

Hypothyroidism: Review Questions

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QUESTIONS

Choose the single best answer for each question.

- 1. Which of the following can cause myxedema coma?**
 - A) Advanced progression of hypothyroidism
 - B) End-stage Graves' disease
 - C) Overdose of propylthiouracil
 - D) Uncontrolled diabetes
- 2. Which of the following is the most common cause of hypothyroidism?**
 - A) Acute thyroiditis
 - B) Hashimoto's disease
 - C) Radioactive iodine exposure
 - D) Thyroidectomy
- 3. A patient has a normal serum thyrotropin (TSH) level, but a low thyroxine (T₄) level. What is the most appropriate diagnosis and treatment?**
 - A) Euthyroid sick syndrome; no treatment necessary
 - B) Hyperthyroidism; administer Lugol's solution
 - C) Pituitary dysfunction; delay treatment until further work-up has been completed
 - D) Primary hypothyroidism; administer levothyroxine
- 4. Which of the following is the most common cause of goiter?**
 - A) Iodine deficiency
 - B) Iodine excess
 - C) Kwashiorkor
 - D) Marasmus
- 5. Which of the following is the best therapy for hypothyroidism?**
 - A) Dessicated thyroid
 - B) Levothyroxine
 - C) Liothyronine
 - D) Liotrix
 - E) Methimazole
- 6. What is the recommended dosage of levothyroxine in elderly adults with stable primary hypothyroidism?**
 - A) Initial dose of 25 µg daily, titrated every 4 to 6 weeks to achieve a normal serum TSH level
 - B) Initial dose of 50 µg daily, titrated every 2 weeks to achieve a normal serum TSH level
 - C) Initial dose of 75 µg daily, titrated every 2 weeks until the TSH level is suppressed below 0.1 mU/L
 - D) Initial dose of 100 µg daily, titrated every 2 months to achieve a normal T₄ level
 - E) Initial dose of 100 µg daily, titrated every 4 weeks to achieve a normal T₄ level
- 7. Which of the following is NOT a clinical symptom of hypothyroidism?**
 - A) Cold intolerance
 - B) Depression
 - C) Diarrhea
 - D) Muscle cramps
 - E) Weight gain

(turn page for answers)

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EXPLANATION OF ANSWERS

1. **(A) Advanced progression of hypothyroidism.** Myxedema coma, a rare and life-threatening condition, results from a progression of hypothyroidism. Common precipitating factors are infection, medication, and environmental stress. Graves' disease causes hyperthyroidism. Propylthiouracil is used to treat hyperthyroidism. Uncontrolled diabetes can cause a coma, but a myxedema coma specifically refers to one occurring from advanced hypothyroidism.
2. **(B) Hashimoto's disease.** Hashimoto's disease is the most common cause of hypothyroidism. Hypothyroidism also can occur as a result of acute thyroiditis, a viral infection of the thyroid gland. Treatments for Graves' disease, such as thyroidectomy and administration of radioactive iodine, also frequently cause the expected side effect of hypothyroidism.
3. **(A) Euthyroid sick syndrome; no treatment necessary.** The patient has euthyroid sick syndrome. Medical treatment for this condition is ineffective. In cases of pituitary or hypothalamic dysfunction, further evaluation is performed with a thyrotropin (TSH)-releasing hormone stimulation test. Lugol's solution (supersaturated potassium iodide) is used prior to thyroidectomy or for thyroid blocking in a radiation emergency.
4. **(A) Iodine deficiency.** Endemic goiter is a common worldwide problem caused by iodine deficiency. People in most developed nations do not have iodine deficiency in their diets. Kwashiorkor and marasmus are both forms of severe malnutrition. Kwashiorkor is caused by a low-protein diet, and marasmus is caused by total calorie deficiency. Most people with a goiter have normal thyroid function. The thyroid becomes hypertrophic in response to a low iodine level, but it is usually able to maintain serum thyroxine (T_4) levels.
5. **(B) Levothyroxine.** Levothyroxine is the preferred therapy for hypothyroidism. Liothyronine can cause abrupt increases in serum triiodothyronine (T_3), which can cause adverse effects, especially in older patients. A more stable, uniform level of T_3 is achieved by administering levothyroxine. Dessicated thyroid and liotrix are combination agents that contain T_3 and thus may have adverse effects similar to those of liothyronine. Methimazole is used in the treatment of hyperthyroidism.
6. **(A) Initial dose of 25 μg daily, titrated every 4 to 6 weeks to achieve a normal serum TSH level.** In the stable elderly patient, it is recommended to begin therapy at a low synthetic T_4 dose of 25 μg daily and increase the dose by 25- to 50- μg increments every 4 to 6 weeks, based on results of the TSH test. Checking a TSH level before 4 weeks have passed is likely to show a falsely elevated level. A sudden increase in levothyroxine may place excessive strain on the patient's cardiac reserve. The TSH level, not the T_4 level, is used as the metabolic marker. The goal of treatment is to normalize, not suppress, the TSH level. In patients with central hypothyroidism, the T_4 level is monitored because the cause of the hypothyroidism is a low TSH level. This condition usually occurs as a result of postpartum pituitary necrosis (Sheehan's syndrome) or a pituitary tumor.
7. **(C) Diarrhea.** Patients with hypothyroidism present with constipation, whereas patients with hyperthyroidism can have diarrhea. Hypothyroidism slows down the body's systems and can cause cold intolerance, weight gain, muscle cramps, and depression.

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