

Diagnosis and Treatment of Pituitary Gland Disorders: Review Questions

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QUESTIONS

Choose the single best answer for each question.

- A 65-year-old woman presents to her primary care physician complaining of persistent headaches. Magnetic resonance imaging (MRI) of the brain shows a 1-cm pituitary mass that extends to the optic chiasm. The patient denies any visual problems and says that her annual eye examination a few months ago was normal. Results of hormonal testing reveal suppressed follicle-stimulating hormone and luteinizing hormone; levels of prolactin, total thyroxine, cortisol, and insulin-like growth factor-1 are normal. What is the next best step in the management of this patient?

 - Perform a dual-energy x-ray absorptiometry (DEXA) bone density scan
 - Perform a visual fields test
 - Refer to a neurosurgeon for surgical removal of the mass
 - Start estrogen replacement therapy
 - Treat with bromocriptine
- A 32-year-old woman presents to her primary care physician with palpitations, excessive sweating, and irregular menstrual periods. Physical examination is notable for a pulse of 110 bpm and diffuse nontender enlargement of the thyroid. The physician suspects hyperactive thyroid and orders thyroid function tests, which reveal a thyroid-stimulating hormone (TSH) level of 6 μ IU/mL (normal, 0.5–5.0 μ IU/mL) and a free thyroxine level of 3.4 ng/dL (normal, 0.71–1.85 ng/dL). What is the best test to confirm the cause of this patient's problem?

 - Antithyroid antibodies
 - MRI of the pituitary gland
 - Thyroid scan and uptake
 - Total triiodothyronine
 - Ultrasound of the thyroid
- A 45-year-old man with impotence is referred by his primary care physician to an endocrinologist. An extensive work-up performed by his physician revealed a prolactin level of 856 ng/mL (normal, 0–15 ng/mL) and a free testosterone level of 125 ng/dL (normal, 260–1000 ng/dL). An MRI of the brain reveals a 5-mm pituitary tumor. Which of the following is first-line treatment for this patient?

 - Bromocriptine alone
 - Bromocriptine and testosterone replacement therapy
 - Bromocriptine and pituitary surgery
 - Pituitary surgery and radiation therapy
 - Testosterone replacement therapy alone

Questions 4 and 5 refer to the following case.

A patient with acromegaly undergoes surgery to remove a pituitary adenoma, which was thought to have been producing excessive growth hormone. The day after surgery, the patient develops polyuria. The patient's urine specific gravity is 1.000 (normal, 1.002–1.028).

- What is the most likely explanation for this patient's polyuria?

 - Diabetes insipidus caused by posterior pituitary damage
 - Diuresis caused by the decrease in growth hormone circulation
 - Hypercalcemia caused by the anesthetic medication administered during surgery
 - Hyperglycemia caused by excessive growth hormone

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(E) Hypokalemia caused by fluid administration during surgery

5. **What is the best treatment option for this patient?**

- (A) No treatment is needed
- (B) Hydration
- (C) Insulin
- (D) Pamidronate
- (E) Pitressin

ANSWERS AND EXPLANATIONS

1. **(B) Perform a visual fields test.** According to results of her hormonal work-up (ie, normal pituitary hormone levels), this patient has a nonfunctioning pituitary incidentaloma. To select a treatment strategy, a visual fields test is needed to determine if the pituitary mass is putting pressure on the optic chiasm. Bromocryptine would not be beneficial in this setting, and surgical intervention becomes an important consideration when there is a visual field abnormality.¹ Neither DEXA bone scan nor estrogen replacement therapy is necessary at this point.
2. **(B) MRI of the pituitary gland.** The only way the thyroid function test results can be compatible with a hyperthyroid state is if the patient has a TSH-secreting adenoma of the pituitary gland. An MRI can be used to determine the cause of the patient's hyperthyroidism. All of the other tests either confirm hyperthyroidism or the state of the thyroid but do not confirm the cause of the thyroid's overactivity.
3. **(A) Bromocryptine alone.** Low levels of testosterone are related to increased levels of prolactin. Prolactin

levels need to be suppressed for the patient to achieve better sexual function. Bromocryptine monotherapy is the first line of treatment in this case. The pituitary mass found on brain MRI is a microadenoma, and no surgical intervention or radiation therapy is necessary. Testosterone replacement therapy would be considered at a later stage and only if the testosterone levels are low after prolactin levels normalize.

4. **(B) Diuresis caused by the decrease in growth hormone circulation.** Excessive growth hormone secretion causes fluid retention in different tissues of the body. After surgery, there is a sudden drop in growth hormone, resulting in self-limited diuresis.² No other electrolytic abnormalities are related to this situation, and there is usually no problem in the posterior pituitary; therefore, diabetes insipidus should not be expected. If there was a problem with hyperglycemia, the urine specific gravity would be elevated.
5. **(A) No treatment is needed.** Diuresis is a self-limited problem, and no intervention is required. Pitressin, pamidronate, hydration, or insulin would be necessary if the patient had electrolyte abnormalities or if blood glucose levels were elevated.

REFERENCES

1. Mavrakis AN, Tritos NA. Diagnostic and therapeutic approach to pituitary incidentalomas. *Endocrine Pract* 2004;10:438–44.
2. Colao A, Ferone D, Marzullo P, et al. Systemic complications of acromegaly: epidemiology, pathogenesis and management. *Endocrine Rev* 2004;25:102–52.

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