with Parkinson's Disease

Presenter:

Lyn R. Tindall, M.S., CCC-SLP

Departmental Affiliations:

University of Kentucky Rehabilitation Sciences Doctoral Program
Department of Veterans Affairs Medical Center

Abstract Text:

Attendance in speech and language therapy results in improvements in communication for many persons with severe disabling conditions, but accessing therapy is constrained by transportation needs and time. Secondary disability may be induced by dependence on caregivers who, for example, often provide transportation and wait during therapy. Missed appointments due to these barriers are costly to agencies and reduce treatment impact. Although videophone delivered therapy has the potential to promote the same speech and language treatment outcomes, the equality of treatment outcomes under conditions of delivery has not been tested. The effects of videophone delivered therapy on client independence, satisfaction, cost-benefits, and caregiver burden are unknown. This study is designed to test the differences in outcomes for clients served using videophone delivered voice therapy. The Lee Silverman Voice Treatment (LSVT®) program was chosen to test the effectiveness of videophone delivery because it is simple, structured, has proven effectiveness, and previous research suggests an expected change in vocal loudness that can be tested in another delivery mode. For this study, the LSVT® study of Ramig, Sapir, Fox, & Countryman (2001) will be replicated with one change, the delivery of the treatment via videophones rather than face to face in the clinic. In previous studies individuals with Parkinson's disease (PD) showed an 8 decibel improvement in vocal loudness following intensive daily therapy for four weeks. In addition to testing the comparability of results, this study will examine client satisfaction, effects on perception of caregiver burden, and cost benefit associated with videophone delivery of the

Key Words:

LSVT, Videophone, Voice Therapy, Parkinson's Disease

OTHER PRESENTATIONS

Client-Centered Approach: Contributing to Greater Satisfaction and Outcomes

Presenters:

Camille Skubik-Peplaski, MS, OTR/L; Lisa Tudor, MBA, BBA, BA; Chasity Paris, MS, OTR/L; Jason Hale, OTR/L

Collaborators:

Camille Skubik-Peplaski, MS, OTR/L; Lisa Tudor, MBA, BBA, BA; Chasity Paris, MS, OTR/L; Jason Hale, OTR/L

Departmental Affiliations:

Cardinal Hill Rehabilitation Hospital
University of Kentucky Medical Center, Rehabilitation Sciences Program

Abstract Text:

This presentation discusses the application of The Cardinal Hill Occupational Participation Process (CHOPP) among varying diagnoses, client factors, and contexts and provides an overview of the research being conducted to demonstrate outcomes of client satisfaction using the CHOPP. The Cardinal Hill Occupational Participation Process (CHOPP) is an evaluation and intervention tool developed to apply The Practice Framework into everyday use for Cardinal Hill Healthcare System, (Skubik- Peplaski, Paris, Boyle, & Culpert, 2006). In this study, the clients' satisfaction at the initial evaluation of their ability to perform meaningful roles was compared to discharge satisfaction and then was correlated with various outcome measures including the Functional Independence Measure (FIM™), OASIS, and other internal tools. Client satisfaction of role resumption was found to be significantly correlated with FIM™ gain. Client satisfaction changes were found to be consistent across settings. The study identified that there was no difference for inpatient and outpatient client satisfaction for preferred role resumption as identified on the CHOPP. Lastly, client satisfaction for the ability to perform roles improved by 127% from initial evaluation to discharge, following occupational therapy intervention.

This presentation will also demonstrate through case studies how the practice framework was integrated into a variety of practice and satisfaction scores were obtained. Research methods, results of the study, and conclusions will be presented. The outcomes of this study provide evidence that occupational therapy services are client-centered and that client's are satisfied with their progress in their ability to resume or learn meaningful roles.

Key Words:

Client-centered, evidence-based practice, occupational therapy intervention, client satisfaction

POSTER PRESENTATIONS

Presenter:

Poster Presentation:

Tracy Allen, M.D.

Sports Participation in Children with Lower Extremity Amputations

Anshu Chen, Post-Doc

Differential Phosphoproteomic Analysis of Spinal Cord Injury in Rats

Jessica Clark
Graduate Student

Cortical Alteration in Memory Networks in Young and Older Adults

Laurie Davis
Graduate Student

The Role of Ketones in the Neuroprotective Mechanism Of Fasting Following Traumatic Brain Injury

Ying Deng-Bryant
Graduate Student

Neuroprotective Effects of Tempol, a Catalytic Scavenger of Peroxynitrite-Derived Free Radicals, in the Mouse Controlled Cortical Impact Injury Model

Heather Foozer
Researcher

Behavioral Dysfunction and Histological Damage in Calpastatin Knockout Mice after Controlled Cortical Impact Injury

Walter High, Ph.D.

