Pituitary Adenomas in Patients with Multiple Endocrine Neoplasia

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Pituitary Tumors
General Overview

• The pituitary gland is the brain’s regulator of hormone production
• Pituitary tumors are relatively common
• Pituitary tumors are almost always benign
• Pituitary tumors can cause significant hormonal dysfunction
• More than 25% of patients with MEN type 1 will develop a pituitary tumor
Pituitary Gland

Anatomy
Pituitary Gland

Anatomy

- Anterior pituitary:
  - Pars tuberalis
  - Pars intermedia
  - Pars distalis

- Posterior pituitary:
  - Infundibular stalk
  - Pars nervosa

- Optic chiasm
- Median eminence
- Hypophyseal fossa in sella turcica of sphenoid bone
Pituitary Gland

Hormonal Function

- ACTH
- TSH
- GH
- Prolactin

Anterior Pituitary

Posterior Pituitary

Gonadotropins (FSH, LH)

Adrenal Cortex

Bone

Muscle

Thyroid

Ovary

Testis

Breast

Kidney

Oxytocin

ADH

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Pituitary Tumors

General Features

• Incidence
  - 8000 new tumors diagnosed in US annually
  - Up to 10% of population have undiagnosed tumors at autopsy
• > 98% of pituitary tumors are benign adenomas

• Symptoms
  - Headache
  - Visual Symptoms
    - Visual Acuity
    - Peripheral Vision
    - Restricted Eye Movements
  - Hormonal dysfunction
Pituitary Tumors

General Features

Microadenoma (< 1 cm)

Macroadenoma (> 1 cm)
Pituitary Tumors

Hormonal Effects

• Non-functional Adenomas (30%)
  − Do not secrete hormones
  − May compress normal gland and decrease normal hormone production

• Functional Adenomas
  − Prolactin secreting (40%)
  − Growth hormone secreting (20%)
  − Corticotropin secreting (7%)
  − Gonadotropin secreting (<1%)
  − Thyrotropin secreting (<1%)
  − Some tumors secrete more than one hormone
  − May compress normal gland and decrease other hormone production
Pituitary Tumors in MEN

Differences in MEN type 1 patients

• 25% to 50% of MEN type 1 patients will develop a pituitary tumor
• 2/3 of tumors are microadenomas
• Distribution of hormone secretion is same as in non-MEN population
  – Majority of tumors are prolactinomas or non-functional
  – MEN patient more likely to have multi-hormonal secretion
• MEN tumors may be more aggressive with increased likelihood of invasion
Management of Pituitary Tumors
Diagnosis and Evaluation

Multidisciplinary Evaluation

• Evaluation by Endocrinologist
  - Hormone testing
  - Medications to supplement deficiencies
• Evaluation by Ophthalmologist
  - Formal visual fields
• MRI Scan
• Evaluation by Neurosurgeon
Treatment Options

- Observation
- Surgery

- Medication
- Radiation
Surgery

• Endonasal Transphenoidal Tumor Resection
• Indications
  – Documented rapid growth
  – Failure of medical therapy
  – Compression of optic nerves/chiasm
  – Diagnostic
  – Reduce dependence on medical therapy
• Can be performed with endoscope or microscope
Surgery

Endoscopic
Surgery
Microscopic
Surgery
Video
Pituitary Emergencies

Apoplexy

• Bleeding into pituitary tumor with rapid expansion

• Symptoms
  – Sudden onset headache
  – Rapid visual loss
  – Restricted eye movements
  – Stroke-like symptoms
  – Acute adrenal insufficiency – hemodynamic collapse

• This is a life threatening emergency and requires immediate attention

• Usually requires emergent surgery if vision is impaired
Thank You For Attending