

CASE 1 (Group 1)

A 55-year-old woman presents for a routine physical examination and reports feeling completely well. The only abnormal clinical finding was a palpable multinodular goiter, which she has had for eight years. On thyroid function testing, the serum thyroid-stimulating hormone level (TSH) was undetectable (normal 0.3-3.04); the free thyroxine (T4) level was 1.3 ng/dL (normal, 0.7-1.9); and the free triiodothyronine (T3) level was 2.5 pg/mL (normal, 2.3-4.2). Thyroidal uptake of ¹²³I was 23% at 24 hours (normal, 15-23%); uptake was increased in the palpable thyroid nodules. The bone densitometry T score was -2.5, indicating mild osteoporosis, and the Z score was -1.35, indicating more bone loss than would be expected in a woman her age.

Based on the case information provided above, answer the following questions:

- What symptoms (thyroidal and “extra-thyroidal”), physical findings and laboratory values are suggestive of thyroid disease? What additional information, if any, would be helpful or necessary to establish a specific diagnosis? Why is this important?
- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
- If this patient has thyroid disease, what therapeutic options (drugs, surgery, RAI) are available for the management of this patient’ thyroid disease? Which is most appropriate for this patient? Why? What are possible complications of the therapy you recommend?
- If therapy is appropriate, are any adjunctive therapies required to treat thyroidal or "extra-thyroidal" symptoms? Why?

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CASE 2 (Group 2)

A 24-year-old woman presents for her six-week postpartum examination. She complains of minor depression, anxiety, tachycardia, and heat intolerance. Her weight has dropped to slightly below the pre-pregnancy level. Thyroid function testing showed an undetectable TSH level (normal, 0.3-3.04) and a free T4 level of 2.3 ng/dL (normal, 0.7-1.9). Thyroidal uptake of ¹²³I was 1% at 24 hours (normal, 15-23%).

Based on the case information provided above, answer the following questions:

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CASE 3 (Group 3)

A 72-year-old man presents to the ER complaining of heart palpitations, anxiety, constant diaphoresis and weight loss. Three weeks earlier he presented to the ER complaining of severe GI distress of unknown origin and at that time had undergone radiographic imaging with diatrizoate sodium. This imaging study showed no abnormalities, and the patient was treated for symptoms, reassured and sent home. His physical examination now reveals a large multinodular goiter. Thyroid function test results were as follows: TSH, undetectable (normal, 0.3-3.04); free T4, 3.3 ng/dL (normal, 0.7-1.9); and free T3, 3.5 pg/mL (normal, 2.3-4.2). Thyroidal uptake of ¹²³I was 6% at 24 hours (normal, 15-23%).

Based on the case information provided above, answer the following questions:

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CASE 4 (Group 4)

A 25 yo woman reported to her physician after noting the development of a lump in the right side of her neck. A firm, non-tender, immovable nodule (2x2 cm) occupies the right lobe. The left lobe was barely palpable. This patient has no history of irradiation, no family history of thyroid disease and no symptoms of hypothyroidism or hyperthyroidism. Current TFTs are as follows: TSH of 2.6 μ U/mL (normal 0.3-3.04); free T4 of 0.9 ng/dL (normal, 0.7-1.9); thyroid antibodies, negative.

Based on the case information provided above, answer the following questions:

- What symptoms (thyroidal and “extra-thyroidal”), physical findings and laboratory values are suggestive of thyroid disease? What additional information, if any, would be helpful or necessary to establish a specific diagnosis? Why is this important?
- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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CASE 5 (Group 5)

A 42 yo woman presents to the ER with tremor, sweats, heat intolerance, general weakness, difficulty swallowing and the feeling that she can always feel her heart beating. She claims to have lost about 10 pounds over the past month even though she has a good appetite. A review of her medical history reveals that she has been diagnosed with type 2 diabetes which she manages by diet alone, and arthritis which is treated with aspirin only (5.4 g/day). Physical examination reveals a BP of 170/85, a pulse of 120 bpm and respiration of 25 breaths per minute. Examination of her eyes reveals lid lag and proptosis. A neck examination reveals the presence of a diffusely enlarged thyroid. Her TFTs are: TSH level <0.05 uM/mL (normal, 0.3-3.04); a free T4 level of 4.1 ng/dL (normal, 0.7-1.9); a total F4 of 6 ug/dL (normal, 5-12) and TPO antibodies of 310 uU/mL (normal <100). Other labs include a blood glucose of 295 mg/dL (normal 60-115).

