NEUROPSYCHOLOGY TODAY

Monthly Newsletter published by Dr. Danov Neuropsychologist, P.C.
March 2009 Issue - Pediatric Neuropsychology: Concussion

What is Pediatric Neuropsychology?

Neuropsychology is a medical diagnostic study of the brain functioning. Neuropsychologists are licensed, doctoral level psychologists with an extensive specialized training in the area of brain structure and systems in relation to various cognitive functions.[1]

Pediatric neuropsychologists evaluate brain functioning by objectively testing:

- General intellect
- Academic achievement (reading, writing, math, etc.)
- Behavioral/ and emotional status
- Executive skills (reasoning, planning, etc.)
- Auditory/Visual information processing speed, accuracy
- Attention and concentration
- Learning and memory
- Language
- Visuomotor and sensorimotor functioning[1]

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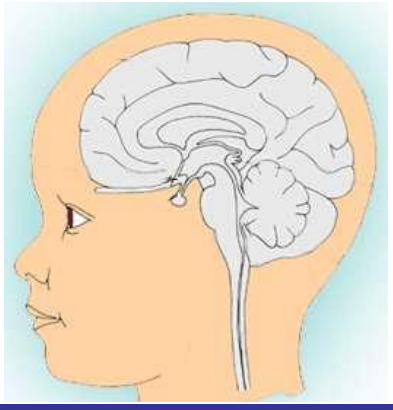
Reasons for a referral to a neuropsychologist

Pediatricians, neurologists, and therapists refer children for a neuropsychological exam to assess, differentiate, and monitor cognitive deficits associated with:

- TBI, hydrocephalus, Chiari malformation, CVA, etc.
- Autistic spectrum disorders
- ADHD, learning disabilities
- Premature birth, developmental delays
- Epilepsy, seizures
- Viral/ Infectious diseases (encephalitis, Lyme, meningitis, EBV, etc.)
- Psychiatric disorders (depression, anxiety, etc.)
- Exposure to neurotoxins (lead, mercury, etc.)
- Metabolic/endocrine disorders (vitamin or iron deficiency, DM, etc.)[1]



Pediatric Concussion: The risk of long-term symptoms

Traumatic brain injury (TBI) is an injury to the brain caused by a sudden trauma. Mild TBI, or concussion, is the mildest and the most common type of TBI. It is a closed head injury caused by a collision with an object or sudden acceleration, deceleration, or rotation of the head. Up to 90% of all TBIs in both children and adults are concussions.[2]

It is estimated that 1.5 million of US children are affected by concussions each year. Twice as many boys sustain TBI as girls. Most pediatric concussions result from falls, being struck by an object, motor-vehicle accidents, and sport-related accidents.[2,3]

Research suggests that children are at a higher risk of sustaining concussions compared to adults[2] and may also experience more extensive and severe symptomatology. This increased vulnerability to the effects of concussion may be explained by the fact that the child's developing brain is still in the process of neuronal maturation and skill acquisition, in addition to weaker neck and shoulder musculature.[3]

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Pediatric Neuropsychological Evaluation

Neuropsychological (NP) evaluation assesses symptom exaggeration, extent of brain injury and disability, and the types and severity of neurocognitive deficits. Serial NP exams allow tracking progressive decline or response to treatment, and differentiating various diagnoses. Upon the completion of the exam, neuropsychologists may also diagnose children with various cognitive and developmental disorders, learning disabilities, and ADHD, among others.[1]

Comprehensive pediatric NP exam takes several sessions to complete. It includes a clinical interview followed by several NP testing sessions and a final consultation session.

During the 1 to 1.5 hour-long clinical interview, the neuropsychologist discusses with the parents the reason for the child's referral, chief complaints and symptoms, and records their demographic information, personal and family medical history, and other relevant data. Based on the information collected, the neuropsychologist decides which tests to administer.

Next, the child undergoes 3-4 one-on-one testing sessions lasting 1 to 2 hours each. All tests administered during this exam are non-intrusive and involve such tasks as answering questions and arranging the blocks, as well as various paper-and-pencil exercises. No needles or electronic equipment are used.

Next, the neuropsychologist scores the test data, analyses the results, and prepares a report of findings. Lastly, during the final consultation, the neuropsychologist discusses the results, diagnosis or diagnostic impressions, and treatment recommendations. The patients are encouraged to ask questions and assume an active role in addressing their cognitive symptoms.

All parts of the NP exam are confidential, and no information is released to schools or other agencies without the parents' written request.

Attention Deficit/ Hyperactivity Disorder

Attention Deficit/Hyperactivity Disorder (ADHD) occurs in 3-7% of children (mostly boys). It is characterized by chronic inattention (Predominantly Inattentive type), impulsivity-hyperactivity (Predominantly Hyperactive/Impulsive type), or both (Combined type). ADHD may persist into adolescence and/or into adulthood.[4]

Historically, the neurobiological evidence of ADHD was an area of controversy. However, a recent research study demonstrated that the children with ADHD are about 3 yrs behind in their brain maturation and development, compared to their peers without ADHD.[5] Also, ADHD has been associated with lower levels of dopamine, which has been linked to attention, learning, motor function, motivation and reward, among other functions.[6]

Not surprisingly, children with ADHD often present with deficits in attention, executive skills, short term memory, sensory motor integration, and dysregulation of affect and behavior. Special school accommodations are often needed to minimize the effects of ADHD-related cognitive deficits on academic and daily performance.

