USMLE Step 2 Clinical Knowledge (CK) Practice Exam (Sample)

Study Guide

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Questions

1. At what age is adenomyosis most commonly diagnosed?

- **A. Under 30 years**
- **B. Between 30 and 40 years**
- **C. Usually over 40 years**
- **D. Over 50 years**

2. What type of hearing loss is associated with otosclerosis?

- **A. Sensorineural hearing loss**
- **B. Mixed hearing loss**
- **C. Conductive hearing loss**
- **D. Central auditory processing loss**

3. What is a potential side effect of loop diuretics?

- **A. Hyperkalemia**
- **B. Metabolic alkalosis**
- **C. Edema**
- **D. Weight gain**

4. Which of the following is a contraindication for breastfeeding?

- **A. Recent vaccination**
- **B. Active TB infection**
- **C. Mother's dietary restrictions**
- **D. Minor illness like a cold**

5. What is a key feature of Dejerine-Roussy syndrome?

- **A. Contralateral hemiplegia**
- **B. VPL nucleus involvement leading to dysesthesia**
- **C. Bradykinesia and rigidity**
- **D. Bladder dysfunction and ataxia**

6. Which antibiotic combination is used to treat infections caused by Pseudomonas aeruginosa?

- **A. Amoxicillin and Clavulanate**
- **B. Cefepime, pip-tazo, and aztreonam**
- **C. Ciprofloxacin and vancomycin**
- **D. Clindamycin and erythromycin**

7. Which of the following is a feature of Wiskott-Aldrich syndrome?

A. Hypogammaglobulinemia

B. Excessive hair growth

C. Chronic kidney disease

D. Myopathy

8. What effect does hypothyroidism have on prolactin levels?

A. Reduces prolactin levels

B. Has no effect on prolactin levels

C. Increases prolactin levels

D. Variably affects prolactin levels

9. What imaging study is typically used to diagnose a posterior urethral injury?

A. CT scan of the abdomen

B. Retrograde urethrogram

C. Ultrasound of the kidneys

D. Abdominal X-ray

10. Patients with hypocalcemia due to alkalosis will present with which symptom?

A. Muscle weakness

B. Seizures

C. Cardiac arrhythmias

D. Neuropathy

Answers

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

Explanations

1. At what age is adenomyosis most commonly diagnosed?

A. Under 30 years

B. Between 30 and 40 years

C. Usually over 40 years

D. Over 50 years

Adenomyosis is a condition characterized by the presence of endometrial tissue within the muscular wall of the uterus, leading to symptoms such as heavy menstrual bleeding, painful periods, and enlarged uterine size. It is most commonly diagnosed in women who are in their reproductive years, particularly those aged over 40. This age group is often approaching or in perimenopause, which is associated with hormonal changes that may contribute to the development of adenomyosis. As women age, particularly after 40, the prevalence of adenomyosis increases, likely due to accumulated hormonal influences and changes in uterine tissue. It is also worth noting that the diagnosis typically follows several years of menstrual cycles that may exacerbate the condition, leading to its increased identification in this age demographic. Factors such as childbirth and uterine surgery also play a role, as the condition is often more prevalent in women who have had multiple pregnancies. Consequently, the age group of over 40 years aligns with the typical presentation and diagnosis of adenomyosis, supporting why this answer is the most accurate in reflecting clinical findings.

2. What type of hearing loss is associated with otosclerosis?

A. Sensorineural hearing loss

B. Mixed hearing loss

C. Conductive hearing loss

D. Central auditory processing loss

Otosclerosis primarily leads to conductive hearing loss. This condition involves abnormal bone remodeling in the middle ear, resulting in the stiffening of the stapes bone, which impedes the transmission of sound vibrations from the outer ear to the inner ear. Conductive hearing loss is characterized by a reduction in sound intensity reaching the inner ear, which can be caused by various factors that interfere with sound conduction. In the case of otosclerosis, the fixation of the stapes limits the effective movement of sound waves through the middle ear, leading to a classic presentation of conductive hearing impairment. While otosclerosis may potentially lead to a mixed hearing loss if it progresses and affects the cochlea over time, the primary and most characteristic type of hearing loss associated with this condition at its onset is purely conductive. Therefore, recognizing that otosclerosis affects the mechanics of sound conduction is crucial for understanding the auditory challenges it presents.