Based on the case information provided above, answer the following questions:

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- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
- If this patient has thyroid disease, what therapeutic options (drugs, surgery, RAI) are available for the management of this patient’ thyroid disease? Which is most appropriate for this patient? Why? What are possible complications of the therapy you recommend?
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CASE 6 (Group 6)

A 25 YO woman presents to the clinic complaining that over the past few months she has difficulty performing many physical tasks due to severe muscle weakness, and frequently feels "hot and sweaty", even when the weather is mild. She also says she can feel her heart pounding all the time and has developed tremors and difficulty swallowing. Physical examination reveals a BP of 180/90, a pulse of 110 beats/min, hyperreflexia, lid lag and a diffusely enlarged thyroid gland. (estimated size, 100 g). Her TFTs are as follows: TT4 of 6 ug/dL (normal, 5-12), free T4 of 1.8 ng/dL (normal, 0.7-1.9) and TSH < 0.05 μ U/mL (normal, 0.3-3.04).

Based on the case information provided above, answer the following questions:

- What symptoms (thyroidal and "extra-thyroidal"), physical findings and laboratory values are suggestive of thyroid disease? What additional information, if any, would be helpful or necessary to establish a specific diagnosis? Why is this important?
- Is any information provided about this patient's social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
- If this patient has thyroid disease, what therapeutic options (drugs, surgery, RAI) are available for the management of this patient' thyroid disease? Which is most appropriate for this patient? Why? What are possible complications of the therapy you recommend?
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CASE 7 (Group 7)

A 81-year-old woman was brought to the ER by her son who reports that she has become withdrawn and uncommunicative over the past several months and now is spending days in her room, staring out the window. Her son reports that his mother has lost considerable weight over the past months, apparently because she does not want to eat. Physical examination reveals atrial fibrillation, pedal edema, and a palpable multinodular goiter. Thyroid function tests are: Undetectable TSH levels (normal, 0.3-3.04) and a free T4 level of 2.3 ng/dL (normal, 0.7-1.9). Thyroidal uptake of ¹²³I is 34% at 24 hours (normal, 15-23%); the scan showed increased uptake in the palpable thyroid nodules.

Based on the case information provided above, answer the following questions:

- What symptoms (thyroidal and “extra-thyroidal”), physical findings and laboratory values are suggestive of thyroid disease? What additional information, if any, would be helpful or necessary to establish a specific diagnosis? Why is this important?
- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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CASE 8 (Group 8)

A 44-year-old woman presents for a routine physical examination. She reports feeling well, and the clinical examination showed no abnormalities. Laboratory test results are normal except for the lipid panel, which showed a total serum cholesterol level of 347 mg/dL (normal <200) and an elevated low-density lipoprotein (LDL) level (173 mg/dL). Further studies showed TSH levels of 16 μ U/mL (normal, 0.3-3.04) and free T4 levels of 0.8 ng/dL (normal, 0.7-1.9).

Based on the case information provided above, answer the following questions:

- What symptoms (thyroidal and “extra-thyroidal”), physical findings and laboratory values are suggestive of thyroid disease? What additional information, if any, would be helpful or necessary to establish a specific diagnosis? Why is this important?
- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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CASE 9 (Group 9)

