# SHORT STATURE

**DMC** (Dr Modi's Clinic)
Asif Nagar, Mehadipatnam, Hyderabad)

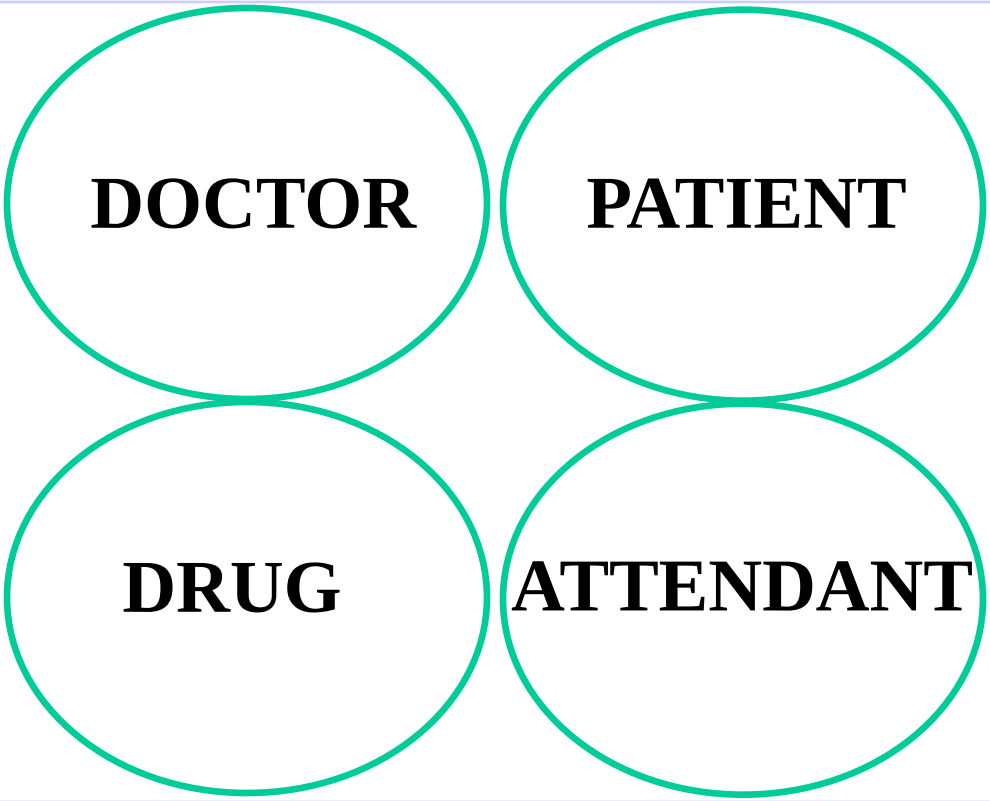
- Dr K D MODI, MD, DM, DNB

# Height is important

- Personal health
- Professional health
- Social health
- Sexual health
- Self-confidence
- Physical health

# QUADRUPLE OF ATREYA

(CHARAK SANHITA)



# Defining short stature

- According to growth charts
  - ICMR
  - Aggarwal
  - Western
  - Below 3rd %ile or 5th %ile
- Growth velocity
- mid-parental height
  - FH + MH + 6.5 cm for boys
  - FH + MH _ 6.5 cm for girls

# Measuring stature

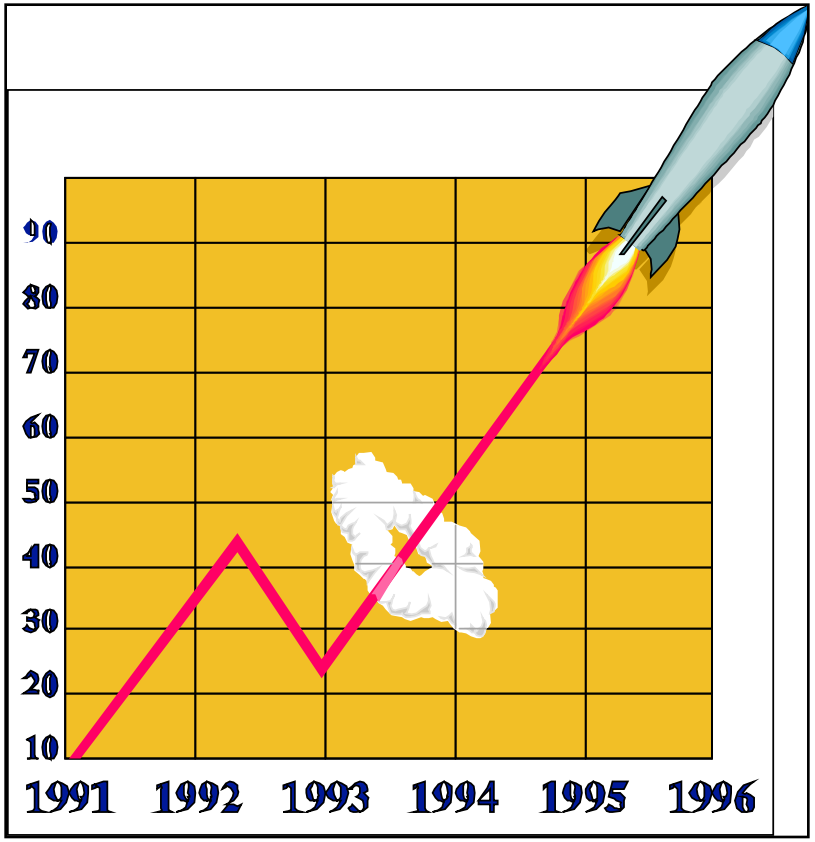
- Stadiometer
- Barefeet
- Four points touching the wall
- Frankfurt plane [line joining inferior orbital margin to ext auditory meatus] paralel to ground
- Serial measurements better