Effect of rhGH Replacement in Persons with Moderate to Severe Traumatic Brain Injury (TBI) on Neuropsychological Test Performance, Aerobic Capacity, Body Composition and Community Integration Questionnaire (CIQ)

Jonathan Lifshitz, Ph.D.

Somatosensory Whisker-Barrel Circuit Disruption: An Experimental Model of Post-Traumatic Morbidity

POSTER PRESENTATIONS

Presenter:

Poster Presentation:

Sindhu Madathil, Post-Doc

Conditional Overexpression of Insulin-Like Growth Factor -1 Promotes Neuronal Survival in a Mouse Model of Traumatic Brain Injury

Lamin Mbye
Graduate Student

Attenuation of Acute Mitochondrial Dysfunction by NIM811, a Non-Immunosuppressive Cyclosporin A Derivative, Following Focal Traumatic Brain Injury in Mice

Jignesh Pandya, Post-Doc

Mild Mitochondrial Uncoupling with FCCP Confers Neuroprotection Following Traumatic Brain Injury In Rodents: Study of Dose Response and Therapeutic Window of Opportunity

Rangaswamy Rao Ravikumar, Ph.D.

Selective COX-2 Expression in Reactive Astrocytes at Post-Acute Time Points Following Spinal Cord Contusion in Rats

Sara Salles, D.O.

Inpatient Rehabilitation After Deep Brain Stimulation Placement: A Case Series

Anne Shandera
Graduate Student

Clinician's Confidence in Measure of Effort

Melba Custer, MS, OTR/L &
Lisa Tudor, MBA, BBA, BA

Client Perception of Care Across the Continuum

POSTER PRESENTATION

Sports Participation in Children with Lower Extremity Amputations

Presenter:

Tracy Allen, M.D.

Collaborators:

Tracy Allen, M.D., Wayne Cottle, C.P., Vishwas, Talwalkar, M.D.

Departmental Affiliations:

University of Kentucky, Department of Physical Medicine and Rehabilitation
Shriner's Hospital for Children, Lexington, Kentucky

Abstract Text:

There are well recognized medical, physical, emotional and psychological benefits in participating in sports activities for patients with lower extremity amputations. Due to advancements in prosthetic design there has been an increase in opportunities for sports participation by children with limb amputations. Research on pediatric athletes with lower extremity amputations is very limited. There is little information published concerning what type of sports the pediatric amputee participates in, their type of prosthesis and how it contributes or hinders in their ability to participate in their chosen sport, and what residual limb complications are directly associated with their sports activity. In this study, we performed a retrospective chart review of children seen in the past 5 years in Shriner's prosthetic clinic that were diagnosed with a lower extremity amputation and participated in organized sports. The factors evaluated included data regarding their sex, age at the time of their amputation, current age, demographics, reason for amputation, level of amputation, type of amputation, prosthesis used, the sport(s) they participate in, repair and adjustments to their prosthesis, complications to the residual limb and any further surgical interventions since their original amputation.

Key Words:

Lower Extremity Amputation, Sports, Prosthesis, Children

POSTER PRESENTATION

Differential Phosphoproteomic Analysis of Spinal Cord Injury in Rats

Presenter:

Anshu Chen

Collaborators:

RangaswamyRao Ravikumar, Ph.D.; Melanie L. McEwen, Ph.D.; and Joe E. Springer, Ph.D.

Department Affiliations:

University of Kentucky Medical Center, Department of Physical Medicine & Rehabilitation
Cardinal Hill Rehabilitation Hospital

Abstract Text:

Traumatic injury to the spinal cord initiates a host of pathophysiological events that are secondary to the initial insult leading to neuronal dysfunction and death, yet the molecular mechanisms underlying its dysfunction are poorly understood. Phosphorylation is one of the most significant post-translational modifications of proteins, and plays an important role in various types of metabolic regulation and signal transduction. In this study, we used a phosphoprotein-specific stain in conjunction with two-dimensional gel (2D gel) electrophoresis and mass spectrometry to investigate injury-related differences in the phosphoproteome of rat spinal cord tissue. . Rats received a spinal cord contusion at thoracic segment 10 (T10), and the lesion epicenter was dissected at 24 h post-injury. Tissue protein samples were separated by 2D gel electrophoresis, and stained with Pro-Q Diamond phosphoprotein gel stain followed by Sypro Ruby gel stain. ImageMaster 2D platinum software was used to quantify protein abundances and changes in expression levels. Differential proteins were then trypsinized and analyzed with mass spectrometry for protein identification. Over 300 phosphoprotein spot-features were examined in each gel, and the phosphorylation levels of fourteen spots were significantly different between the 24 h SCI and sham samples. Specifically, six phosphoprotein spots appeared in samples from injured animal only. Five phosphoprotein spots had significant higher phosphorylation levels and three phosphoprotein spots significantly decreased. The subsequent identification of these injury-related phosphoproteins should reveal events contributing to the dysregulation of kinases and phosphatases, an indication of the subsequent signal transduction pathways involved in spinal cord injury mechanism.

