Developmental Retardation

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Evaluation of Development

- Prerequisites
- Equipment
- Steps
Development Quotient

\[
DQ = \frac{\text{Avg age of attainment}}{\text{Obs age of attainment}} \times 100
\]
Developmental Assessment

- Calculate DQ
- Corrected age vs postnatal age
- Dissociation
- Delay vs Regression
- Normal range of developmental milestones
WHO Motor Development Milestones

- Walking alone
- Standing alone
- Walking with assistance
- Hands- & knees crawling
- Standing with assistance
- Sitting without support
## Red Flag Signs in Child Development

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Age</th>
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<tbody>
<tr>
<td>No visual fixation or following</td>
<td>2 months</td>
</tr>
<tr>
<td>No vocalization</td>
<td>6 months</td>
</tr>
<tr>
<td>Not sitting without support</td>
<td>9-10 months</td>
</tr>
<tr>
<td>Not standing alone</td>
<td>16 months</td>
</tr>
<tr>
<td>Not walking alone</td>
<td>18 months</td>
</tr>
<tr>
<td>No single words</td>
<td>18 months</td>
</tr>
<tr>
<td>Lack of imaginative play</td>
<td>3 years</td>
</tr>
<tr>
<td>Loss of comprehension, single words, phrases</td>
<td>Any age</td>
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</tbody>
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Developmental Screening

Brief assessment procedure designed to identify children who undergo more detailed evaluation
Developmental Surveillance

Repeated observations on development made by skilled caregiver over time to see rate & pattern of development
Screening Tools

- Phatak’s Baroda Screening Test
- Denver Development Screening Test
- Trivandrum Development Screening Chart
- CAT/CLAMS
- Goodenough Harris Drawing Test
Definitive Tests

- Bayley Scale of Infant Development II
- Stanford Binet Intelligence Scale
- Wechsler Intelligence Scale for Children IV
- Vineland Adaptive Behavior Scales
- DAS II
Learning Disabilities

- Arise from specific neurodevelopmental dysfunction that prevents expectable learning in one or more academic areas

- Unexpected in relation to overall intellectual functioning of the child

- Not because of GDD, major visual or hearing handicaps or major social & emotional stressors
Dyslexia

- Commonest LD
- Difficulty with accurate and/or fluent word recognition and poor word spelling & decoding abilities
- Etiology: genetic (50%)
- Co-occur with ADHD in 15-40% children
Case based approach

Case 1:
The parents of a 9-month old boy are concerned because he is unable to sit without support and speaks bisyllables only.

Impression

Isolated Motor Delay

Isolated Language Delay

Global Developmental Delay
Case based approach

Case 2:
The parents of a 16-month old boy are concerned because he cannot walk without support, can stand without support and doesn’t speak any meaningful words.

Impression

Isolated Motor Delay

Isolated Language Delay

Global Developmental Delay
Case based approach

Case 3:
The parents of a 9-month old boy are concerned because he is unable to sit without support, does not actively reach for objects, and coos but does not babble.

Impression

Isolated Motor Delay

Isolated Language Delay

Global Developmental Delay
GDD: Etiology

Genetic causes:

a. Metabolic disorders, i.e. storage diseases, PKU
b. Down syndrome
c. Fragile X
d. Rett syndrome.
e. DiGeorge syndrome
g. Neurocutaneous syndromes
h. Leukodystrophy
GDD: Etiology cont...

Acquired causes:

a. Prenatal or perinatal causes:
   i. Exposure to teratogens or toxins
   ii. Intrapartum asphyxia
   iii. Prematurity
   iv. Congenital infections
   v. Congenital hypothyroidism
   vi. Intracranial hemorrhage

b. Postnatal causes:
   i. Infection (meningitis, encephalitis)
   ii. Cranial trauma
   iii. Environmental causes,
Evaluation of GDD

- History
- Examination
- Investigations:
  a. Karyotyping
  b. Fragile X testing (FMR1 triplet repeat analysis)
  c. Rett syndrome testing
  d. Fluorescence In Situ Hybridization (FISH)
  e. Metabolic Screening
  f. Neuroimaging
  g. EEG
Evaluation cont...

h. Thyroid screening
i. Visual & Hearing assessment
j. Lead levels
k. Autism/LD screening
Treatment

- Treatment of underlying cause
- Multisensory & early stimulation
- Supportive therapy
Thank You