# Anthropometry

- US: LS ratio
- Arm span
- SE: EMC ratio
- Sitting height
- Supine length [if age< 2 years]

# Growth patterns

- Growth velocity charts
- Growth is not a steady continuous process but occurs by episodic saltatory increments
- More in spring, summer



# Growth velocity

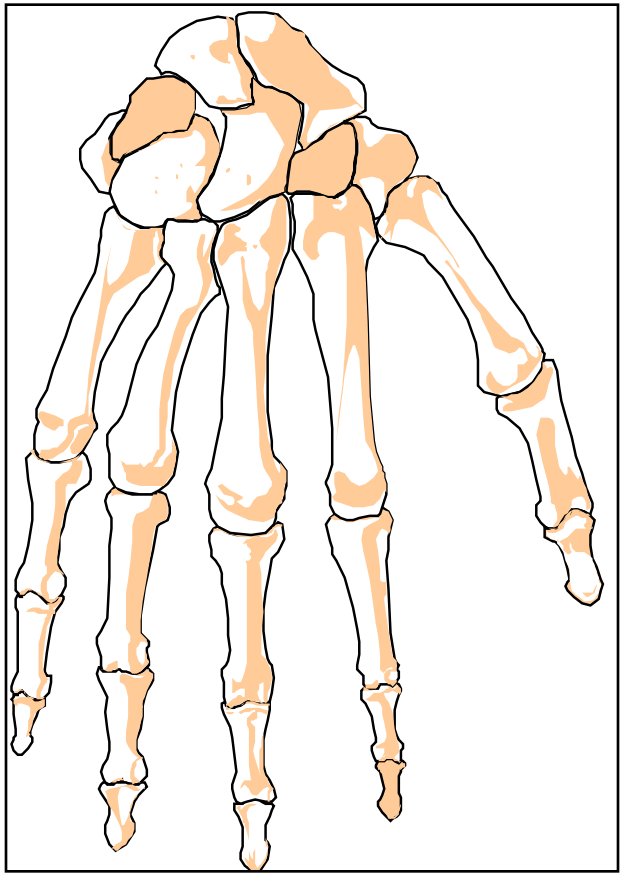
| year | Increment in cm |
|---|---|
| 1 | 25 |
| 2 | 10 |
| 3, 4 | 7 |
| 5, 6 | 6 |
| 7 - puberty | 5 |
| mid-puberty | 9 – 10.3 |

# Anthropometry

- CA  chronological age
- HA  height age
- BA  bone age
- WA weight age
- DA dental age

# Bone age

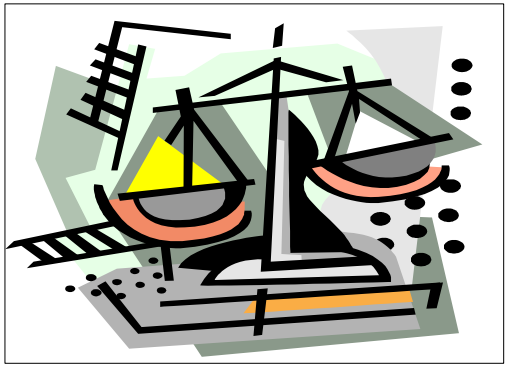
- Tanner-Whitehouse atlas
- GP atlas
- 20 bone method
- Most accurate
- Predicts adult height
- Useful for D/D