Key Words:

Spinal Cord Injury, Phosphoproteomic, 2D Gel Electrophoresis, Rat

POSTER PRESENTATION

Cortical Alteration in Memory Networks in Young and Older Adults

Presenter:

Jessica Clark^{1,2}

Collaborators:

Adam Lawson¹, Chunyan Guo³, Seth Kiser^{1,2}, Yang Jiang¹

Departmental Affiliations:

1University of Kentucky Medical Center, Department of Behavioral Science

2University of Kentucky Medical Center, Department of Psychology

3Department of Psychology, Capital Normal University, Beijing, China

Abstract Text: (maximum of 250 words)

We reported age-related differences in a delayed match-to-sample task measured by event-related potentials (Lawson, Guo, & Jiang 2007). The present rapid event-related functional magnetic imaging (fMRI) study mapped cortical regions involved in performing the memory task in both young and older adults. Twenty-six (13 younger and 13 older) normal right-handed adults participated. They memorized 80 line-drawing pictures until reaching at least 90% accuracy in immediate recognition. Inside the MRI scanner, participants were first presented with a new sample target object and then judged 10 test objects (new or studied, match/non-match) in rapid succession for each memory trial. Subjects were instructed to forget the previous sample target object when a new sample target object appeared in the next trial. The fMRI results showed that both age groups utilized some common cortical areas in frontal cortices that include bilateral inferior and mid-frontal cortices, and cingulate ($p < 0.001$). Reduced fMRI signals in older adults were observed in bilateral inferior frontal cortices. Moreover, there was significantly increased cortical activity in older brains in cingulate and bilateral frontal areas BA 46 and 9. The fMRI results furthermore revealed increased fMRI responses to targets in mid-frontal regions in young, but to new distracters in elderly. These results are consistent with the idea that older adults compensate for cognitive decline by developing enhanced frontal activity when accomplishing memory tasks. Implications of these results are discussed, including aiding in the detection of precursors of problematic aging, and implications for cognitive rehabilitation (Supported by NIH AG00986; P30AG028383).

Key Words: fMRI, Memory, Aging

POSTER PRESENTATION

The Role of Ketones in the Neuroprotective Mechanism of Fasting Following Traumatic Brain Injury

Presenter:

Laurie M. Davis¹

Collaborators:

A.H. Sebastian¹, R.D. Readnower¹, J.M. Rho², P.G. Sullivan¹

Departmental Affiliations:

¹University of Kentucky Medical Center, Spinal Cord & Brain Injury Research Center (SCoBIRC)

¹University of Kentucky Medical Center, Department of Anatomy and Neurobiology

²Barrow Neurological Institute, Phoenix, Arizona

Abstract Text

The attenuation of mitochondrial dysfunction, and thus maintenance of cellular homeostasis, has been associated with improved tissue sparing and cognitive recovery in multiple models of traumatic brain injury (TBI). Also, modulations in dietary intake and energy metabolism have recently been the subject of some debate. Improved dietary support after TBI has been associated with improved outcome; however the effective timing of this nutritional support has been within the first 30-60 hours. Therefore, we have attempted to elucidate the neuroprotective mechanism of therapeutic fasting after TBI. In our current study we have found that 24hrs of fasting after a moderate (1.5mm) controlled cortical impact (CCI) injury induced significant increases in cortical tissue sparing and improved cognitive function. Fasting also improved mitochondrial function, decreased calcium loading and oxidative biomarkers of damage. As a potential mechanism underlying fasting induced neuroprotection we investigated ketosis, one of the primary physiological hallmarks of fasting. Systemic ketone (β -hydroxybutyrate) administration increased tissue sparing when given after a moderate CCI injury. Ketones also decreased mitochondrial reactive oxygen species (ROS) production, and increased respiratory function in the presence of excitotoxic levels of calcium. Our results indicate that dietary modulation, such as fasting, can mediate neuroprotection when initiated post injury and that ketones may be the mechanism underlying this neuroprotective effect due to their ability to maintain proper mitochondrial function. These data underscore the importance for maintaining proper metabolic substrate levels post injury, and represent a clinically relevant potential therapeutic treatment for the attenuation of damage after TBI.

