

รายวิชา 3804662
วิชา จิตสรีรวิทยาพัฒนาการ (Psychophysiological Development)
 จำนวน 3 หน่วยกิต ประจำปีภาคการศึกษาปลาย ปีการศึกษา 2553
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 วันที่เรียน- เวลา: วันพุธ เวลา 18.00 - 21.00 น.
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วิชา จิตสรีรวิทยาพัฒนาการ (Psychophysiological Development)
Lecture 15
Psychophysiological Development: Abnormal Development and Disease (I)
อาจารย์นายแพทย์ วรสิทธิ์ สิริพรพานิช
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Abnormal Development and Diseases I

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Developmental domains

- Motor development
- Cognitive / intellectual development
- Social-emotional development
- Language development

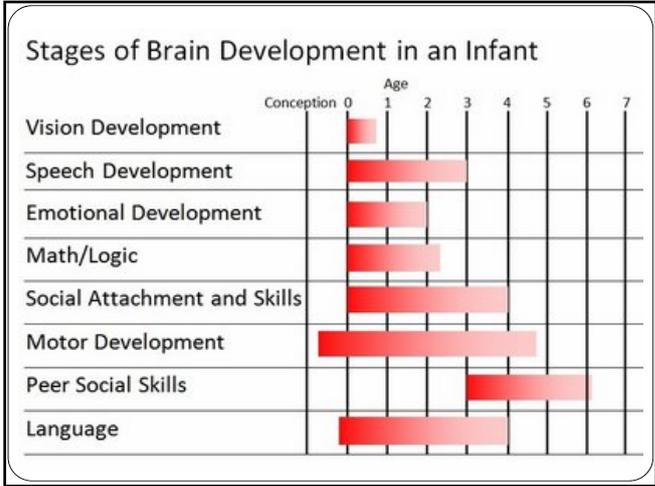


Developmental milestones

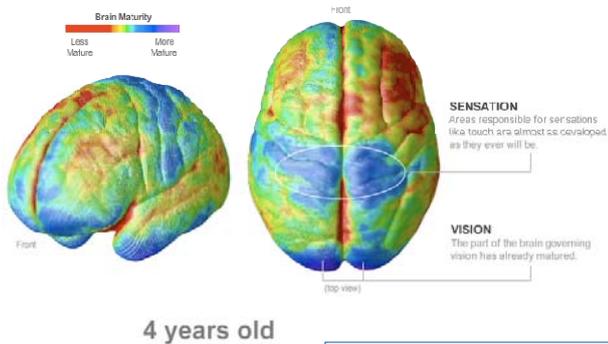
In normal infants developmental milestones such as eye-hand coordination and visual tracking occur at predictable ages





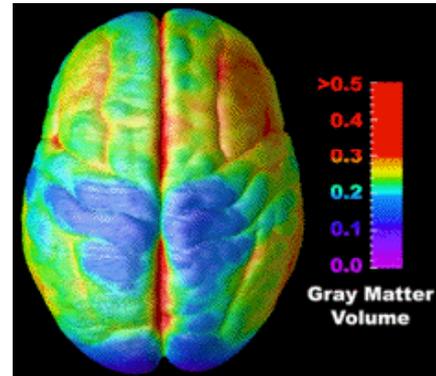


Brain maturation



Picture from mindblog.dericbownds.net

Postnatal brain development



Gogtay et al.,
PNAS 2004

Developmental delay & disorders

- **Developmental delay** is any significant lag in a child's physical, cognitive, behavioral, emotional, or social development, in comparison with norms
- **Developmental disorders** are disorders that occur at some stage in a child's development, often retarding the development

Case I

- A 7-year-old girl was sent to the Pediatrics department due to poor school performance. She had a history of developmental delay since one year old. She spoke the first meaningful word at around 3 years old (normal child can do at around 1 year old). Her gross and fine motor development were also delayed.
- Physical examination: normal

Question I

- What is the most likely cause of poor school performance in this child?
 - A. Mental retardation
 - B. Chronic illness
 - C. Learning disability (LD)
 - D. Absence seizure
 - E. Autistic spectrum disorders

Question II

- What is the most proper investigation in this case?
 - A. Chromosome study
 - B. IQ (intelligence quotient) test
 - C. MRI brain
 - D. Electroencephalogram (EEG)
 - E. Cerebrospinal fluid (CSF) analysis

Question III

- What is the etiology of mental retardation?
 - A. Genetic diseases (i.e. Down syndrome, Fragile X syndrome)
 - B. Congenital infection (i.e. congenital rubella syndrome)
 - C. Perinatal asphyxia
 - D. Malnutrition (i.e. iodine deficiency in pregnant woman)
 - E. All of above

Question IV

- What is the most proper management in children with mental retardation?
 - A. Acetylcholinesterase inhibitor (Donepezil; Aricept) administration
 - B. Lesson should be frequently repeated
 - C. High protein diet
 - D. High dose of folic acid
 - E. All of above

Question V

- What is the neurotransmitter that play an important role in learning and memory processes?
 - A. Dopamine
 - B. Acetylcholine
 - C. Serotonin
 - D. Glutamate
 - E. GABA