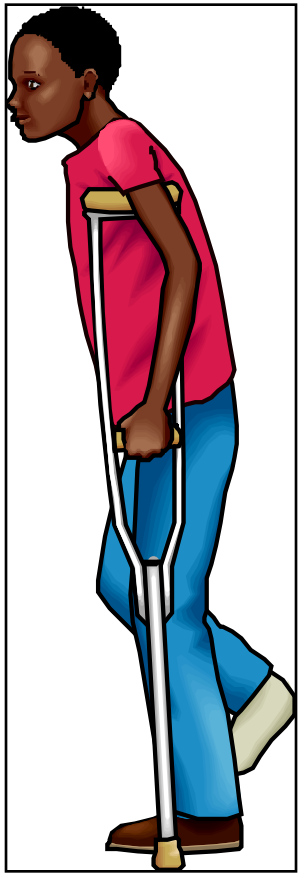
# Differential diagnosis

- Constitutional growth delay CGD
  - Delayed puberty/ Late bloomer
  - BL normal [upto 3 years]
  - BA = HA < CA
  - GV normal for BA
  - AH normal

BALANCE IS ESSENTIAL



# Non-pathologic short stature



- Familial short stature FSS
  - Family history
  - BL small
  - BA, GV normal
  - HA < CA
  - AH = MPH < normal

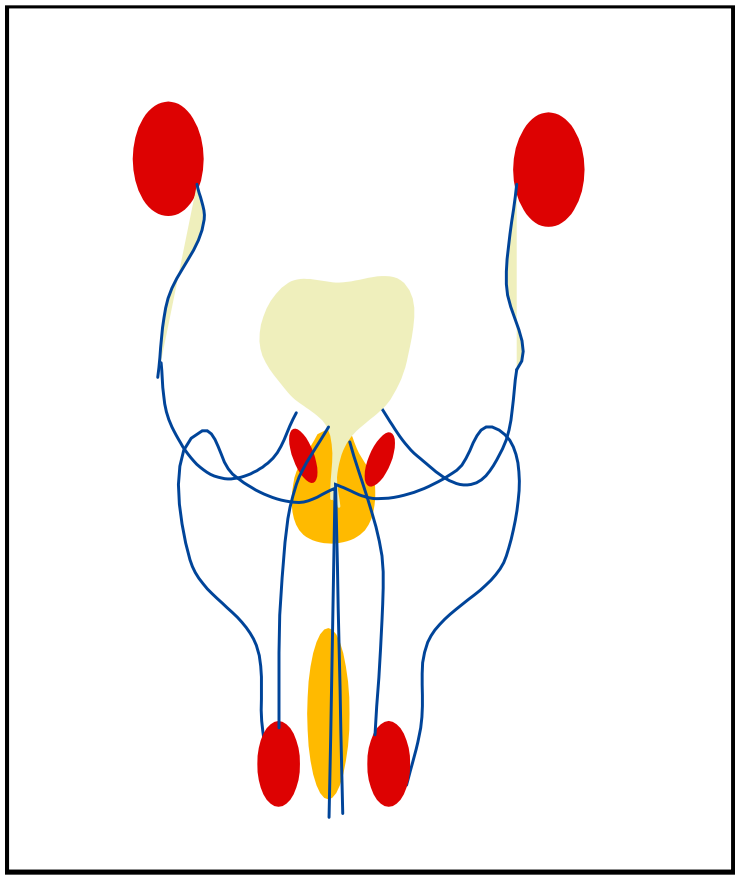
# PATHOLOGICAL SHORT STATURE

- ENDOCRINE
- METABOLIC
- GENETIC
- PSYCHOSOCIAL

- SYSTEMIC
- NUTRITONAL
- IUGR
- SKELETAL

- IDIOPATHIC

# ENDOCRINE CAUSES



- GHD/Panhypopit
- Diabetes insipidus
- Hypothyroidism
- Cushing’s
- Diabetes mellitus
- Hypogonadism

# GENETIC SYNDROMES

- Turner’s syn
- Noonan’s
- Russel Silver
- Seckel’s
- Down’s

# SYSTEMIC ILLNESSES

- Chronic anaemia
- CRF
- RTA
- Asthma
- congenital heart disease
- Chronic infections
- Chronic bowel disease
- Steroid therapy

# Differential diagnosis

- ENDOCRINOPATHY
- Bone age retarded
- History
  - Birth asphyxia/breech
  - Headache/vomiting
  - Polyuria/polydipsia
  - Weight gain/obesity
  - Delayed milestones
- Physical features

- NON-ENDOCRINOPATHY
- Bone age normal
- History
  - Weight loss/anorexia
  - Chr diarrhea
  - Chr cough/dyspnea
  - Low birth weight
  - Poor intake
- Physical features