Key Words:

Trauma, Brain, Mitochondria, Ketone Bodies, Beta-hydroxybutyrate, Caloric Restriction, Reactive Oxygen Species

POSTER PRESENTATION

Neuroprotective Effects of Tempol, a Catalytic Scavenger of Peroxynitrite-Derived Free Radicals, in the Mouse Controlled Cortical Impact Injury Model

Presenter:

Ying Deng-Bryant

Collaborators:

Kimberly M. Carrico, Indrapal N. Singh and Edward D. Hall

Departmental Affiliations:

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Abstract Text:

The present study examined the ability of tempol, a catalytic scavenger of peroxynitrite (PN)-derived free radicals, to reduce oxidative damage, ameliorate mitochondrial dysfunction and inhibit calpain-mediated proteolysis in a severe unilateral controlled cortical impact injury mouse model. Mice were treated with single i.p. dose of tempol (3, 10, 30, 100, 300mg/kg) 15min after TBI and sacrificed at 1hr post-injury, when oxidative damage is at its peak. Quantitative slot-blots were performed to measure PN specific marker, 3-nitrotyrosine (3NT), in ipsilateral cortex of young adult male CF-1 mice. Tempol produced a dose-related reduction in 3NT with the highest dose decreasing it to the sham level. Secondly, we examined the ability of a single 300 mg/kg i.p. single dose to maintain respiration and attenuate nitrative damage in Percoll gradient-isolated cortical mitochondrial at 12hr post-injury, when mitochondrial dysfunction is at its peak. Tempol treatment significantly maintained respiratory function together with a decrease in mitochondrial 3NT levels. Thirdly, we examined the ability of tempol to effect calpain-mediated degradation of the cytoskeletal protein spectrin. A single i.p. dose of tempol at 15 min post-injury significantly attenuated the increase in spectrin degradation at 1hr. Multiple dosing with tempol (at 15 min, 3, 6, 9 and 12 hr) was also effective at suppressing cytoskeletal damage at its post-injury peak at 24 hrs. These results demonstrate a mechanistic link between PN-mediated oxidative damage to brain mitochondria, exacerbation of Ca_i^{++} overload and calpain-mediated proteolytic damage. Future studies will explore the ability of tempol to improve neurological recovery and reduce neurodegeneration.

Key Words:

Tempol, Peroxynitrite, Traumatic Brain Injury

POSTER PRESENTATION

Behavioral Dysfunction and Histological Damage in Calpastatin Knockout Mice after Controlled Cortical Impact Injury

Presenter:

Heather N. Foozer

Collaborators:

Sindhu K. Madathil, Nathan O. Surles, Kathryn E. Saatman

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Abstract Text:

Prolonged activation of calpains contributes to posttraumatic cell death, which is associated with motor and cognitive dysfunction after traumatic brain injury. Pharmacological inhibition of the calcium-activated neutral proteases reduces behavioral deficits in experimental models of head injury. To further investigate the role of calpains in brain injury, we utilized genetically altered mice deficient in calpastatin (CAST $-/-$), the endogenous inhibitor of calpains. CAST $-/-$ mice (n=3) exhibited higher endogenous calpain activity in cortical tissue homogenates compared to wildtype mice (n=4; $p<0.05$) as measured using a fluorometric calpain assay. Following three days of training in a visuospatial Morris water maze task, CAST $-/-$ or wildtype C57BL/6 mice were anesthetized and subjected to 0.5 mm controlled cortical impact injury to the left parietal cortex. At 2 d postinjury, mice were tested for memory retention in the water maze. CAST $-/-$ mice (n=15) showed a trend toward greater posttraumatic memory impairment compared to wildtype mice (n=14; $p=0.07$). Sensorimotor function was tested using a corner turn test at 2 and 8 d postinjury, while motor function (neuroscore) was assessed at 2, 4, and 8 d. Brain injury resulted in sensorimotor dysfunction ($p<0.001$), but the performance of brain-injured CAST $-/-$ mice (n=22) was equivalent to wildtype mice (n=19). In contrast, CAST deficiency significantly increased motor deficits (neuroscore) of brain-injured mice at 2 and 4 d. At 8 d postinjury, brain-injured CAST $-/-$ mice exhibited a larger cortical lesion ($p<0.05$). Overactivation of calpains after contusion brain injury may enhance tissue damage and exacerbate motor and cognitive deficits.

Supported, in part, by NIH grants NS045131 and NS088803, Kentucky Spinal Cord and Head Injury Research Trust (KSCHIRT) grant 6-12, and a KSCHIRT fellowship (SKM).

Key Words:

Brain Injury, Calpain, Motor Function

POSTER PRESENTATION

Effect of rhGH Replacement in Persons with Moderate to Severe Traumatic Brain Injury (TBI) on Neuropsychological Test Performance, Aerobic Capacity, Body Composition and Community Integration Questionnaire (CIQ).