3. What is a potential side effect of loop diuretics?

A. Hyperkalemia

B. Metabolic alkalosis

C. Edema

D. Weight gain

Loop diuretics, such as furosemide and bumetanide, are potent medications primarily used to manage fluid retention (edema) associated with conditions like heart failure, liver disease, and renal impairment. One potential side effect of loop diuretics is metabolic alkalosis. This occurs due to the loss of electrolytes and water through increased urine output, which leads to decreased hydrogen and chloride ions in the body. When loop diuretics increase renal excretion of sodium and water, they also promote increased excretion of potassium and hydrogen ions, leading to a relative increase in bicarbonate concentration in the serum. This can result in a higher pH and the development of metabolic alkalosis. In contrast, the other options do not align with common effects associated with loop diuretics. For instance, hyperkalemia (high potassium levels) is more closely associated with potassium-sparing diuretics rather than loop diuretics, which typically lead to hypokalemia. Edema would not be a side effect since loop diuretics are intended to reduce edema, and weight gain is not a typical side effect seen with diuretic therapy; instead, diuretics often lead to weight loss due to fluid loss. Therefore,

4. Which of the following is a contraindication for breastfeeding?

A. Recent vaccination

B. Active TB infection

C. Mother's dietary restrictions

D. Minor illness like a cold

Active tuberculosis (TB) infection is a contraindication for breastfeeding primarily due to the risk of transmission of the infection to the infant. When a mother has active TB, especially if she is not on appropriate treatment, there is a significant risk that TB bacteria could be present in her breast milk or that the close contact required for breastfeeding could lead to airborne transmission. Consequently, the recommendation is to delay breastfeeding until the mother is no longer infectious, which is generally after she has received adequate treatment and has been assessed as non-contagious. In contrast, recent vaccinations are not a contraindication for breastfeeding, as most vaccines given to the mother do not affect the infant adversely if breastfeeding continues. Dietary restrictions of the mother, unless they involve specific allergens or health concerns that are contraindicated, do not inherently prevent breastfeeding. Furthermore, minor illnesses like a cold typically do not pose any risk to the infant via breast milk, and breastfeeding can even provide the infant with antibodies to help fight off infections. Therefore, active TB infection stands out as the clear contraindication in this context.

5. What is a key feature of Dejerine-Roussy syndrome?

A. Contralateral hemiplegia

B. VPL nucleus involvement leading to dysesthesia

C. Bradykinesia and rigidity

D. Bladder dysfunction and ataxia

Dejerine-Roussy syndrome, also known as thalamic pain syndrome, is characterized by specific neurological deficits that arise primarily due to lesions involving the ventral posterolateral (VPL) nucleus of the thalamus. This condition usually occurs following a vascular insult to the thalamus, such as a stroke, leading to a distinctive pain syndrome. The key feature of this syndrome involves the presence of dysesthesia—abnormal sensations such as pain, tingling, or burning—resulting from the involvement of the VPL nucleus, which is responsible for processing sensory information, particularly from the contralateral side of the body. Patients may experience heightened pain responses that can become debilitating, often described as a paradoxical pain that is disproportionate to any physical causes. While contralateral hemiplegia may occur in thalamic strokes, it is more directly associated with lesions in the lateral corticospinal tract rather than the specific manifestations of Dejerine-Roussy syndrome. Bradykinesia and rigidity are key features of Parkinsonian syndromes and are not characteristic of thalamic lesions. Bladder dysfunction and ataxia may occur due to other neurological conditions but do not define Dejerine-Roussy syndrome

6. Which antibiotic combination is used to treat infections caused by Pseudomonas aeruginosa?

A. Amoxicillin and Clavulanate

B. Cefepime, pip-tazo, and aztreonam

C. Ciprofloxacin and vancomycin

D. Clindamycin and erythromycin

The selection of Cefepime, piperacillin-tazobactam (pip-tazo), and aztreonam for the treatment of infections caused by Pseudomonas aeruginosa is based on the efficacy of these antibiotics against this particular organism, which is known for its resistance to many antibiotics. Cefepime is a fourth-generation cephalosporin that has a broad spectrum of activity, including coverage for Pseudomonas. It is often used in serious infections where pseudomonal coverage is required, such as in cases of pneumonia, sepsis, or urinary tract infections. Piperacillin-tazobactam is a beta-lactam antibiotic that also provides effective coverage against Pseudomonas aeruginosa. The addition of tazobactam enhances its activity against beta-lactamase producing strains, which are common in Pseudomonas infections. Aztreonam is a monobactam that specifically targets Gram-negative bacteria, including Pseudomonas. It is particularly useful in patients who are allergic to penicillin, as it has a low cross-reactivity with penicillins. Using these three antibiotics together can provide a synergistic effect and broad coverage for severe infections suspected

