Concept & Causes of Learning Disabilities

LPT Gondar Mental Health Group
Learning Disability or Mental Retardation
Important!

- Exam questions only from workbook
- The lecture names many conditions the aim of this is to increase your awareness of these disorders not for you to remember each one!
Concepts - Learning Disability

- A general concept
- Intellectual functioning & IQ
- Mental Age
- Epidemiological concept
- Clinical - ICD 10 & DSM IV
- Medico-legal concept
Learning Disability
General Concepts

- Affects ability to learn
- Impairs cognition
- Is only one attribute of people with LD
- Is a serious disability
- Are people first
- Have hopes and dreams like everyone else
- Face many obstacles
- Often require considerable support
Intellectual functioning

- A theoretical construct
- A human trait distributed in a predictable manner
- \[ IQ = \frac{\text{Mental age}}{\text{Chronological age}} \times 100 \]
Mental Age

- Is defined as the developmental level acquired by an individual
- Is an outdated way to classify and describe an individual’s abilities
Learning Disability
Epidemiological Concept
Learning Disability
Clinical concept

Six criteria (E. A. Doll, 1941)

- social incompetence
- due to mental subnormality
- which has been developmentally arrested
- which obtains at maturity
- is of constitutional origin
- is essentially incurable
Learning Disability
Clinical concept

- The definition specifies three criteria
  - significantly subaverage intelligence
  - impaired adaptive behaviour or functioning
  - origin during the developmental period
ICD 10 Definition

- Mental Retardation is defined as a condition of arrested or incomplete development of the mind, which is characterised by impairment of skills manifested during the developmental period, which contribute to the overall level of intelligence, e.g. cognitive, language, motor and social abilities.
ICD 10 Definition

- Sub average intellectual functioning
- At least two limited areas of adaptive functioning exist concurrently
- The disability occurred before the age of 18 years
- All three criteria need to be satisfied
Mental Retardation
Classification based on IQ < 70

- Mild MR: IQ 50 – 70
- Moderate MR: IQ 35 – 49
- Severe MR: IQ 20 – 34
- Profound MR: IQ < 20
Adaptive skill areas

- Communication
- Self-care
- Home living
- Social skills
- Community use
- Self-direction
- Health and safety
- Functional academics
- Leisure
- Work
Causes of Learning Disability

- Prenatal: 70%
- Perinatal: 9%
- Postnatal: 2%
- Familial/Cultural: -
- Unidentifiable: 19%
Prenatal Causes

- Genetic disorders
  - Chromosomal aberrations
  - Single gene mutations
    - Autosomal dominant
    - Autosomal recessive
    - X linked disorders
  - Microdeletions
- Congenital malformations
- Exposure
Prenatal causes – Genetic disorders

**Chromosomal aberrations**
- Autosomal abnormalities
- Sex chromosomal abnormalities

**Microdeletions**

**Single gene mutations**
- Autosomal dominant disorders
- Autosomal recessive disorders
- X linked disorders
Chromosomal aberrations

Abnormalities of autosomes

Downs syndrome – Trisomy 21
Edwards syndrome – Trisomy 18
Pataus syndrome - Trisomy 13

Abnormalities of sex chromosomes

Fragile X syndrome – fragile site on Xq27-28
Klinefelter’s syndrome – 47, XXY
Turners syndrome – 45, XO
Partial deletions & Microdeletions

Prader-Willi syndrome
  - microdeletion of paternal 15q
Williams syndrome
  - microdeletion of 17
Cri du chat syndrome
  - partial deletion of 5
Autosomal dominant disorders

- Tuberous sclerosis (Epiloia)
- Neurofibromatosis (von Recklinghausen’s disease)
- Encephalofacial angiomatosis (Sturge – Weber syndrome)
X – linked disorders

- Fragile X syndrome
- Lesch-Nyhan syndrome
- Haemoglobin (HbH) disease with mental retardation
- ATR-X syndrome (α – thalassaemia/mental retardation syndrome)
Prenatal causes - Congenital anomalies

- CNS malformations
  - Neural tube defects
- Multiple malformations syndromes
  - Cornelia de Lange syndrome
Epidemiology of Genetic disorders

Genetic disorders/congenital anomalies apparent by age 25: 79 per 1000 livebirths

1. Single gene (Mendelian) disorders  
   a. Autosomal dominant  
   b. Autosomal recessive  
   c. X-linked disorders

2. Chromosome abnormalities

3. Multifactorial conditions (onset <25)

4. Conditions that appear genetic but precise mechanism unknown

5. Other congenital anomalies
Prenatal - Exposure

- Maternal infections
  - Congenital rubella (Rubella syndrome), HIV
- Teratogens
  - Fetal alcohol syndrome
- Toxaemia, placental insufficiency
  - Prematurity
- Trauma
- Iatrogenic
  - Radiation, Drugs
- Severe malnutrition
  - IUGR
Perinatal causes

- Infections
- Delivery
  - Anoxic brain damage
- Others
  - Hyperbilirubinaemia
Postnatal causes

- **Infections**
  - Encephalitis

- **Metabolic**
  - Hypoglycaemia

- **Endocrine**
  - Cretinism

- **Cerebrovascular**
  - Thrombo-embolism

- **Toxins**
  - Lead poisoning

- **Trauma**
  - Head injury

- **Neoplasms**
  - Meningioma, Cranipharyngioma

- **Psychosocial factors**
  - Understimulation
Clinical syndromes

- Downs syndrome
- Fragile X syndrome
- Tuberous sclerosis
- Phenylketonuria
- Cornelia de Lange syndrome
- Edwards syndrome
- Prader Willi syndrome
- Angelman syndrome
- Lesch Nyhan syndrome

- Other inborn errors
  - amino acid metabolism
  - Fatty acid metabolism
  - Carbohydrate metabolism
  - Nucleic acid metabolism
- Smith Magenis syndrome
- Williams syndrome
Downs syndrome

- **Physical features**
  - Facies, somatotype, Congenital anomalies, Infantile spasms, Hypothyrodism

- **Psychiatric associations**
  - Dementia
  - Depression
  - Hyperactivity
  - Conduct disorder
  - Autism
Phenyketonuria

- **Physical features**
  - Blond hair, blue eyes, spasticity, epilepsy

- **Psychiatric associations**
  - Autism
  - Hyperactivity
  - Epilepsy
Management

- Assessment is key
- Effective communication,
- Treat any coexistent mental disorders - psychosis, depression, anxiety
- Adapt environment to meet the needs of the person
- Maintain quality of life as much as possible
- Support the family