Presenter:

Walter M. High, Jr., Ph.D.

Collaborators:

Walter M. High, Jr., Kurt A. Mossberg, Maria Briones-Galang, Charles Gilkison, Brent E. Masel, Randall J. Urban.

Affiliations:

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Abstract Text:

Background: Persons with TBI often have neuropsychological impairments in memory, processing speed and executive functioning and physical impairments such as fatigability. Neuropsychologic and physical impairments contribute to decreased community participation. Recent studies indicate 15-20% of persons sustaining moderate to severe TBI have chronic growth hormone (GH) deficiency by GH stimulation testing. The impact of GH deficiency on TBI outcome is unknown. **Subjects:** Twenty persons with moderate to severe TBI, age 21-49 years, at least 1 year post-injury, deficient/insufficient (D/I) in GH (GH response to glucagon <8 ng/dl). **Procedures:** Persons with TBI with D/I GH were randomly assigned to rhGH (n=10) or placebo (n=10) treatment groups. Subjects, examiners, and investigators were blinded to group assignment. Subjects were assessed prior to beginning treatment of daily injections and again at one year with neuropsychological and physical tests. Aerobic capacity was assessed using a graded treadmill exercise test. Speed was held constant and incline increased 2% every minute. Expired gases were collected to assess oxygen consumption (VO_2), carbon dioxide production (VCO_2) and minute ventilation (V_E). Heart rate was monitored by ECG. Body composition was assessed by DEXA. Performance between the two groups was compared at one year using the baseline performance as a covariate. **Results:** Ten of 20 neuropsychological measures of memory, processing speed, manual dexterity, intelligence, and executive functioning performance were better for the rhGH group. Only finger tapping for the dominant hand reached statistical significance ($p < .01$). Processing Speed Index from the WAIS-III ($p < .08$) and Delayed Recall from the CVLT-II ($p < .11$) approached significance (1-tailed test). Subjects treated with rhGH had increased peak VO_2 and V_E of 19% and 12%, respectively. Subjects receiving placebo had decreases of 4% in peak VO_2 and 1% in peak V_E . There were no appreciable changes in body composition in this cohort of TBI subjects. Persons treated with rhGH reported significantly more participation in the community (CIQ) ($p < .05$, 1-tailed test). **Conclusions:** Treatment of GH deficiency following TBI results in improved manual dexterity and community participation. We also found indications for improved processing speed, long term recall, and VO_2 . Detection and treatment of D/I GH in TBI subjects significantly improves their condition prior to treatment.

POSTER PRESENTATION

Somatosensory Whisker-Barrel Circuit Disruption: An Experimental Model of Post-Traumatic Morbidity

Presenter:

Jonathan Lifshitz, Ph.D.

Collaborators:

N/A

Departmental Affiliations:

University of Kentucky Medical Center, Spinal Cord & Brain Injury Research Center (SCoBIRC),

Abstract Text:

The present scientific plan integrates diverse subject matter across Neuroscience disciplines focused on the persistent morbidity experienced by brain injury survivors. A reproducible experimental model of post-traumatic morbidity is afforded by combining diffuse brain injury in the rodent with the experimental control of the somatosensory whisker-barrel circuit. After diffuse brain injury, somatosensory thalamocortical projection neurons atrophy after suffering axonal injuries that disconnect their synaptic targets. In contrast to the soothing and pacifying nature of facial whisker stimulation in uninjured rats, brain-injured rats react to whisker stimulation by cowering, freezing and guarding the mystacial pads. This aberrant behavior indicates widespread circuit activation across numerous brain regions. The emerging hypothesis is a paradigm shift, in which surviving, atrophic neurons reorganize by forming local synapses that ultimately scattering neural information. With sensory stimulation, the scattered neural information unveils behavioral morbidity that can be investigated at the behavioral, anatomical and functional levels. The rapid neurodegeneration after diffuse brain injury affords directed investigation of underlying cellular and molecular degenerative processes common to many diseases. Therapeutic strategies – whether pharmacological or rehabilitative – to mitigate the onset, reduce the duration and/or promote the resolution of neurological dysfunction can be appropriately translated to the clinical setting and to other diseases.

