

Approach to short stature



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Short Stature



Height below 3rd centile or more than 2 standard deviations below the median height for age & sex

Causes of Short Stature



Physiological:

- Familial
- Constitutional

Pathological:

- Undernutrition
- Chronic systemic diseases
- Endocrine Causes
- Psychosocial dwarfism
- SGA babies
- Skeletal dysplasias
- Genetic syndromes

Assessment of child with Short Stature



- **Accurate height assessment**
- **Assessment of body proportions**
- **Assessment of height velocity**
- **Comparison with population norms**
- **Comparison with child's own genetic potential**
- **Sexual maturity rating**

Evaluation



History	Etiology
LBW	SGA
Polyuria	CRF, RTA
Chronic Diarrhoea	Malabsorption
Neonatal hypoglycemia/Micropenis/Jaundice	GH deficiency
Headache/Vomiting/Visual problem	ICSOL
Lethargy/Constipation/ Weight gain	Hypothyroidism
Dietary intake	Undernutrition
Social History	Psychosocial dwarfism
Delayed puberty in parents	Constitutional delay

Examination



Findings	Etiology
Body disproportion	Skeletal dysplasia/Rickets
Pallor	CRF
Dysmorphism	Genetic syndromes
Hypertension	CRF
Frontal bossing, depressed nasal bridge, crowded teeth, small penis	GHD
Goiter/coarse skin	Hypothyroidism
Central obesity/Striae	Cushing Syndrome

Investigations



Level One:

- Complete Hmg with ESR
- Bone Age
- Urinalysis
- Stool examination
- RFT
- LFT
- FBS

Investigations cont.....



Level Two:

- TFT
- Karyotyping

Level Three:

- Celiac serology
- GH stimulation tests

Bone Age



- Usually $BA < CA$
- Exceptions: Familial short stature
Precocious puberty
- $BA = HA$: Constitutional delay
Undernutrition
Systemic illness
- $BA < HA$: GHD
Hypothyroidism

Familial Short Stature



- Normal height & weight at birth
- Catch down in growth
- By 2 years, height & weight lies on target centile
- Growth velocity normal
- Bone age = chronological age
- Normal puberty
- Final height low but within target range

Constitutional Short Stature



- Normal length & weight at birth
- Normal growth till 6-12 months
- Deceleration till 2-3 yrs
- Height velocity accelerates & grow parallel to 3rd percentile
- Normal height velocity
- Delayed puberty
- Final height normal
- Bone age < Chronological age
- Bone age = Height Age
- Family history of delayed puberty

Constitutional Vs Familial



Feature	Constitutional	Familial
Height	Short	Short
Height velocity	Normal	Normal
Family history	Of delayed puberty	Of short stature
Bone age	Less than chronological age	Normal
Puberty	Delayed	Normal
Final height	Normal	Low but normal for target height

Psychological Dwarfism



- Emotional deprivation dwarfism/ Maternal deprivation dwarfism/ Hyperphagic short stature
- Functional hypopituitarism
- Low IGF-1 levels & inadequate response to GH
- Good catch up growth in less stressful environment

Management



- **Counselling of parents**
- **Dietary advice**
- **Treatment of underlying medical condition**
- **Regular monitoring**

Failure to Thrive



- Physical growth significantly less than peers
- Used for children < 5 years of age
- Includes: Wt < 3rd percentile
Failure to gain weight
Crossing of 2 major percentiles

Etiology



Organic:

- GI
- CNS
- Renal
- Cardiopulmonary
- Endocrine
- Infections
- Genetic

Etiology cont...



Non organic:

- **Poverty**
- **Faulty diet**
- **Psychosocial**



Thank You