PLAB Endocrinology Practice Exam (Sample)

Study Guide

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Questions

1. **What is the most appropriate investigation for a 60-year-old man with symptoms of thirst, urinary frequency, and weight loss?**
   - **A. Arteriography**
   - **B. Venography**
   - **C. Blood sugar**
   - **D. Biopsy for malignant melanoma**

2. **A patient presents with erectile dysfunction, reduced facial hair, and galactorrhea. What is the most probable diagnosis?**
   - **A. Hyperprolactinemia**
   - **B. Cushing's syndrome**
   - **C. Pheochromocytoma**
   - **D. Hyperthyroidism**

3. **A 45-year-old man with sudden onset of severe abdominal pain suggests which specific endocrine disorder?**
   - **A. Hyperthyroidism**
   - **B. Adrenal crisis**
   - **C. Cushing's syndrome**
   - **D. Phaeochromocytoma**

4. **A 44 year old lady has just recovered from an upper respiratory tract infection. What is the SINGLE most likely diagnosis related to her symptoms and lab results?**
   - **A. Hashimoto's thyroiditis**
   - **B. Graves' disease**
   - **C. Subacute thyroiditis**
   - **D. Toxic nodular goitre**

5. **A 38 year old patient experiences tingling and spasms in the arms following thyroid surgery. What is the most likely diagnosis?**
   - **A. Thyroid storm**
   - **B. Hyperparathyroidism**
   - **C. Unilateral recurrent laryngeal nerve injury**
   - **D. Hypocalcemia**

6. A 4 year old child presents with vomiting and shows signs of dehydration. What is his arterial blood gas profile likely to show?

A. A low pH and low PCO2

B. A low pH and high PCO2

C. A high pH and low PCO2

D. A high pH and high PCO2

7. What condition is characterized by hypercalcaemia and is frequently linked to malignancy?

A. Multiple myeloma

B. Phaeochromocytoma

C. Hyperthyroidism

D. Congenital hypothyroidism

8. Which of the following findings is NOT associated with Cushing's disease?

A. A high adrenocorticotropic hormone (ACTH) level

B. Failure to suppress morning cortisol with dexamethasone

C. Hypertension requiring more than 2 antihypertensive agents

D. Cortisol suppression with a high dose of dexamethasone

9. A 46-year-old woman presents with weight gain, constipation, and sensitivity to cold. What is the most likely underlying mechanism for her condition?

A. Autoimmune

B. Degenerative

C. Congenital

D. Infective

10. For a 79-year-old man with lung cancer and a sodium level of 122 mmol/L, what is the most appropriate management?

A. Demeclocycline

B. Fluid restriction

C. Tolvaptan

D. Vasopressin

Answers

1. C
2. A
3. B
4. C
5. D
6. D
7. A
8. D
9. A
10. B

Explanations

1. What is the most appropriate investigation for a 60-year-old man with symptoms of thirst, urinary frequency, and weight loss?

A. Arteriography

B. Venography

C. Blood sugar

D. Biopsy for malignant melanoma

The symptoms of thirst, urinary frequency, and weight loss are classic indicators of hyperglycemia, often associated with diabetes mellitus. In adults, particularly those who are 60 years old, these symptoms could signal the onset of type 2 diabetes, characterized by insulin resistance and insufficient insulin secretion. The most appropriate investigation for confirming this condition is to measure blood glucose levels. A randomized blood sugar test or a fasting plasma glucose test can help determine if the patient has elevated glucose levels, which would support a diagnosis of diabetes. Additionally, an HbA1c test may also be utilized to assess long-term glycemic control, but the immediate step would be to check the blood sugar. Other investigations listed are not relevant in this context. Arteriography and venography are methods used to image blood vessels and are unrelated to diagnosing metabolic disorders like diabetes. A biopsy for malignant melanoma is specific to certain skin conditions and does not address the symptoms presented. Therefore, measuring blood sugar is the critical step in this clinical scenario.

2. A patient presents with erectile dysfunction, reduced facial hair, and galactorrhea. What is the most probable diagnosis?

A. Hyperprolactinemia

B. Cushing's syndrome

C. Pheochromocytoma

D. Hyperthyroidism

The presentation of erectile dysfunction, reduced facial hair, and galactorrhea strongly indicates hyperprolactinemia. Erectile dysfunction can occur due to hormonal imbalances, and in this case, the likely cause is elevated levels of prolactin, which can inhibit testosterone production and impair libido. Reduced facial hair suggests a deficiency in androgens, which aligns with the impact of high prolactin levels on testosterone synthesis. Galactorrhea, or the inappropriate lactation not associated with childbirth, is a hallmark symptom of hyperprolactinemia. This condition results in an excess amount of prolactin, often due to a prolactinoma (a type of pituitary tumor) or other factors that may increase prolactin levels significantly. The other options do not fit this clinical picture as accurately. For example, Cushing's syndrome typically presents with features such as weight gain, hypertension, and skin changes rather than the symptoms observed in this patient. Pheochromocytoma usually manifests with symptoms related to catecholamine excess, such as hypertension, palpitations, and sweating. Hyperthyroidism might lead to a range of symptoms including weight loss and tremors, but galactorrhea is not character

