PAEA Pediatrics End of Rotation (EOR) Practice Exam (Sample)

Study Guide

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Questions

1. **Which of the following treatments is often used as a first-line approach to hyperthyroidism?**
   - **A. Levothyroxine**
   - **B. Methimazole**
   - **C. Radioactive iodine**
   - **D. Beta-blockers**

2. **In patients with sickle cell disease or G6PD deficiency, infection with parvovirus B19 can precipitate which of the following?**
   - **A. Hemolytic anemia**
   - **B. Pleurisy**
   - **C. Aplastic crisis**
   - **D. Pneumonia**

3. **Hydrocele is characterized by which finding?**
   - **A. Painful scrotal swelling**
   - **B. Painless scrotal swelling**
   - **C. Increased redness of the scrotum**
   - **D. Fever associated with swelling**

4. **What is the recommended treatment for pinworm infection in school-age children?**
   - **A. Pyrantel**
   - **B. Albendazole**
   - **C. Ivermectin**
   - **D. Supportive care only**

5. **What is the treatment for seizures lasting more than 5 minutes?**
   - **A. Oral ibuprofen**
   - **B. IV diazepam**
   - **C. Topical lidocaine**
   - **D. Midazolam**

6. Enuresis is typically defined as bedwetting occurring at or after what age?

A. 3 years

B. 4 years

C. 5 years

D. 6 years

7. A 15-year-old male presents with knee pain and a painful lump below the knee. What is the most likely diagnosis?

A. Patellar tendonitis

B. Osgood-Schlatter disease

C. Meniscus tear

D. Fractured patella

8. What is the best treatment for coarctation of the aorta?

A. Medication management

B. Surgical correction

C. Observation

D. Physical therapy

9. In the context of drug reactions, type I hypersensitivity reactions are characterized by which mechanism?

A. Delayed cell-mediated response

B. IgE-mediated immune response

C. Cytotoxic antibody-mediated response

D. Immune complex-mediated response

10. What is the recommended treatment for bulimia nervosa?

A. Cognitive Behavioral Therapy or fluoxetine

B. Hospitalization and nutritional counseling

C. Behavior modification and high-calorie diets

D. Family therapy and exercise programs

Answers

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

Explanations

1. Which of the following treatments is often used as a first-line approach to hyperthyroidism?

A. Levothyroxine

B. Methimazole

C. Radioactive iodine

D. Beta-blockers

Methimazole is a first-line treatment for hyperthyroidism, particularly in cases of Graves' disease, which is the most common cause of this condition. It is an antithyroid medication that works by inhibiting the synthesis of thyroid hormones, leading to a decrease in the levels of hormones such as thyroxine (T4) and triiodothyronine (T3) in the bloodstream. This mechanism helps manage the symptoms associated with hyperthyroidism, including weight loss, anxiety, and increased heart rate. In many cases, methimazole is preferred over other treatments as an initial approach due to its effectiveness in quickly improving symptoms and normalizing thyroid function. Patients may be monitored for thyroid levels and side effects during treatment, allowing for adjustments in dosage as needed to achieve the desired hormonal balance. Other treatment options exist, such as radioactive iodine, which is often used for long-term management or definitive treatment of hyperthyroidism, particularly in older adults or patients with significant goiter. However, radioactive iodine is not typically considered a first-line treatment for initial symptom control. Beta-blockers may be used to help manage symptoms like palpitations and tremor but do not address the underlying hyperthyroidism. Levothyroxine, on

2. In patients with sickle cell disease or G6PD deficiency, infection with parvovirus B19 can precipitate which of the following?

A. Hemolytic anemia

B. Pleurisy

C. Aplastic crisis

D. Pneumonia

In patients with sickle cell disease or G6PD deficiency, infection with parvovirus B19 is particularly concerning because it can lead to an aplastic crisis. Parvovirus B19 specifically targets and destroys erythroid progenitor cells in the bone marrow, which are responsible for red blood cell production. In individuals who already have compromised erythropoiesis, such as those with sickle cell disease or G6PD deficiency, this viral infection can critically reduce the production of red blood cells. An aplastic crisis is characterized by a sudden decrease in red blood cell production, leading to a rapid drop in hemoglobin levels and worsening anemia. This can result in significant clinical symptoms, including fatigue, pallor, and potentially more severe complications. While hemolytic anemia is associated with sickle cell disease and G6PD deficiency, it is not specifically precipitated by parvovirus B19 infection. Pleurisy and pneumonia are also not direct consequences of a parvovirus B19 infection. Understanding the specific impact of parvovirus B19 on erythropoiesis highlights why aplastic crisis is the outcome of concern in these groups of patients.

3. Hydrocele is characterized by which finding?

A. Painful scrotal swelling

B. Painless scrotal swelling

C. Increased redness of the scrotum

D. Fever associated with swelling

Hydrocele is a condition characterized by the accumulation of fluid in the tunica vaginalis surrounding the testicle. One of the hallmark features of hydrocele is the presentation of painless scrotal swelling. This swelling usually appears gradually and can vary in size. The absence of pain is a significant distinguishing factor from other conditions that may cause scrotal swelling, such as testicular torsion or epididymitis, where pain is typically present. The fluid accumulation in hydrocele does not cause any inflammatory reaction or irritation of the scrotal tissue, which is why the swelling is often painless. The diagnosis is usually confirmed through a physical examination and sometimes with transillumination, where light shines through the scrotum revealing the presence of fluid. Recognizing that hydrocele presents as a painless scrotal swelling helps clinicians differentiate it from other more acute or painful scrotal conditions, allowing for appropriate management and treatment.

