

PUBERTY AND MENOPAUSE

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REPRODUCTIVE HEALTH

Outline - Puberty

- Definition - Puberty
- Pubertal changes
- Precocious puberty
- Delayed puberty

Puberty – definitions

- Transition from childhood into adulthood with regard to reproductive function
- Transition from sexual immaturity to maturity
- Occurs at 11-15 years on average
- Occurs a little earlier in girls than in boys
- Involves appearance of secondary sexual characteristics and a growth spurt

Pubertal changes in girls

- Enlargement of breast bud (thelarche) is the earliest sign
- Pubic hair (puberche) a year later
- Growth spurt – same time as puberche
- Deposition of subcutaneous fat to give typical female contour to the body
- Enlargement of genitalia
- Appearance of axillary hair

Pubertal changes in girls contd.

- Changes in bony pelvis to acquire typical female form
- Psycho-social changes – interest in opposite gender, shyness, fluctuating moods – influenced by education, socialization
- Menarche – due to increase in amplitude of GnRH production – higher levels of estrogen - endometrial proliferation – shedding

Precocious puberty

- Any combination of the pubertal changes occurring too early
- Primary = GnRH dependent
 - Due to an early rise in GnRH production
 - May be complete or incomplete
- Secondary: - due to some underlying disorder of the endocrine system – independent of GnRH

Causes of precocious puberty – GnRH dependent

- Complete :
 - Constitutional – commonest
 - Juvenile primary hypothyroidism
 - Intracranial lesions – trauma, tumor, infection
- Incomplete:
 - Premature thelarche – (before 8 years)
 - Premature puberche – (axillary, pubic hair before 8 years)
 - Premature menarche - (before 9 years)

GnRH independent precocity

- Pseudopuberty, peripheral causes – excess estrogen or androgens
- Ovary
 - Granulosa cell tumor, Theca cell tumor, Leydig cell tumor, Chorionic epithelioma, Androblastoma
- Adrenal
 - Hyperplasia, tumor
- Liver : - hepatoblastoma
- Iatrogenic :- Oestrogen or androgen intake

Management of precocious puberty

- Goals:
 - Reduce gonadotrophin secretion
 - Suppress gonadal hormone secretion or counteract effects of sex steroids on tissues
 - Decrease growth rate to normal – slow down skeletal maturation
 - Protect the child from sexual abuse

Management contd.

- Drugs:
 - GnRH agonists = 1st line – suppress FSH,LH secretion – reverses ovarian cycle. E.g Buserelin 100mg OD
 - DMPA – 30mg OD or 150mg IM weekly – does not reverse skeletal changes
 - Cyproterone acetate - progestogen
 - Danazol – anti-estrogen

Delayed puberty

- Delay in onset of menstruation beyond age 17 years
- Usually accompanied by hypoplasia of the genital tract
- Causes: associated with
 - Hypergonadotrophic hypogonadism,
 - Hypogonadotrophic hypogonadism or
 - Eugonadism

Causes of delayed puberty

- Hypergonadotrophic hypogonadism
 - Gonadal dysgenesis 45X, ovarian failure 46XX
- Hypogonadotrophic hypogonadism
 - Constitutional delay, Chronic illness, Malnutrition, Primary hypothyroidism, Isolated gonadotrophin deficiency(Kallman's syndrome), Intracranial lesions
- Eugonadism
 - Cryptomenorrhoea, Androgen insensitivity syndrome

Outline - Menopause

- Definition
- Menopausal changes
- Management

Definition

- Cessation of periodic menstrual flow
- End of a woman's reproductive career due to loss of ovarian follicular activity
- Stoppage of menstruation for 12 consecutive months in absence of any other pathology
- Retrospective diagnosis
- Occurs on average at 45-55 years

Definitions contd.

- Pre-menopause = before, post-menopause = after and peri-menopause = just before
- Menopause is abrupt in a few women, but a gradual process - irregular prolonged cycles in the majority
- Climacteric = term used to describe the peri-menopausal period

Definitions contd. - 2

- Premature = before 40 years
- Early = 40-44years
- Delayed = beyond 55 years – associated with DM, fibroids, estrogen producing tumors
- Artificial menopause = surgical removal, radiation therapy

Menopausal changes/symptoms

- Vasomotor symptoms – hot flushes
- Urogenital atrophy
- Osteoporosis
- Cardiovascular disease
- Cerebrovascular disease
- Psychological changes
- Skin and hair changes

Diagnosis of menopause

- Cessation of menstruation for 12 months
- Appearance of menopausal symptoms
- Serum estradiol levels $< 20\text{pg/ml}$
- Serum FSH and LH $> 40\text{mIU/ml}$ – at least 3 values taken at 1 week or more intervals

Management

- Non-hormonal
 - Nutrition – calcium, protein rich, Vit D supplements, soy proteins for vasomotor
 - Exercise/life style – walking, stop alcohol, smoking
 - Biophosphanates – Alendronate, Ibandronate
 - Calcitonin – Ca⁺⁺ sparing
 - Selective estrogen receptor modulators – for bone density, inhibits E2 receptors in breast and uterus

Management contd

- Non hormonal contd.
 - Clonidine – hot flushes
 - Thiazides – reduced Ca^{++} excretion
 - Phytoestrogens e.g. isoflavanes

HRT - benefits

- Improvement in:
- vasomotor symptoms (70-80%)
- Urogenital atrophy
- Bone mineral density
- Decrease in:
- Fractures
- Colorectal cancer

HRT - Risks

- Endometrial cancer
- Breast cancer
- Thrombo-embolism
- Coronary artery disease
- Lipid metabolism
- Dementia, Alzheimers disease

Andropause

- Physical and psychological changes that occur in men as they grow older due to decreasing testosterone levels
- Age of onset and severity highly variable
- Decrease in testosterone due to:
 - Decreased production – physiological hypogonadism
 - Increase in sex hormone binding globulin(SHBG)
 - reduces bio-available testosterone

Symptoms of Andropause

- Vary from person to person but include:
 - Low sex drive
 - Difficulty in getting erections or erections that are not as strong as before
 - Lack of energy – Lethargy
 - Loss of strength or muscle mass
 - Irritability and mood swings
 - Increased body fat
 - Hot flushes
 - Depression

Diagnosis

- Symptoms
- Blood testosterone levels
- Differential diagnosis:
 - Hypogonadism
 - Diabetes
 - Hypertension

Treatment

- Supportive = Lifestyle change:
 - Exercise
 - Stress reduction
 - Good nutrition
- Specific = Testosterone replacement therapy
 - Skin patch – dry skin – trunk, thighs
 - Testosterone gel - arms
 - Capsules – BD after meals
 - Injection – testosterone enanthate every 2-4 wks

Adverse effects

- Mood swings
- Testosterone should not be taken by any man with:
 - Prostate cancer
 - Breast cancer
 - BPH
 - Kidney disease
 - Liver disease