7. Which of the following is a feature of Wiskott-Aldrich syndrome?

A. Hypogammaglobulinemia

B. Excessive hair growth

C. Chronic kidney disease

D. Myopathy

Wiskott-Aldrich syndrome is a rare X-linked immunodeficiency disorder that is characterized by a triad of features: eczema, thrombocytopenia (low platelet counts), and immunodeficiency. One of the key immunological abnormalities associated with this condition is hypogammaglobulinemia, which refers to low levels of antibodies (immunoglobulins) in the blood. This deficiency predisposes affected individuals to recurrent infections and can lead to severe complications. In Wiskott-Aldrich syndrome, the patients often have a decreased ability to generate antibodies in response to infections or immunizations due to the underlying immunologic defect. This is why hypogammaglobulinemia is a hallmark feature of the syndrome. The other potential choices do not relate to Wiskott-Aldrich syndrome. Excessive hair growth is not associated with this condition and could relate to other disorders or hormonal imbalances. Chronic kidney disease is not a recognized feature of Wiskott-Aldrich syndrome, and myopathy, which refers to muscle disease, is also unrelated. Therefore, identifying hypogammaglobulinemia as a feature aligns perfectly with the immunological compromise that defines this syndrome.

8. What effect does hypothyroidism have on prolactin levels?

A. Reduces prolactin levels

B. Has no effect on prolactin levels

C. Increases prolactin levels

D. Variably affects prolactin levels

Hypothyroidism is known to increase prolactin levels. The mechanism behind this involves the intricate interplay between the hypothalamus, pituitary gland, and thyroid function. In a state of hypothyroidism, there is an increase in the levels of thyroid-releasing hormone (TRH), which is produced by the hypothalamus. Elevated TRH stimulates the pituitary gland to secrete more prolactin. Therefore, when thyroid hormone levels are low, the feedback loop fails, resulting in an increase in prolactin production. Clinical observations support this relationship, as patients with hypothyroidism often present with elevated levels of prolactin. This increase can lead to various symptoms, including galactorrhea (milk production), irregular menstrual cycles in women, and fertility issues in both sexes. Understanding this connection is important for clinicians, as they must consider thyroid function in patients presenting with elevated prolactin levels to avoid misdiagnosis of conditions like prolactinoma, which could lead to unnecessary interventions.

9. What imaging study is typically used to diagnose a posterior urethral injury?

A. CT scan of the abdomen

B. Retrograde urethrogram

C. Ultrasound of the kidneys

D. Abdominal X-ray

The retrograde urethrogram (RUG) is the imaging study of choice to diagnose a posterior urethral injury. This procedure involves the insertion of a contrast medium into the urethra, followed by imaging to visualize the anatomy of the urethra and any potential disruptions or injuries. It is particularly useful in cases of trauma or suspected injuries where the urethra may be compromised, providing clear delineation of the injury's extent and location. The retrograde urethrogram is preferred because it specifically focuses on the urethra, allowing for detailed assessment of both anterior and posterior urethral injuries. Additionally, it can help rule out injuries before any attempt at catheterization, which is crucial to avoid exacerbating a potential injury. Imaging studies such as a CT scan of the abdomen or ultrasound of the kidneys can provide information about other abdominal and pelvic injuries, but they do not specifically target urethral injuries. An abdominal X-ray may reveal pelvic fractures but is not reliable for visualizing the urethra itself, thus lacking the specificity required for diagnosing posterior urethral injuries. Therefore, the retrograde urethrogram stands out as the most appropriate choice for this scenario.

10. Patients with hypocalcemia due to alkalosis will present with which symptom?

A. Muscle weakness

B. Seizures

C. Cardiac arrhythmias

D. Neuropathy

In the context of hypocalcemia due to alkalosis, patients can experience a range of symptoms primarily related to neuromuscular excitability. In particular, a notable manifestation of hypocalcemia is the risk of cardiac arrhythmias. Calcium plays a critical role in cardiac muscle function, including regulating myocardial contraction and electrical conduction. When calcium levels drop, it can lead to increased myocardial excitability and changes in the electrocardiogram, such as a prolonged QT interval, which can predispose patients to various types of arrhythmias. While muscle weakness, seizures, and neuropathy can also manifest in hypocalcemia, they are less directly linked to the acute effects of hypocalcemia caused by alkalosis on cardiac function. Muscle weakness tends to be more associated with chronic electrolyte imbalances or other conditions affecting the neuromuscular junction, and while seizures can occur due to severe hypocalcemia, the immediate threat in patients with hypocalcemia from alkalosis is often related to cardiac stability. Thus, the likelihood of arrhythmias, particularly in the acute setting, is a significant concern for patients with hypocalcemia secondary to metabolic alkalosis.