Key Words:

Traumatic Brain Injury, Morbidity, Experimental Model, Behavioral Deficit

POSTER PRESENTATION

Conditional Overexpression of Insulin-Like Growth Factor -1 Promotes Neuronal Survival in a Mouse Model of Traumatic Brain Injury

Presenter:

Sindhu Kizhakke Madathil

Collaborators:

Nathan Surles, Kathryn E.Saatman

Departmental Affiliations:

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Abstract Text:

Insulin-like growth factor 1 (IGF-1) is a polypeptide hormone which has been shown to be a potent neurotrophic factor that promotes cell survival, synaptogenesis and myelination. In traumatic brain injury (TBI) clinical trials patients receiving IGF-1 and growth hormone showed reduced hypermetabolism, and hyperglycemia. We have previously shown that administration of IGF-1 improved neurobehavioral function following TBI in rats. In the present study we investigated the histological effects of astrocytic overexpression of IGF-1 after moderate TBI using transgenic mice (IGF-1Tg) which conditionally express IGF-1 under the control of the GFAP promoter and regulated by a 'tet-off' system. Mice were removed from Doxycycline diet 4 weeks before TBI to induce IGF-1 overexpression. Both wild type (WT) and IGF-1Tg mice received a controlled cortical impact (CCI) injury of 0.5mm depth or sham injury. At 72hrs postinjury, both IGF-1Tg and WT mice showed reactive astrocytosis in the hemisphere ipsilateral to the impact. However, the GFAP immunoreactivity was slightly higher in IGF-1Tg than WT. Astrocytic IGF-1 immunolabeling was much greater in IGF-1Tg than WT mice, as expected. Overexpression of IGF-1 significantly attenuated calpain-mediated spectrin breakdown in the ipsilateral cortex. Lesion volume analysis of cresyl violet stained sections showed a significant ($p < 0.05$) sparing of ipsilateral cortex in the IGF-1Tg mice compared to WT. Fluorojade C staining further confirmed that neurons are spared in the cortex and hippocampus of IGF-1Tg mice. The current findings suggest that astrocyte derived IGF-1 promotes neuronal survival following TBI and further studies are necessary to elucidate the downstream events of this paracrine action.

Key Words:

Traumatic Brain Injury, IGF-1, Neuroprotection, Controlled Cortical Impact

POSTER PRESENTATION

Attenuation of Acute Mitochondrial Dysfunction by NIM811, a Non-Immunosuppressive Cyclosporin A Derivative, Following Focal Traumatic Brain Injury in Mice

Presenter:

Lamin H. Mbye

Collaborators:

I.N. Singh, K.M. Carrico, J.E. Springer, P.G. Sullivan, and E.D. Hall

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Abstract Text:

Maintenance of mitochondrial homeostasis is central to cellular function and survival. Yet, several lines of evidence demonstrate that mitochondrial function is severely compromised following Traumatic Brain Injury (TBI). Mitochondrial dysfunction is characterized by generation of reactive oxygen species (ROS), induction of oxidative damage, mitochondrial permeability transition (mPT), and ultimately, uncoupling of the electron transport system. Experimental studies suggest that cyclosporine A (CsA), which inhibits mPT and promotes mitochondrial stability, may be of therapeutic benefit in the treatment of TBI. However, CsA is immunosuppressive and exhibits cytotoxic properties (Waldmeier, *Mol. Pharmacol.* 62:22-29, 2002). In the present study, we evaluated the effects of both CsA and NIM811, a non-immunosuppressive CsA analog, on the attenuation of acute mitochondrial dysfunction following TBI in mice. Young adult male CF-1 mice were subjected to severe (1.0 mm) TBI utilizing eh pneumatic-controlled cortical impact (CCI) model. Mitochondrial respiration was assessed using a Clarke-type electrode in mitochondria isolated from the injured cortex of animals treated with CsA, NIM811, or vehicle 15 min post injury. Our results show that mean respiratory control ratio (RCR) of mitochondria from vehicle-treated animals at 3 or 12 hrs was significantly ($P \leq 0.01$) lower, relative to sham non-injured animals. On the other hand, the RCR of mitochondria from CsA- or NIM 811-treated groups was not different from shams. Moreover, CsA- and NIM811-treated mitochondria had significantly ($P \leq 0.03$) higher RCRs than those obtained from vehicle-treated mitochondria, indicating protective effectiveness. We further evaluated oxidative damage activities on mitochondrial proteins by immunoblot analysis and show that mitochondria isolated from CsA- and NIM811-treated animals exhibit substantially lower protein oxidation and lipid peroxidation than those isolated from vehicle-treated animals. Finally, we demonstrate that 10 mg/kg of NIM811 is just as protective as 20 mg/kg of CsA, indicating a higher potency of NIM811. These findings first of all, confirm that post-traumatic oxidative damage occurs in mitochondria with concomitant impairment of mitochondrial bioenergetics. Secondly, the data indicate that the neuroprotective properties of CsA and NIM811 are mediated through maintenance of mitochondrial homeostasis. Thirdly, since NIM811 lacks immunosuppressive properties, it may be a safer alternative to CsA for neuroprotective treatment in TBI patients.