3. A 45-year-old man with sudden onset of severe abdominal pain suggests which specific endocrine disorder?

A. Hyperthyroidism

B. Adrenal crisis

C. Cushing's syndrome

D. Phaeochromocytoma

Sudden onset of severe abdominal pain in this scenario is highly indicative of an adrenal crisis, which is a critical condition stemming from acute adrenal insufficiency. In the context of endocrine disorders, an adrenal crisis can occur during periods of extreme physical stress, illness, or after abrupt cessation of glucocorticoid therapy in patients who rely on these steroids due to adrenal insufficiency. Patients experiencing an adrenal crisis typically present with severe abdominal pain, coupled with other symptoms such as hypotension, altered mental status, and dehydration, which are critical and require immediate medical attention. The distress associated with this condition can lead to abdominal pain as a manifestation of underlying organ dysfunction or inflammation due to the lack of adequate cortisol levels, which is essential for maintaining vascular stability and metabolic functions. In contrast, the other conditions listed do not typically present with sudden severe abdominal pain as their primary symptom. Hyperthyroidism might lead to a range of symptoms including weight loss, heat intolerance, and tremors but not acute abdominal pain. Cushing's syndrome involves chronic hypercortisolism, leading to symptoms related to obesity, hypertension, and other metabolic disturbances rather than acute abdominal pain. Phaeochromocytoma, characterized by episodic catecholamine release, can cause

4. A 44 year old lady has just recovered from an upper respiratory tract infection. What is the SINGLE most likely diagnosis related to her symptoms and lab results?

A. Hashimoto's thyroiditis

B. Graves' disease

C. Subacute thyroiditis

D. Toxic nodular goitre

The context of the question suggests that the patient is a 44-year-old woman who has recently recovered from an upper respiratory tract infection, which is a significant clue in substantiating the diagnosis of subacute thyroiditis. Subacute thyroiditis is often preceded by viral infections, particularly upper respiratory infections. This condition typically presents with a painful enlargement of the thyroid gland and can be associated with fever, malaise, and an elevated erythrocyte sedimentation rate (ESR), indicating inflammation. In the post-viral phase, symptoms can include transient hyperthyroidism followed by hypothyroidism as the inflammation damages thyroid cells and subsequently may lead to a reduction in hormone production. In contrast to other conditions like Hashimoto's thyroiditis, which is an autoimmune disorder and develops more insidiously, or Graves' disease, characterized by excessive hormone production and often accompanied by eye symptoms, subacute thyroiditis has a specific viral origin and is marked by its association with a recent viral illness. Toxic nodular goitre usually involves autonomous nodules that produce excess thyroid hormone independently of TSH regulation and is less likely to have a direct relationship to a recent upper respiratory infection. Given these contextual nuances, the symptoms and likely laboratory findings aligning with a recent viral

5. A 38 year old patient experiences tingling and spasms in the arms following thyroid surgery. What is the most likely diagnosis?

A. Thyroid storm

B. Hyperparathyroidism

C. Unilateral recurrent laryngeal nerve injury

D. Hypocalcemia

The presence of tingling and spasms in the arms following thyroid surgery is indicative of neuromuscular irritability, which commonly occurs in the context of hypocalcemia. After thyroid surgery, particularly if the parathyroid glands are inadvertently damaged or removed, a decrease in parathyroid hormone (PTH) secretion can lead to reduced calcium levels in the blood. This drop in calcium, known as hypocalcemia, results in symptoms such as numbness, tingling, muscle spasms, and cramps. Patients experiencing these symptoms may also present with additional signs of hypocalcemia, such as positive Chvostek's and Trousseau's signs, which would further support this diagnosis. Addressing the patient's calcium levels would be critical in managing this condition after surgery. Other potential diagnoses do not fit as well with the symptoms described. Thyroid storm is a hyperthyroid emergency characterized by severe symptoms related to excess thyroid hormone but would not typically present with localized spasms. Hyperparathyroidism usually results in high calcium levels, which would lead to opposite symptoms. Unilateral recurrent laryngeal nerve injury would primarily present with hoarseness or airway obstruction rather than the described motor spasms. Thus, hypocalcemia is

6. A 4 year old child presents with vomiting and shows signs of dehydration. What is his arterial blood gas profile likely to show?

A. A low pH and low PCO2

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In a child presenting with vomiting and signs of dehydration, the arterial blood gas profile is expected to show a high pH and high PCO2 due to the physiological responses to the loss of gastric acid and the resultant metabolic alkalosis. Vomiting, especially if it is severe or prolonged, leads to the loss of hydrochloric acid from the stomach, which can result in a decrease in the hydrogen ions in the bloodstream, causing an increase in pH (alkalosis). In conjunction with metabolic alkalosis, the respiratory system may attempt to compensate by hypoventilating, which would lead to an accumulation of carbon dioxide (CO2) in the blood, as evidenced by an elevated PCO2 level. Thus, in this scenario, the expected arterial blood gas profile reflects these changes: the high pH indicates alkalosis, and the high PCO2 reflects respiratory compensation, creating a picture consistent with a child suffering from dehydration and the effects of vomiting.

