



Adult and Pediatric Concussion

Neurology

Concussion, mild traumatic brain injury (TBI), frequently occurs in childhood and adolescence. When an otherwise happy, healthy child suffers an even mild brain injury, their future success in school and sports can immediately be jeopardized but to a largely unknown degree. Appropriate early assessment is necessary to identify children having post-concussive symptoms in order to design a program for timely reintroduction into every day activities.

The Pediatric Concussion Clinic (PCC) is dedicated to the rapid assessment of a child's brain function following mild TBI. The clinic is staffed by a multidisciplinary team of medical professionals including neurologists, neurosurgeons, intensive care physicians, and neuroradiologists, working closely with experts in neuropsychology. Children will be seen rapidly in order to facilitate a speedy return to a normal life.

Children attending the clinic will have suffered a concussion with either loss of consciousness or evidence of signs and symptoms of difficulties with concentration and memory, headache and dizziness, disturbances of balance, mood, and sleep. Some children with mild TBI will be identified from the emergency room and patient floors at NewYork-Presbyterian Hospital/Weill Cornell Medical Center. Others with more moderate TBI may be referred from the pediatric intensive care unit. The clinic is also open to children admitted or evaluated at other institutions, as well as via self-referral from parents concerned about their child's symptoms or behavior following TBI.

The clinic meets weekly and more urgent assessments can be provided on an as-needed basis. The initial visit will include a physician's history and neurologic exam, a screening ImpACT™ exam, and a review of any prior neuroimaging studies. Immediate feedback will be provided to the family. Children with significant abnormalities on screening exams will undergo more detailed testing by the neuropsychologist and will have additional MRI scans performed, including diffusion tensor imaging (DTI) as described in Figure 1. Given the risk for developing post-traumatic epilepsy, a baseline EEG will be obtained for standard and computerized analysis. Follow up studies will be performed monthly and as needed for clinical changes, until full recovery is observed.

The clinic works closely with the Brain Trauma Foundation and other investigators at Weill Cornell Medical College to further investigate the biology of concussion. Supplemental neuroimaging and neuropsychological studies will be performed in subjects who enroll in that study, as described in the accompanying clinical trial announcement (see Clinical Trial listing on back). Smooth eye pursuit will be investigated as an additional test of attention and information processing in enrolled subjects. These research studies will be correlated to the clinical findings and hopefully with future advances, allow prediction of speed of recovery and risks for further injury.

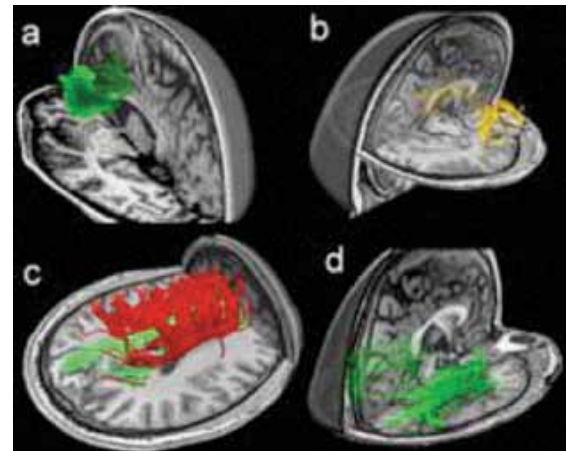


Figure 1: DTI fiber tractography of commonly damaged structures in mild TBI. Depicted are the a) anterior corona radiata, b) uncinate fasciculus, c) corpus callosum in red (with cingulum bundle also shown in green), and d) inferior longitudinal fasciculus (courtesy of Drs. Sumit Niogi and Jam Ghajar 2009)

Neurosurgery

Diffusion Tensor Magnetic Resonance Imaging in the Evaluation of Professional Football Players Following a Concussive Event

Investigators at the Departments of Neurological Surgery and Radiology at NewYork-Presbyterian Hospital/Weill Cornell Medical Center have teamed up with the **New York Giants** to develop a more sophisticated method to evaluate players who have suffered a concussion. Concussions, a form of mild traumatic brain injury, have gained heightened awareness in the **National Football League**. Disability following concussions, including long-term cognitive dysfunction, has raised concerns with how they are managed by the physician. Unfortunately, since most patients after a concussion will often have only vague complaints and no abnormality on standard modes of CT or MRI, the physician is left with unclear data from which to formulate prognoses and make "return to play" recommendations.

With this in mind, a study group led by Dr. Roger Härtl, team neurosurgeon of the **New York Giants** and staff neurosurgeon at Weill Cornell Medical College and NewYork-Presbyterian Hospital/ Weill Cornell Medical Center, has been created to evaluate a new method of MRI called diffusion tensor imaging (DTI) in the diagnosis of concussions. The DTI specifically evaluates integrity of the brain's axons: the wires that connect the circuitry of the brain. These axons, or wires, are known to be preferentially damaged in trauma, but this injury cannot be adequately imaged or evaluated on standard MRI. It is the hopes of the research team by evaluating axonal injury, to create a more sensitive and specific test to evaluate the injury a football player suffers during competition, and that DTI will ultimately better guide physicians on how to counsel and treat players who have been injured.



A DTI image showing the axonal tracts, or wire connections, from the superficial brain down to the deep brain structures and the brain stem.



Weill Cornell Medical College



NewYork-Presbyterian
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Brain and Spine Center July 2010

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Highlights

NEWYORK-PRESBYTERIAN PHYLLIS AND DAVID KOMANSKY CENTER FOR CHILDREN'S HEALTH AND WEILL CORNELL MEDICAL COLLEGE HOSTS INAUGURAL "LIDS FOR KIDS" SOFTBALL GAME

On June 26, 2010, from 9:00 AM to 1:00 PM, the Division of Pediatric Neurosurgery at NewYork-Presbyterian Hospital/Weill Cornell Medical Center hosted its first annual "Lids for Kids" softball game at Battery Park City Field. The goal of the event was to celebrate our young patients and to educate parents and caregivers about pediatric head injury prevention.

Upcoming CME Activities and Other Events

MONTHLY COMPLIMENTARY CME LECTURE SERIES ON MULTIPLE SCLEROSIS HOSTED BY THE JUDITH JAFFE MULTIPLE SCLEROSIS CENTER

6:00pm – 8:30pm

September 29, 2010: The State of MS 2010

October 20, 2010: Pediatric MS: Is it a different disease?

November 17, 2010: Estrogen Receptor Ligands: A novel treatment for MS

December 15, 2010: Hippocampal Atrophy in MS

For more information and to register, visit our website at www.cornellneurology.org

INDICATIONS AND CONTROVERSIES OF MINIMALLY INVASIVE SPINE SURGERY AND NAVIGATION: *HANDS-ON SYMPOSIUM*

Dec. 2, 2010; 12:00pm – 5:30pm

Dec. 3, 2010; 7:30am – 5:30pm

Dec. 4, 2010; 7:30am – 12:00pm

This symposium will provide a comprehensive overview on new and less invasive techniques with and without stereotactic navigation for the operative treatment of spinal disorders. *CME pending.* For more information, please contact Jessica Grajales at jeg9059@nyp.org

ACTIVE CLINICAL TRIALS

The FCC in conjunction with the Brain Trauma Foundation (BTF) is enrolling children ages 7-17 who have suffered a concussion to further investigate the biology of concussion. The study may involve a few sessions each taking about 3.5-5 hours of time and will include smooth pursuit eye-tracking, neuropsychological testing, completion of questionnaires, and an MRI-DTI.

For more information about eligibility please contact the Brain Trauma Foundation Research Coordinator at 212-746-3125 or slee@braintrauma.org.

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