POSTER PRESENTATION

Mild Mitochondrial Uncoupling with FCCP confers Neuroprotection Following Traumatic Brain Injury In Rodents: Study of Dose Response and Therapeutic Window of Opportunity

Presenter:

Jignesh D. Pandya, Ph.D.

Collaborators:

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Text Abstract:

Traumatic brain injury (TBI) is a major healthcare problem in the United States, however there are currently no therapeutic interventions. In the current study we propose the novel approach of partial uncoupling of mitochondrial respiration using carbonyl cyanide 4-(trifluoromethoxy) phenylhydrazone (FCCP) following TBI as a therapeutic intervention. It is well known that mitochondria play a central role in neuronal function and that mitochondrial dysfunction is a pivotal link for neuropathological sequelae in TBI. Chemical uncouplers such as FCCP are compounds that “uncouple” the electron transport from the synthesis of ATP by diverting the proton gradient to heat generation rather than utilizing it for ATP synthesis. While complete uncoupling of mitochondria is lethal for cells, mild uncoupling could confer neuroprotection by reducing Ca^{2+} uptake and ROS production following TBI. To test the hypothesis that mild mitochondrial uncoupling with FCCP is neuroprotective following TBI, adult Sprague Dawley rats were injured using the controlled cortical impactor (CCI) model of TBI. Animals received a sham operation, 1.5mm (mild) or 2mm (severe) injury and were administered vehicle or FCCP at the following doses; 0.5, 1, 2.5, 5 mg/kg at various times post injury (i.e. 3, 6, 9, 12, 24 hrs post injury). Preliminary results demonstrate that FCCP results in significant increases in cortex sparing and improves behavioral outcomes following TBI. FCCP treatment improved bioenergetics of mitochondria isolated from cortex and hippocampus. Structural integrity of mitochondria after FCCP treatment versus vehicle was confirmed by electron microscopy. The results of these studies determined the optimal effective dose and therapeutic window of opportunity for FCCP mediated neuroprotection following mild and severe TBI in rodents.

Key Words:

Mitochondria, Neuroprotection, Mild Uncoupling, Traumatic Brain Injury

POSTER PRESENTATION

Selective COX-2 Expression in Reactive Astrocytes at Post-Acute Time Points Following Spinal Cord Contusion in Rats.

Presenter:

Ravikumar Rangaswamy

Collaborators:

RangaswamyRao Ravikumar^{1,2}, Kelsey C. Ladt¹, Melanie L. McEwen^{1,2,3}, Stephanie S. Sheikh¹, Diane M. Snow^{2,3}, and Joe E. Springer^{1,2,3}

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Text Abstract:

Traumatic damage to the spinal cord results in the activation of multiple destructive pathophysiological events including ischemia, edema, inflammatory responses, oxidative damage, glutamate/Ca²⁺-mediated excitotoxicity, and necrotic and apoptotic cell death. Certain biochemical pathways can lead to the generation of reactive oxygen species. One such pathway involves the metabolism of arachidonic acid by cyclooxygenase-2 (COX-2), the primary enzyme responsible for the synthesis of prostaglandins from arachidonic acid. The purpose of this study was to characterize the temporal and cell-specific expression pattern of COX-2 in the spinal cord at different acute and post-acute time- points following spinal cord injury. Given that oxidative damage events are rapidly invoked, we hypothesized that COX-2 levels would increase at acute times following injury. Adult rats received a "mild/moderate" contusion to the spinal cord at thoracic segment 10 (T10). Expression of COX-2 in the T10 segment of the spinal cord was characterized using immunocytochemistry and immunoblotting at 1, 7, 14, 28, and 42 days after spinal cord injury. The results show that COX-2 immunoreactivity was localized mainly around the site of injury and co-localized almost exclusively with GFAP-positive astrocytes. Surprisingly, COX-2 immunoreactivity was not upregulated until 28 days and persisted for 42 days post-injury. These results demonstrate that COX-2 expression increased at relatively late post-acute post-injury times and co-localized with reactive astrocytes that were in close proximity to the injury epicenter. These findings suggest that COX-2 overexpression may be involved in reactive astrocyte function following spinal cord injury.

Key Words:

Cyclooxygenase-2, Spinal Cord Injury, Reactive Astrocytes

POSTER PRESENTATION

Inpatient Rehabilitation After Deep Brain Stimulator Placement: A Case Series

Presenter:

Sara S. Salles, D.O.

Collaborators:

Devi Nampiaparampil, M.D., Sara S. Salles, D.O.

