ANTERIOR PITUITARY DISEASES

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Presentation of ant. pituitary disease
Hypopituitarism

• Describes deficiency of any of the anterior pituitary hormones. The most common is pituitary macroadenoma.

• Clinical assessment—presentation is variable, following radiotherapy

• GH secretion is often the earliest to be lost. In adults, this produces

• Lethargy, muscle weakness and increased fat mass. Next gonadotrophin (LH and FSH) secretion become impaired with loss of libido in the male and oligomenorrhoea and amenorrhoea in the females. Later in the male there may be gynaeacomastia and decrease frequency of shaving. In both sexes, axillary and pubic hair eventually become sparse or even absent, the skin becomes finer and wrinkled.
• ACTH resulting in symptoms of cortisol insufficiency (including postural hypotension and dilutional hyponatraemia). In contrast to primary adrenal insufficiency, angiotensin 11 (two) dependent zona glomerulosa function is not lost and hence aldosterone secretion maintains normal plasma potassium. Striking degree of pallor is present. Secondary hypothyroidism is present contributing to apathy and cold intolerance, but frank myxoedema is rare.
Management

• Cortisol replacement
• Thyroid hormone replacement, depends on T4 level.
• Sex hormone replacement, above 50 to prevent osteoporosis
• Growth hormone replacement, after replacing hydrocortisone, levothyroxine and sex steroids, if some are still lethargic and unwell, we have to give them GH replacement, which may help youngsters to achieve a higher peak bone mineral density.
Pituitary Tumours

• Produce a variety of mass effects depending on their size and location, and also present as incidental finding on CT or MRI. or with hypopituitarism.
• Intracellular are non-functioning macroadenoma.
• Supracellular are craniopharyngioma.
• Paracellular are craniopharyngioma, with subsequent compression of 3, 4, and 6\textsuperscript{th} nerves, but it is unusual presentation (diplopia and strabismus)
• Headache, common but non-specific, due to stretching of the diaphragma sellae.
• Occasionally, pituitary tumours infarct or there might be bleeding into cystic lesions, this is termed pituitary apoplexy which cause acute onset of hypopituitarism. Non- haemorrhagic infarcts can occur in normal pituitary in Sheehan’s syndrome, DM and raised intracranial pressure.
• Investigations-MRI or CT scan.
Local complications
- Headache
- Visual field defect
- Disconnection hyperprolactinaemia
- Diplopia (cavernous sinus involvement)
- Acute infarction/expansion (pituitary apoplexy)

Hormone excess

Hyperprolactinaemia
- Galactorrhoea
- Amenorrhoea
- Hypogonadism

Acromegaly
- Headache
- Sweating
- Change in shoe and ring size

Cushing's disease
- Weight gain
- Bruising
- Myopathy
- Hypertension
- Striae
- Depression

Macroadenoma (arrows) > 10 mm diameter

Microadenoma (arrow)

Hypopituitarism

Growth hormone
- Lethargy

Gonadotrophins
- Lethargy
- Loss of libido
- Hair loss
- Amenorrhoea

ACTH
- Lethargy
- Postural hypotension
- Pallor
- Hair loss

TSH
- Lethargy

Vasopressin (usually post-surgical)
- Thirst and polyuria
Management

• Urgent treatment is required in evidence of visual pathway pressure, full recovery is unusual if defect is present for more than 04 months.

• Serum prolactin must be measured before emergency surgery is performed, if prolactin is over 5000mlU/L, dopamine agonist is used which causes shrinkage of the macroadenoma.

• Pituitary functions test are done 4-6 wks and, post- surgical MRI is done 3-6 months to detect any residual mass, and after histopathological confirmation, as external radiotherapy can be given.

• In microadenoma causing no mass effect then, follow up by neuroimaging without a clear-cut diagnosis having been established is advised.
Hyperprolactinaemia

- Females - hypogonadism, galactorrhea,
- Males - hypogonadism
- Prolactin may be bound to IgG antibodies (macroprolactinaemia). It is of no pathological importance, not to be confused by macroprolactinoma, a prolactin secreting pituitary tumour of more than 1cm in diameter.
18.58 Causes of hyperprolactinaemia

Physiological
- Stress (e.g. post-seizure)
- Pregnancy
- Lactation
- Nipple stimulation
- Sleep
- Coitus
- Exercise
- Baby crying

Drug-induced

Dopamine antagonists
- Antipsychotics (phenothiazines and butyrophenones)
- Antidepressants
- Antiemetics (e.g. metoclopramide, domperidone)

Dopamine-depleting drugs
- Reserpine

Oestrogens
- Oral contraceptive pill
- Methyldopa

Pathological

Common
- Disconnection hyperprolactinaemia (e.g. non-functioning pituitary macroadenoma)
- Prolactinoma (usually microadenoma)
- Primary hypothyroidism
- Polycystic ovarian syndrome
- Macroprolactinaemia

Uncommon
- Pituitary tumour secreting prolactin and growth hormone
- Hypothalamic disease
- Renal failure

Rare
- Cerebrospinal fluid (e.g. post herpes zoster)
Investigations

Pregnancy test.

Prolactin level 500-1000 ml/U stress or drugs.

1000-5000 drugs or (macroprolactinoma) or disconnection

Hyperprolactinaemia.

Above 5000 are highly suggestive of macroadenoma. LH, FSH, TSH to exclude hypothyroidism causing TRH-induced prolactin excess. MRI pituitary.

Management - cessation of offending drug, thyroxine for primary hypothyroidism. If gonadal dysfunction is the primary concern sex steroid replacement therapy may be indicated. Physiological galactorrhoea can be given dopamine agonist.
Prolactinoma

• In premenopausal women they are mostly microadenoma, Prolactin-secreting cells of the ant. pituitary share a common lineage with GH-secreting associated cells (pituitary acidophils), so occasionally prolactinoma can secrete GH and cause acromegaly. Macroadenoma can elevate prolactin to above 100,000 mU/L.

• The investigations of prolactinoma is the same as other pituitary tumours.

• Dopamine agonist visual field defects may improve within days of starting treatment. Possible to withdraw treatment without recurrence after few years in some microadenomas. In macroadenoma only after surgery or radiotherapy. After menopause treated only if galactorrhoea is troublesome.
Acromegaly

- Acromegaly is caused by GH secreted by a pituitary tumour, usually a macroadenoma and carries a twofold excess mortality when untreated.
Clinical features of acromegaly. (IGT = impaired glucose tolerance)
Investigations

• GH level measurement during GTT and measuring IGF-1. Pituitary hormones must be measured prolactin in particular as 30% of cases are associated with prolactin secreting tumour.

• Treatment - surgery, radiotherapy, (octreotide) and dopamine agonist in case prolactinoma are added.
Craniopharyngioma

• They are usually benign tumours that develop in the cell nests of Rathke’s pouch, and may be located in the sella turcica, or more commonly in the suprasellar space.

• Presentation-pressure on adjacent structure, or hypopituitarism or cranial diabetes insipidus.

• Hypothalamic damage- Hyperphagia and obesity, loss of the sensation of thirst, and disturbance of temperature regulations.

• Treatment is surgical removal and radiotherapy.