A 26-year-old woman presents with heavy menstrual bleeding, fatigue, hoarseness and significant weight gain (20 pounds) over the past three months. Her normal menses occur about every 25 days and last about three days. For the past year, however, they have been as frequent as twice a month and have lasted for a week, requiring almost twice the usual number of tampons. On questioning, she acknowledged recent episodes of cold intolerance, which she attributes to unusually cold weather, and occasional muscle cramping and feeling cold much of the time. She also reported that her hairdresser commented that her hair had become dry, coarse, and brittle. Physical examination reveals pale yellow and dry skin, puffy eyelids, delayed deep tendon reflexes and a palpable, firm thyroid. Thyroid function testing showed a serum TSH level of 85 $\mu\text{U/mL}$ (normal, 0.3-3.04) and a free T4 level of 0.4 ng/dL (normal, 0.7-1.9). The serum thyroid antiperoxidase antibody level (TPO antibodies) was 9.3 U/mL (normal, <1.0). Thyroid uptake of ^{123}I was 1% at 24 hours (normal, 15-23%). Other laboratory tests: hematocrit (Hct) of 33% (normal, 36-36%); hemoglobin (Hgb) of 12 g/dL (normal, 12-16); red blood cell (RBC) count of 3500/mm³ (normal, 4000-5200) and mean corpuscular volume (MCV) of 104 mm³ (normal, 80-100).

Based on the case information provided above, answer the following questions:

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- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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CASE 10 (Group 10)

A 72-year-old woman is brought to the ER after being discovered unconscious by her daughter. Shortly after arrival, the woman had a grand mal seizure. The daughter reported that her mother had become senile during the past year, appearing to be withdrawn and uninterested in her surroundings. In recent weeks, she had experienced severe constipation and abdominal bloating and had become very unsteady on her feet. In the ER the patient could be aroused but was incoherent and disoriented. Her blood pressure was 170/110 mm Hg, pulse 50 bpm and regular, and rectal temperature 35°C. The skin was yellowish, dry, and coarse. The precordial pulse was not palpable, and there were bilateral pleural effusions as well as evidence of ascites and pitting edema of the legs. Laboratory tests showed a reduced serum sodium level of 120 mEq/L and an elevated serum creatinine level of 2.3 mg/dL. Cerebrospinal fluid obtained by lumbar puncture had a high protein content but was otherwise normal. Computed tomography of the head showed no abnormalities. Chest x-ray showed bilateral pleural effusions and an enlarged, globular heart. Echocardiography showed a moderate pericardial effusion. During the night, the patient became delirious, and the intern ordered a sedative. The next morning she could not be awakened. Thyroid function tests showed a TSH level of 258 μ U/mL (normal, 0.3-3.04); free T4 could not be detected (normal, 0.7-1.9).

Based on the case information provided above, answer the following questions:

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- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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CASE 11 (Group 11)

A 42 yo man reports to his physician complaining of fatigue, dry skin and constipation. He has a 10 year history of alcoholism, and has cirrhosis and grand mal seizures currently treated with phenytoin (300 mg./day) and phenobarbital (90 mg at night). He also has rheumatoid arthritis for which he only takes aspirin (20 tablets per day). TFT results: TT4, 4.2 ug/dL (5-12 normal), FT4, 0.6 ng/dL (0.7-1.9 normal), TSH, 2.5 μ U/mL (0.3-3.04 normal).

Based on the case information provided above, answer the following questions:

- What symptoms (thyroidal and “extra-thyroidal”), physical findings and laboratory values are suggestive of thyroid disease? What additional information, if any, would be helpful or necessary to establish a specific diagnosis? Why is this important?
- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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CASE 12 (Group 12)

A 58 yo female presents to her physician complaining of progressive tremors, dizziness and ataxia over the past several months, along with weight loss. She had an MI several months ago complicated by malignant ventricular ectopy that was treated with amiodarone. She also has Parkinsonism, type I diabetes and diabetic gastroparesis. Her current medications include amiodarone (ventricular ectopy), metoclopramide (diabetic gastroparesis), insulin (type 1 diabetes), bromocriptine (Parkinsonism) and levodopa/carbidopa (Parkinsonism). She has a palpable but normal thyroid. TFTs: TT4 14.5 ug/dL (5-12 normal), FT4 2.3 ng/dL (normal 0.7-1.9), TSH 3.8 μ U/mL (normal 0.5-4.7); TT3 40 ng/dL (70-132 normal) and TPO antibodies, 40 IU/L (normal <100).

Based on the case information provided above, answer the following questions:

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- Is any information provided about this patient’s social history, family history, medical history or current medications that is important in terms of potential thyroid disease? What additional information of this type, if any, would be helpful to establish a specific diagnosis?
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