Thyroid disease – Q&A

Question #1

A 16-year-old girl presents for follow-up of autoimmune hypothyroidism. Thyroid labs were checked 6 months ago, and they were normal. She had been compliant taking 125 mcg of levothyroxine every day, but she stopped taking it 3 months ago. She noted that she has been tired, constipated, and her menstrual periods are irregular. If measured, which of the following labs would you expect to be elevated?

A) HDL cholesterol
B) IGF-1
C) Prolactin
D) Hemoglobin

Answer: C

TRH (from the hypothalamus) stimulates TSH as well as prolactin. The other tests may be abnormal, but the patient would have to have profound and prolonged hypothyroidism.

Question #2

A 14-year-old boy is referred to your clinic for concerns of abnormal thyroid function tests. He has recently had tiredness, trouble focusing and listening in school. He is on no medications. Growth records show that both his height and weight have been tracking at the 75th percentile for the last several years. His physical exam in unremarkable, including evaluation of his thyroid gland. Labs were recently obtained by his pediatrician and included: TSH = 2.95 mU/mL, total T4 = 21 mcg/dL, total T3 = 125 ng/dL, and T3 uptake (T3U) = 33% (RR 24-37). Which of the following is the most likely reason to explain his thyroid function test results?

A) Familial dysalbuminemic hyperthyroxinemia
B) Graves disease
C) Resistance to thyroid hormone
D) Thyroxine-binding globulin excess

Answer: A

The patient most likely has a mutation in the serum albumin (ALB) gene resulting in stronger binding to albumin which causes him to have an elevated total T4 level. If the T3U was low, then the labs would be most consistent with TBG excess.

Question 3

You are asked to see an 8-year-old girl with a 6 month history of heart palpitations, tachycardia, and tremor. Physical exam is remarkable for a symmetrically enlarged and palpable thyroid gland. Family is remarkable for hyperthyroidism diagnosed in her father (at 18 y.o.), paternal uncle (at 27 y.o.), and paternal grandmother (at 35 y.o.). Laboratory studies include the following: TSH = 0.02 mU/mL, free T4 = 4.2 ng/dL, total T3 = 595 ng/dL, TSH receptor antibody (TRAb) < 1.75 IU/L, thyroid peroxidase (TPO) antibody <9.0 IU/mL, anti-thyroglobulin antibody <4 IU/mL, and thyroglobulin level = 65 ng/dL. Which of the following is the most likely explanation for this patient's hyperthyroidism?

A) Activating mutation of the TSH receptor
B) Graves disease
C) Ingestion of thyroid hormone
D) Mutation in the thyroid hormone receptor beta

Answer: A

With negative thyroid antibodies and positive family history, along with an enlarged thyroid gland on exam, she most likely has familial non-autoimmune hyperthyroidism.

Question 4

A 15-year-old girl presents to your office for concerns of an enlarged thyroid gland. She has had intermittent symptoms of tachycardia, loose stools, and anxiety over the last few months. She is on no medications. Physical exam reveals a smooth, nontender, symmetric, and easily palpable thyroid gland. Blood pressure is 115/75 and heart rate is 70 beats per minutes. Laboratory testing reveals TSH = 0.02 mU/mL, free T4 = 2.3 ng/dL, total T3 = 195 ng/dL, negative TSH receptor antibody (TRAb), and positive thyroid peroxidase (TPO) antibody. A thyroid uptake scan shows decreased, patchy uptake. Of the following choices, what is the best next step in her management?

A) Arrange for radioactive iodine ablation
B) Prescribe methimazole
C) Repeat thyroid function tests in 4 to 8 weeks
D) Start her on a beta blocker medication

Answer: C

Her vital signs are normal. Physical exam, imaging, and lab results suggest that she most likely has Hashitoxicosis.

Question 5

15-year-old girl presents for evaluation of thyroid enlargement. On exam, her thyroid is smooth, symmetrically enlarged, and nontender. There is no cervical lymphadenopathy. Which of the following is the best test to order to determine if treatment is indicated?

A) Anti-thyroglobulin antibody
B) Free thyroxine
C) Thyrotropin
D) Ultrasound

Answer: C

TSH (or thyrotropin) is the best test to order in the evaluation of thyroid enlargement.