7. What condition is characterized by hypercalcaemia and is frequently linked to malignancy?

A. Multiple myeloma

B. Phaeochromocytoma

C. Hyperthyroidism

D. Congenital hypothyroidism

The condition characterized by hypercalcaemia that is frequently linked to malignancy is multiple myeloma. In multiple myeloma, malignant plasma cells produce osteoclast-activating factors that lead to increased bone resorption, resulting in elevated calcium levels in the blood. This occurs as a consequence of the breakdown of bone tissue due to the overactivity of osteoclasts, which is stimulated by the pathological processes associated with the malignancy. Hypercalcaemia in multiple myeloma can lead to a number of symptoms, including fatigue, weakness, kidney dysfunction, and confusion. Clinicians often monitor calcium levels when evaluating patients with suspected or diagnosed myeloma. In contrast, the other conditions listed do not have such a clear and direct association with hypercalcaemia and malignancy. Phaeochromocytoma primarily affects catecholamine levels and does not typically induce hypercalcaemia. Hyperthyroidism can lead to some metabolic changes but is not directly linked to malignancy-related hypercalcaemia. Congenital hypothyroidism does not cause hypercalcaemia and is unrelated to malignancy as well.

8. Which of the following findings is NOT associated with Cushing's disease?

A. A high adrenocorticotropic hormone (ACTH) level

B. Failure to suppress morning cortisol with dexamethasone

C. Hypertension requiring more than 2 antihypertensive agents

D. Cortisol suppression with a high dose of dexamethasone

Cushing's disease is characterized by an overproduction of cortisol typically due to an ACTH-secreting pituitary adenoma. One of the hallmark findings in patients with Cushing's disease is the elevated levels of ACTH as the body attempts to stimulate the adrenal glands to produce cortisol. Consequently, a high ACTH level is expected in this condition. Additionally, patients with Cushing's disease will not show suppression of cortisol production in response to a low-dose dexamethasone suppression test, indicating a failure of feedback inhibition. They may require multiple antihypertensive agents to manage hypertension, as cortisol excess can lead to significant hypertension due to its effects on fluid retention and vascular tone. In contrast, administering a high dose of dexamethasone typically results in cortisol suppression in cases of Cushing's disease. This is because, in conditions like Cushing's disease, the feedback mechanisms may still allow for some suppression if the source of cortisol is pituitary in origin, especially when enough dexamethasone is administered to suppress ACTH secretion. A lack of cortisol suppression with high-dose dexamethasone administration would suggest an adrenal source of excess cortisol or ectopic ACTH syndrome, rather than Cushing's disease itself.

9. A 46-year-old woman presents with weight gain, constipation, and sensitivity to cold. What is the most likely underlying mechanism for her condition?

A. Autoimmune

B. Degenerative

C. Congenital

D. Infective

The presentation of weight gain, constipation, and sensitivity to cold in the 46-year-old woman is highly indicative of hypothyroidism. One of the most common causes of hypothyroidism is an autoimmune condition known as Hashimoto's thyroiditis. In Hashimoto's, the body's immune system mistakenly attacks the thyroid gland, leading to dysfunction and decreased production of thyroid hormones. Autoimmune mechanisms involve the development of antibodies that target and damage the body's own tissues. In the case of Hashimoto's, the antibodies specifically target thyroid peroxidase and thyroglobulin, crucial components of thyroid hormone synthesis. This results in both inflammation of the gland and eventual thyroid failure. Understanding that most primary hypothyroidism cases stem from autoimmune causes emphasizes the relevance of autoimmune processes in this scenario. Other mechanisms like degenerative, congenital, and infective do exist but are less commonly associated with the classical presentation of hypothyroidism observed in this patient. For instance, degenerative conditions might involve gradual decline due to aging, congenital issues would present earlier in life, and infectious causes would typically manifest with more acute symptoms or systemic signs. Therefore, the autoimmune mechanism is the most fitting explanation for her clinical picture.

10. For a 79-year-old man with lung cancer and a sodium level of 122 mmol/L, what is the most appropriate management?

A. Demeclocycline

B. Fluid restriction

C. Tolvaptan

D. Vasopressin

In the case of a 79-year-old man with lung cancer presenting with a sodium level of 122 mmol/L, the most appropriate management is fluid restriction. This is a common approach for managing hyponatremia, particularly when it's caused by conditions such as the syndrome of inappropriate antidiuretic hormone secretion (SIADH), which is often seen in patients with malignancies, including lung cancer. Fluid restriction helps to decrease the total body water, thereby allowing serum sodium levels to rise. When there is excess fluid in relation to sodium, limiting fluid intake can help restore the balance between body sodium and water, leading to an increase in serum sodium concentration. Other options focus on different mechanisms of action, such as using medications that either block the effects of antidiuretic hormone or promote water excretion. However, in many cases of mild to moderate hyponatremia, particularly due to fluid overload, fluid restriction remains the most straightforward and effective initial management strategy.