# GHD: PHYSICAL FEATURES

- Cherubic face; fair complexion
- Normal IQ
- Frontal bossing
- Midfacial crowding
- Pallor
- Micropenis
- Truncal  obesity

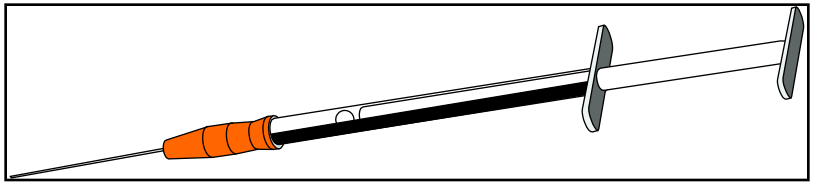
# GHD: PROVOCATIVE TESTS

- Needed because normal range is wide
- Basal GH of no help
- Insulin tolerance test is gold standard
- Exercise test
- Sleep test

- Clonidine stimulation test: 0.15 mg/m2 clonidine given orally in morning
- IV line must be in place
- Sample for GH at 0', 30', 60' and 90'
- GH must rise to > 10 ng/ml
- Value of > 7 ng/ml indicates partial deficiency

# Growth hormone therapy

- EVOLUTION:
- 1958 - pituitary GH
- 1978 - Creutzfeld-Jacob disease
- 1985 - approval for biosynthetic hGH



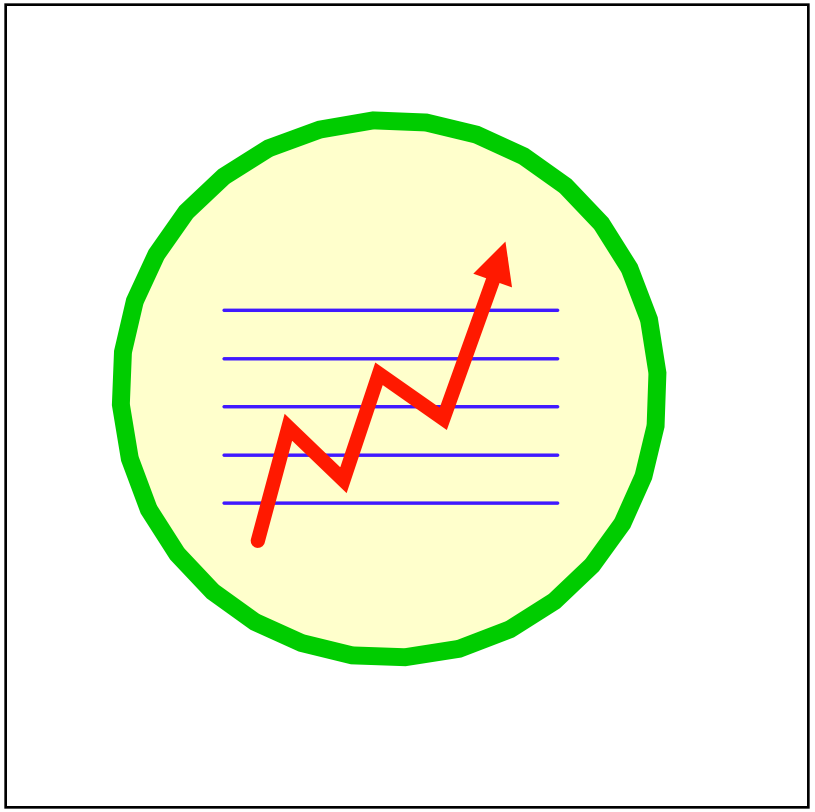
# Growth hormone therapy

- Available only as injection
- Subcutaneous
- Administer after 8.00 pm
- 3 to 7 times a week
- 0.15 to 0.3 mg/kg/week
- Effect is dose-dependent

# Growth hormone therapy

- Effect reduces with time; esp after 3 years
- ?Formation of antibodies
- ?Hypothyroidism
- Side effects more common in adults

# Growth hormone therapy



- Response better if started earlier
- Average increment = 10 cm/year
- Better response in classic GHD
- Higher dose needed in Turner syndrome

# Indications

- GH Deficiency
- IUGR
- Non-GH deficient short stature
  - FSS
  - CGD

- Chronic renal failure
- Burns
- Steroid therapy
- Osteoporosis
- HIV-associated cachexia
- Sports

# Side effects

- Edema
- Arthralgia
- Myalgia
- Muscle stiffness
- Paresthesias
- Carpal tunnel syn
- Hypertension
- Melanocytic nevi
- Hypothyroidism


HEM
HMM

# Who Moved My β Cheese ?

WHO KEPT ME SHORT ?


THANK YOU
FOR YOUR TIME