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Abstract Text:

Deep brain stimulation (DBS) of the subthalamic nucleus or the globus pallidus internus is an evolving treatment in the management of Parkinson's Disease (PD). DBS is a neurosurgical procedure that involves delivering continuous electrical stimulation to the brain through implanted electrodes connected to an internalized neurostimulator that is programmable in amplitude, pulse width, and frequency. DBS is used in patients who have severe motor fluctuations or dopa-induced dyskinesias, to improve function and decrease medication dosages. This case series describes the inpatient rehabilitation of two patients with PD who had undergone DBS placement. One patient had the stimulator, generator, and leads placed simultaneously. He required multiple adjustments of the stimulator, which often led to worsening dysarthria and dysphagia. This resulted in his having variable functional abilities and therefore, multiple modifications of his weekly functional goals. The second patient had a previous left pallidotomy but because of difficulty managing freezing episodes and frequent dyskinesia, underwent DBS placement. He had a staged procedure where he experienced mild improvement after stimulator placement and additional improvement after generator placement. The patient made increasing functional gains and at one month post-discharge, was not experiencing any "off" phenomena. Both patients' medications were weaned dramatically. This suggests that the inpatient rehabilitation of patients after DBS placement may vary considerably and may require periodic reassessments of functional goals.

POSTER PRESENTATION

Clinicians' Confidence in Measures of Effort

Presenter:

Anne L. Shandera

Collaborators:

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Abstract Text:

The goal of the present study was to obtain a more representative picture of the current use of measures of effort than previous research. The frequency of test use, confidence in test accuracy, factors affecting test selection, and situational usage aspects were examined. Members of the International Neuropsychological Society (INS) and the National Academy of Neuropsychology (NAN) were contacted via e-mail. A total of 216 members responded to the survey. This large sample provides data that is more representative of general practice than earlier surveys that have focused on a relatively small amount of data from experts in malingering detection. Most respondents reported using measures to detect feigning in their evaluations (87.1%) Of those who used such tests, they were employed in 54.3% of adult cases and 6.79% of child cases. The Test of Memory Malingering (TOMM) was the most commonly used test of effort (61.6%). Additional measures that were used frequently were the Rey 15-Item Memory Test (Rey 15; 36.1%), the Word Memory Test (WMT; 28.7%), the Validity Index Profile (VIP; 17.6%), the Computerized Assessment of Response Bias (CARB; 13.4%), the Victoria Symptom Validity Test (VSVT; 17.6%), the California Verbal Learning Test- Second Edition (CVLT-2; 9.3%), and the Portland Digit Recognition Test (PDRT; 9.3%). A wide range of confidence ratings were reported, with the WMT, TOMM, VIP, and VSVT rated highest. Although the Rey-15 was the second most commonly used malingering test, it received the lowest confidence rating. Additional characteristics of current practices of detecting malingering are reported.

Keywords:

Assessment, Malingering, Forensic

POSTER PRESENTATION

Client Perception of Care Across the Continuum

Presenters:

Melba Custer, MS, OTR/L

Lisa Tudor, MBA, BBA, BA, Director of Quality Management

Collaborators:

Departmental Affiliations:

University of Kentucky Medical Center, Doctoral Student Rehabilitation Sciences

Cardinal Hill Rehabilitation Hospital

Abstract Text:

The Institute of Medicine (IOM) provided recommendations to Medicare regarding six fundamental aims associated with Healthcare quality: safety, effectiveness, patient-centeredness, timeliness, efficiency and equity (IOM, 2001). Medicare is seeking to change provider behavior by aligning payment incentives so that rewards are given to providers who utilize the six quality aims. Progressive organizations are using these aims to change and emphasize coordination and collaboration across care settings to stimulate consumer awareness of quality healthcare practices. This pilot study provided descriptive data about client satisfaction as measured across a continuum of care. A secondary objective was to test the usefulness of a specific measure developed for the study utilizing the six IOM aims. Individuals (N = 1800) who were clients across all settings in a three-month period of 2006 were sent satisfaction surveys. Of the 1800 that received surveys, 527 individuals responded. Statistical analysis was inconclusive with little variability resulting in a need for revision. The instrument was revised with emphasis on literacy levels and overall length to increase survey completion and improve variability. The original length of the survey was shortened from 41 questions to 24. The overall literacy level of the pilot instrument was tenth-grade and the revised survey is no higher than fourth grade reading level. Literacy levels are an important factor in instrument development to obtain meaningful outcomes of client perceptions of care.

Key Words:

Client-Centered, Outcomes, Literacy Level

PHYSICAL MEDICINE & REHABILITATION RESEARCH DAY 2007

The Department of Physical Medicine & Rehabilitation would like to acknowledge our appreciation to those who have made the 19th Annual Research Day a success.

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