Case II

- A 6-year-old Thai boy was sent to the Pediatrics department with poor school performance. His teacher reported that he could not concentrate with the lessons and frequently disturbed his friends during class. He was quite impatient, whereby at times he would disrupt the queue and take over his friends. His developmental milestones were normal.
- Physical examination: normal, except hyperactivity and limited concentration during examination

Question I

- What is the diagnosis in this case?
 - A. Normal child
 - B. Attention deficit hyperactivity disorder (ADHD)
 - C. Autistic spectrum disorder (ASD)
 - D. Mental retardation
 - E. Gifted child

Question II

- What is the key clinical feature of ADHD?
 - A. Inattention
 - B. Hyperactivity
 - C. Impulsivity (impulsiveness)
 - D. A and B are correct
 - E. A, B and C are correct

Question III

- What is the most proper investigation in this case?
 - A. Chromosome study
 - B. IQ (intelligence quotient) test
 - C. MRI brain
 - D. Electroencephalogram (EEG)
 - E. No further investigation required

Question IV

- What is the neurotransmitter that play an important role in ADHD?
 - A. Dopamine
 - B. Acetylcholine
 - C. Serotonin
 - D. Glutamate
 - E. GABA

Question V

- What is the drug of choice for ADHD management?
 - A. Methyl dopa
 - B. Sodium valproate
 - C. Methylphenidate (Ritalin®)
 - D. Risperidone
 - E. Clonidine

Question VI

- What is the common adverse reaction of methylphenidate?
 - A. Dry mouth
 - B. Nausea
 - C. Decreased appetite
 - D. Insomnia
 - E. All are correct

Question VII

- Doctor prescribed him Ritalin®, one tablet in the morning.
- After treatment, his ability to concentrate in the lessons was significantly improved and he could be seated for a longtime. However, he still had hyperactivity and less attention span during afternoon classes.
- What is the cause of hyperactivity during afternoon period?

Question VIII

- What is the best way to control his ADHD symptoms in the afternoon?
 - A. Add one tablet of Ritalin® at noon
 - B. Add low dose of benzodiazepine at noon
 - C. Change to long-acting methylphenidate (Concerta®)
 - D. Change to the second-line drugs
 - E. A and C are correct

Case III

- A 2-year-old Thai boy was sent to the Pediatrics department with developmental delay. His parents noticed that he could not sit and stand by himself. His motor development was severely delayed whereas language development was mildly impaired. The birth history was abnormal, his mother required emergency operation to deliver him.

Case III (continue)

- Physical examination
 - Head lagging (hypotonia of neck muscles)
 - Spastic tone all limbs
 - Hyperreflexia all limbs
 - Present of Babinski's sign both feet

Question I

- What is the most affected brain region in this case?
 - A. Sensory cortex
 - B. Auditory cortex
 - C. Motor cortex
 - D. Cerebellum
 - E. Brainstem

Question II

- What is the diagnosis in this case?
 - A. Cerebral palsy (CP)
 - B. Attention deficit hyperactivity disorder (ADHD)
 - C. Autistic spectrum disorder (ASD)
 - D. Mental retardation
 - E. Gifted child

Question III

- What is the most proper investigation in this case?
 - A. Chromosome study
 - B. IQ (intelligence quotient) test
 - C. MRI brain
 - D. Electroencephalogram (EEG)
 - E. No further investigation required

Question IV

- What is the neurotransmitter target of drug used in "spastic" cerebral palsy?
 - A. Dopamine
 - B. GABA
 - C. Serotonin
 - D. Acetylcholine
 - E. B and D are correct

Question V

- What is the drug used to reduce spastic tone in cerebral palsy patient?
 - A. Clonazepam
 - B. Baclofen (Lioresal®)
 - C. Diazepam
 - D. Botulinum toxin type A
 - E. All of above

Case IV

- A 3-year-old Thai boy was sent to the Pediatrics department with developmental delay. His parents noticed that he was not interested to play with other children. He could not speak well and seem to lack of interest in communicating. His routine daily activities were also rigid and unable to be changed. However, his motor development was normal.

Case IV (continue)

- Physical examination
 - Poor cooperation
 - No dysmorphic feature
 - No eye contact
 - Speech: echolalia, neologism
 - Motor system: stereotypy and mild clumsiness

Question I

- What is the diagnosis in this case?
 - A. Normal child
 - B. Attention deficit hyperactivity disorder (ADHD)
 - C. Autistic spectrum disorder (ASD)
 - D. Mental retardation
 - E. Gifted child

Question II

- What is the key clinical feature of autistic child?
 - A. Impaired sociability
 - B. Impaired verbal and nonverbal communication skills
 - C. Restricted activities and interests
 - D. A and B are correct
 - E. A, B and C are correct

Question III

- What is the most proper investigation in this case?
 - A. Chromosome study and MECP2 gene analysis
 - B. IQ (intelligence quotient) test
 - C. MRI brain
 - D. Electroencephalogram (EEG)
 - E. No further investigation required

Question IV

- What is the drug of choice for the effective management of autism?
 - A. Risperidone
 - B. Fluoxetine (SSRI)
 - C. Clonidine
 - D. Methylphenidate (Ritalin®)
 - E. Depend on the patient's condition

**THANK YOU
FOR
YOUR ATTENTION**