LINKING MOLECULES AND GENES TO CLINICAL PRACTICE: RECOVERY AFTER STROKE

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MODERATOR: Steven Wolf PT PhD FAPTA. Emory University, Atlanta, GA

PRESENTERS:
Steven Cramer MD, University of California, Irvine, CA
Jeffrey Kleim PhD, Arizona State University, Tempe, AZ
Catherine Curtis PT EdD, New York Medical College, Valhalla, NY

DESCRIPTION:

Stroke is a common condition affecting almost 6 million survivors in the United States. Studies have shown plasticity of the brain after stroke, with many factors influencing recovery. Genetic factors appear to have considerable impact on post-stroke recovery. Polymorphisms in a number of genes have been studied and implicated in brain plasticity after stroke.

The impact of genetic factors on brain plasticity and recovery after stroke will be discussed. Results of studies on the brain-derived neurotrophic factor (BDNF) and apolipoprotein-E (ApoE) genes will be presented in relation to recovery and plasticity. BDNF and ApoE polymorphisms modulate cognitive and motor learning in healthy individuals. Results of physical therapy are variable among people with stroke, with such variability likely to be associated with many factors including genetic polymorphisms. Information from studies of genetic factors on stroke recovery will enhance our ability to predict which patients will most likely benefit from rehabilitation interventions. Knowledge of specific genotypes at these and other genes may be useful in guiding the creation of new rehabilitation interventions.

The session will conclude with a presentation on resources available to clinicians to enhance knowledge of genetic factors associated with stroke and physical recovery, including ethical, legal and social concerns.

OBJECTIVES

Upon completion of this course the participant will be able to:

1. Explain and discuss the concept of plasticity of the nervous system with regards to recovery after stroke
2. Outline and discuss the influence of genetic factors such as brain-derived neurotrophic factor (BDNF) and apolipoprotein-E (ApoE) genes in stroke recovery, including clinical implications for rehabilitation professionals
3. Outline and discuss the role of genetic factors in processes such as learning and attention to task during rehabilitation after stroke
4. Retrieve relevant resources to further knowledge on the role of genetic factors associated with stroke and physical recovery including publicly funded websites such as GeneTests and National Human Genome Research Institute website

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Speakers:

Jeffrey Kleim, PhD  
Arizona State University  
Tempe, AZ

AND

Steven Cramer, MD  
University of California  
Irvine, CA

1. What is plasticity of the nervous system?

2. How does plasticity relate to recovery after stroke?

3. Genetic factors are implicated in brain plasticity and recovery after stroke
   a. Brain-derived neurotrophic factor (BDNF)
   b. Apolipoprotein-E (ApoE)
   c. Other genes

4. Role of genetic factors in
   a. Learning
   b. Attention to task
   c. Exercise interventions

5. Clinical implications of genetic studies for rehabilitation professionals

REFERENCES


1. Overview of resources available to clinicians to enhance knowledge of genetics and genetic factors associated with stroke and physical recovery

2. Publicly funded websites (e.g. National Human Genome Research Institute and GeneTests)

WEBSITES

Health and Human Services Family History Initiative http://www.hhs.gov/familyhistory


Popular Bookshelf
- Genes and Disease. Bethesda, MD

Online Mendelian Inheritance in Man (OMIM)

National Coalition for Health Professional Education in Genetics (NCHPEG) http://www.nchpeg.org
This site has links to a number of family history resources including Core Principles in Family History, recognizing genetic red flags, My Family Health Portrait (the Surgeon General’s Family History Initiative) and an instructional slide set Medical Family History: Tools ForYour Practice co-sponsored by the National Society of Genetics Counselors. http://www.nchpeg.org/index.php?option=com_content&view=article&id=236&Itemid=134

National Human Genome Research Institute http://www.genome.gov

National Institute of Health GeneReviews http://www.geneclinics.org

National Society of Genetics Counselors http://www.nsgc.org

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