About Dr. Rimma Danov

Dr. Rimma Danov received her PhD in clinical psychology from Adelphi University in New York. She completed her internship in clinical psychology and neuropsychology at Harvard Medical School and postdoctoral fellowship in pediatric and adult neuropsychology in a private clinic affiliated with New Jersey Medical School and the Robert Wood Johnson Medical Center. She is an assistant clinical professor at NYU School of Medicine, Dept. of Neurology, Penn State University, Dept. of Kinesiology, and Adelphi University, Derner Institute. In the past, she worked as a NHL neuropsychologist for the NJ Devils hockey team and was engaged as a co-investigator with the NYS Athletic Commission.

Presently, Dr. Danov maintains a full-time private neuropsychology practice where she examines neurocognitive and neurobehavioral functioning of patients with various neurological and neuropsychiatric disorders, such as multiple sclerosis (MS), CVA, Parkinson's, Alzheimer's, dementia, TBI, ADHD, PDD, Autism, learning disabilities, seizures, and many others, using state-of-the-art NP techniques. Dr. Danov also conducts and publishes research in these areas. She is available for medico-legal consultations and testimony.

("Pediatric Concussion: The risk of long-term symptoms," continued from page 1)

The immediate symptoms of concussion may include:

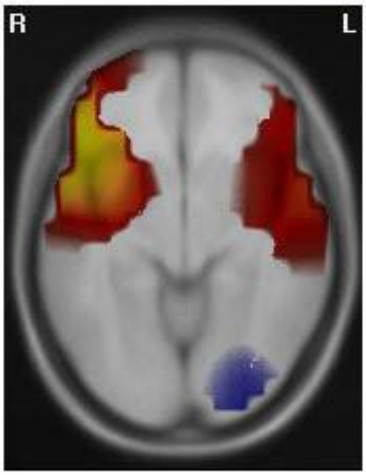
- A period of dizziness, confusion, or disorientation
- Headache, nausea
- Brief loss of consciousness
- Brief memory loss[2]

Researchers found that following concussion, some children experience long-term problems in their academic, family, and social functioning. The long-term symptoms of concussion may include:

- Cognitive impairment (slow thinking, inattention, forgetfulness, etc.)
- Behavioral, mood and personality changes
- Sensorimotor impairment
- Headaches, sleep disturbances[3]

Changes in a child's academic performance, behavior, mood, or personality after concussion may be a sign of long-term symptoms of TBI. NP exam can determine the extent of neurocognitive deficits that contribute to child's academic and emotional/behavioral problems.

Even when neuroradiological findings are negative in patients with concussions, NP medical diagnostic exam often reveals multiple cognitive functional deficits that underlie children's daily struggle in school and home. The image below shows brain activity based on the EEG of a patient who sustained a concussion during an auto accident. The red areas represent underactivity, while blue represents overactivity.



Research Initiatives

Neurocognitive deficits may cause difficulties in virtually all areas of children's functioning and impact their overall well-being. Studying neurocognitive impairment that results from various conditions enhances our early diagnosis, prevention, and treatment tools of cognitive deficits.

In addition to her clinical practice and academic appointments, Dr. Danov is actively involved in research of NP symptoms and their treatment in adults and children. To date, her research team has submitted several research proposals to the National Institutes of Health, National Academy of Neuropsychology, and Parkinson's Disease Foundation in the areas of cognitive impairment and cognitive rehabilitation in neurodegenerative diseases, and neurocognitive sequale following pediatric brain injury. She has also conducted and presented at professional national and international conferences research studies focusing on cognitive impairment in MS, neuropathology of pediatric concussion, cognitive deficits in children with Kleinfelter syndrome, and studies of cognitive rehabilitation for MS and stroke patients. These projects have enhanced our knowledge and treatment of these disorders and pointed to the effectiveness of individualized cognitive rehabilitation treatment for MS and stroke patients.

Works cited:

1. APA, Division 40, Public Interest Advisory Committee (2001). div40.org.
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5. Shaw et al.(2007). Proceedings of the NAS, 104(49), 19649-54.
6. NIH, NIDA (2001). News release, drugabuse.gov/ MedAdv/01/NR1-16.htm

Image credits:

1. Background image (pp.1 & 4): Jeff Johnson Biological and Medical Visuals.
2. Child brain (p.1): BC Cancer Society, Vancouver, BC.
3. Brain activity (p.3): Roy John, NYU, New York, NY.

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Next Issues (April 2009: Cognitive Rehabilitation after Stroke; May 2009: Parkinson's Disease)

We take the following insurance plans:

Aetna	HIP
Americhoice	Magnacare
Amerigroup	Medicare
BCBS	MHN
Cigna	Multiplan
Elderplan	No-Fault
Fidelis	Tricare
First Health	UHC/Oxford
HealthNet	Workers' Comp
Health Plus	1199

Case dependent:

Affinity	GHI HMO
Atlantis	Health First

Each insurance carrier determines the medical necessity of every requested neuropsychological exam differently. Our billing staff determines whether the exam will be covered by the insurance before the exam begins and works very hard to obtain an authorization, if needed. If you have questions about a plan that is not listed here, contact our office to find out whether we can obtain an authorization or have recently joined that plan.

Languages

We are very much open to diverse cultures in this practice and value the quality of a bilingual neuropsychological exam performed in the patient's native language. Dr. Danov is a native Russian speaker. Her current clinical staff include native ***Russian***, ***Spanish*** and ***Hebrew*** speakers.

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