Pituitary Adenomas: Evaluation and Management

Fawn M. Wolf, MD

10/27/17
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<td><strong>Total</strong></td>
<td><strong>18,631</strong></td>
<td><strong>1,969</strong></td>
<td><strong>10.6%</strong></td>
<td><strong>7</strong></td>
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Each series is identified by the authors and by the reference number.

PRL-positive indicates the percentage of tumors that had positive immunostaining for PRL, indicating that they were prolactinomas.
Over 18,000 pituitaries examined at autopsy:
- 10.6% contained adenomas (1.5-27%)
- Frequency similar for men and women and across all age groups
- Vast majority were microadenomas
- Approximately half stained for prolactin (22-66%)

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Endocrine Evaluation: Functional Adenomas

- Prolactin. 10-40% of adenomas are prolactinomas
  - YES

- Acromegaly (growth hormone): IGF-1. 2-10% of adenomas are GH secreting.
- Cushing’s disease (ACTH): cortisol. 1-15% of adenomas are ACTH secreting.
  - Maybe

- FSH/LH
- TSH
  - No
Endocrine Evaluation: Hypopituitarism

• Macroadenomas and larger microadenomas (6-9mm):
  – Common, screening recommended

• Smaller microadenomas (<6mm):
  – Hypopituitarism rarely occurs
  – Screen only if clinically indicated
Evaluation for Hypopituitarism

- FSH/LH: common, occurs in 30-70% of patients
  - Pre-menopausal women: menstrual history
  - Post-menopausal women:
    - No HRT: draw FSH, should be elevated
    - HRT: labs unhelpful
  - Men
    - FSH, LH, total +/- free testosterone
Evaluation for Hypopituitarism

- **ACTH: 20-40%**
  - Central adrenal insufficiency
  - 8am cortisol or cosyntropin stimulation test
- **GH: 10-50%**
  - IGF-1: neither sensitive nor specific. Falsely low: obesity, insulin resistance.
  - Stimulation test: insulin, glucagon
- **TSH 20-40%**
  - Overtly low free T4 (or significant drop from known baseline), with inappropriately normal or low TSH
- **PRL:**
  - Inability to lactate; overtly low PRL typically only seen following apoplexy
Hyperprolactinemia

• Clinically apparent prolactinomas: 5-50/100,000

• Hypogonadism
  – Prolactin inhibits gonadotropin release
  – Full spectrum of severity
  – Bone loss (trabecular)

• Galactorrhea
Diagnosis of Prolactinomas

- Serum draw, any time of day
- Avoid chest wall stimulation, sexual intercourse, intense exercise for 24 hours prior
- >250mcg/L: likely a prolactinoma
  - Risperidone, metoclopramide can occasionally cause PRL in the 200s
- < 250mcg/L: prolactinoma versus non-tumor cause
  - Numerous meds
  - Stalk effect: macroadenomas leading to stalk inhibition as the cause of hyperprolactinemia typically lead to PRLs < 95 mcg/L
When to Consider Cushing’s Syndrome

• Rapid weight gain with proximal weakness
• Patients with unusual features for age (HTN, osteoporosis)
• Patients with multiple and progressive features
• Adrenal adenomas
Diagnosis of Cushing’s Syndrome

- 24h urine free cortisol (UFC)- 2 samples
- Late night salivary cortisols- 2 samples
- 1mg overnight dexamethasone suppression test (ONDST)

- Do not use:
  - 8 am cortisol
  - Imaging prior to biochemical diagnosis
Acromegaly: Clinical Features

• Soft tissue: hands, feet (ring/shoe size), tongue (macroglossia), nerve impingements (carpal tunnel), pharynx/larynx (sleep apnea in 50-70%)

• Bone: coarse facial features, enlarged jaw (macronathia), teeth spread apart, dental malocclusions, increase in BMD

• Skin: skin thickens (difficult venipuncture), skin tags, excessive sweating, hirsutism

• Joints: hypertrophic arthropathy

• Viscera: thyroid (goiter +/- nodules)
When to Suspect Acromegaly

• Combination of DM2, sleep apnea, arthritis/tendonitis, especially if BMI is normal or in the absence of a FH of DM2
• New dental malocclusions
• Heat intolerance, sweating
• Hand/foot swelling
Acromegaly: Diagnosis

• Biochemical diagnosis, not a clinical diagnosis
• Screening IGF-1
  – Nearly always elevated in patients with acromegaly
  – Few physiologic causes of high IGF-1: puberty and pregnancy
• Confirmation: 75g oral glucose tolerance. At 2 hours, GH < 1 ng/ml rules out acromegaly.
Additional Work-up

• Formal visual field (VF) testing for all patients with an incidentaloma abutting the optic nerves or chiasm, even if there are no apparent visual symptoms

• Pituitary dedicated MRI (fine cuts though the sella w/w/o gadolinium), if initial study was a CT or brain MRI
Indications for Surgery

• Visual field deficit, ophthalmoplegia or neurological compromise due to the lesion
• Lesion abutting/compressing optic nerves or chiasm
• Apoplexy with visual disturbance
• Functional tumors, other than prolactinomas

• Consideration of surgery: significant growth over time, hypopituitarism (with resolution in 15-50% of patients), lesions close to the optic chiasm with plans for pregnancy
Evaluation of pituitary function

Hyperfunctioning
- Prolactinoma
  - Dopamine agonist
- Other
  - Surgery

Clinically nonfunctioning
- <1cm
  - Repeat MRI at 1, 2, 5 yrs
    - No change
      - No further studies (?)
  - >1cm
    - Visual fields R/O pituitary hypofunction
      - Repeat MRI at 0.5, 1, 2, 5 yrs
        - Abnormal fields
          - Surgery
      - Tumor growth
        - Surgery