Clinical Design & Innovation
Person-centred, co-ordinated care

PAEDIATRICS

FACULTY OF PAEDIATRICS
ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The Short Child

BACKGROUND

- Short stature: Height < 2 SD below mean for population (< 2nd centile)
- Most cases are variant of normal physiology as oppose to pathological (familial, constitutional delay)
- Paediatric challenge to identify pathology without excess investigations

3 X PHASES OF GROWTH

Infantile:
- Rapid, decelerating
- Mean 25cm in Year 1, 12.5cm in Year 2
- Dependant on nutrition and thyroid status

Childhood
- Predominates 6mo – 3 years
- Dependant on GH / IGF axis and thyroid hormone
- Mean 5-7cm / year

Pubertal
- Dependant on pubertal hormones
- Girls mean peak height velocity 8cm / yr

DIFFERENTIAL DIAGNOSIS

- Physiological: Familial, Constitutional Delay
- Short stature following SGA
- Genetic / Syndromic (eg: Russell Silver, Fetal alcohol)
- Chronic Disease (eg: Coeliac, Crohns, CF)
- Turner's Syndrome
- Endocrine: GH deficiency, Hypothyroidism, Cushings
- Skeletal dysplasia
- Psychosocial deprivation
- Poor nutrition

HISTORY

- Antenatal / Birth history / Birth weight
- General Health / Medical Events (eg: Repeat infections, abdo pain, stool pattern, atopy, headaches,vision, seizures)
- Medications (inhalers, steroids)
- Family history (Parents / sibling heights, family pubertal history - parents' timing of puberty (mother's age of menarche and fathers height in school and signs of puberty))
- Consanguinity
- Social / education history

AUXOLOGY

- Height of patient (stadiometer; use supine length < 2 years supine
- Height of both parents
- Calculate Mid Parental Height
- Plot on Centile Chart
- Calculate Growth Velocity (cm/yr) - requires measurement after an interval of no less than 4 months

EXAMINATION

- Appearance / nutrition
- Dysmorphic features
- Body proportions
- Systemic examination including cardiac and BP measurement
- Visual Acuity / Visual fields
- Tanner Pubertal Staging
- Full CNS or neurological examination including fundoscopy and visual fields

INDICATIONS FOR FURTHER INVESTIGATION

- Marked short stature (< 2nd centile)
- Height centile below MPH range
- Hx suggesting chronic disease
- Hx of hypoglycemia / prolonged jaundice (hypopituitarism)
- Dysmorphic features
- Pubertal delay
- Abnormal height velocity for pubertal stage
- Parental concern re: poor height gain

BASELINE INVESTIGATIONS

- FBC, U+E, Creatinine, LFT
- ESR, CRP
- TFTs
- Coeliac screen witha IgA level
- Karyotype (esp in short girls)
- Bone Age (Xray left wrist for skeletal maturity)

INDICATION FOR SUBSPECIALIST REFERRAL

- Significant short stature
- Poor growth velocity
- Precocious puberty (girl < 8, boy < 9)
- Delayed puberty (girl > 13, boy > 14)
- SGA with no catch up growth over 2 years
- Dysmorphic features

SUBSPECIALIST INVESTIGATIONS

- IGF1, IGF-BP3
- Pubertal evaluation
- GH stimulation testing where indicated

MID PARENTAL HEIGHT

Boy:
Plot father on centile chart
Plot maternal height plus 13cm

Girl:
Plot mother on centile chart
Plot paternal height minus 13cm on chart

MPH is **midpoint between values**
Predicted child height **range is +/- 8.5cm from MPH**

TAKE HOME MESSAGES

- Accurate measurements of child and both parents is required in short stature cases along with parent timing of puberty. Child's birth weight should also be noted
- Baseline investigations should be directed towards most likely primary cause
- Consider subspecialist referral as per indications listed above

Ref: Short Child Form 10/23. CDI/0069/2.0/2023