4. What is the recommended treatment for pinworm infection in school-age children?

A. Pyrantel

B. Albendazole

C. Ivermectin

D. Supportive care only

The recommended treatment for pinworm infection in school-age children is albendazole. This medication works by disrupting the microtubule function and thereby inhibiting glucose uptake in the worms, leading to their death. Albendazole is considered effective and is typically given as a single dose, which may be repeated after two weeks to prevent reinfection, as pinworm eggs can survive in the environment and cause recurrent infections. Pyrantel is another option for treating pinworm infections; however, it is generally considered less effective than albendazole, especially in cases of high worm burden. Ivermectin has also been utilized in specific circumstances for various parasitic infections but is not generally the first-line treatment for pinworms in children. Supportive care can be beneficial by focusing on hygiene measures, but it is not sufficient as a standalone treatment. Thus, some form of pharmacological intervention is necessary for complete resolution of pinworm infections in this age group.

5. What is the treatment for seizures lasting more than 5 minutes?

A. Oral ibuprofen

B. IV diazepam

C. Topical lidocaine

D. Midazolam

The appropriate treatment for seizures that last more than 5 minutes, a condition known as status epilepticus, is to administer intravenous (IV) diazepam. Diazepam is a benzodiazepine that acts as an anticonvulsant and provides rapid control of seizure activity. Administering diazepam allows for quick onset of action, which is critical in preventing further neurological damage that can result from prolonged seizure episodes. Both IV diazepam and midazolam are effective for the acute management of seizures; however, midazolam is typically administered intranasally or intramuscularly in emergencies when IV access is not readily available, making diazepam the preferred choice when IV access is possible. Other options like oral ibuprofen and topical lidocaine do not provide the necessary efficacy for managing seizures and would not be appropriate treatments in this urgent context.

6. Enuresis is typically defined as bedwetting occurring at or after what age?

A. 3 years

B. 4 years

C. 5 years

D. 6 years

Enuresis, commonly referred to as bedwetting, is generally defined as the involuntary discharge of urine during sleep in a child who is old enough to have developed bladder control. The standard age at which children are expected to gain complete nighttime bladder control is around 5 years old. Therefore, if bedwetting occurs at or after this age, it is classified as enuresis. Learning about age norms in child development is crucial for understanding this condition. By the age of 5, most children have achieved a degree of bladder control at night, and continued bedwetting beyond this age may indicate a need for assessment or intervention. Understanding enuresis is important not just for diagnosis, but also for addressing the social and emotional implications for children and families. Managing expectations regarding what is typical at various ages helps parents understand when this behavior is a concern and when it may be considered part of normal development.

7. A 15-year-old male presents with knee pain and a painful lump below the knee. What is the most likely diagnosis?

A. Patellar tendonitis

B. Osgood-Schlatter disease

C. Meniscus tear

D. Fractured patella

Osgood-Schlatter disease is the most likely diagnosis for this 15-year-old male presenting with knee pain and a painful lump below the knee. This condition is characterized by inflammation of the patellar tendon at its insertion point on the tibial tuberosity. It is particularly common in adolescents during periods of rapid growth, and it often presents with localized pain and swelling in the area where the tendon attaches to the bone. The presence of a painful lump below the knee is a classic sign of Osgood-Schlatter disease, which can become prominent due to repeated stress and activity, especially in young athletes involved in sports that require running, jumping, or squatting. This condition typically resolves with conservative management, including rest, ice, and limiting activities that aggravate the symptoms. Understanding the broader context of the knee in adolescent patients can help differentiate it from other potential conditions, such as patellar tendonitis, which usually presents with pain more centered around the patellar region, a meniscus tear characterized by joint locking or swelling rather than a distinct lump, and a fractured patella that presents with severe pain and possibly an inability to move the knee. Recognizing the specific clinical features and typical age of onset is key in arriving at the

8. What is the best treatment for coarctation of the aorta?

A. Medication management

B. Surgical correction

C. Observation

D. Physical therapy

Surgical correction is considered the best treatment for coarctation of the aorta, particularly in cases that present with significant symptoms or when the coarctation is severe. Coarctation of the aorta is a congenital condition where there is a narrowing of the aorta, which can lead to decreased blood flow to the lower portions of the body and increased blood pressure in the upper body. Surgical intervention effectively relieves the obstruction and restores normal blood flow. This may involve resection of the narrowed segment of the aorta, possibly followed by end-to-end anastomosis, or placement of a synthetic patch to widen the narrowed area. In certain cases, less invasive techniques such as balloon angioplasty and stenting have also become options, particularly for mild to moderate cases or in older children and adults. Medication management alone does not address the underlying structural issue, making it insufficient as a long-term solution. Observation is typically reserved for mild cases where the condition may resolve on its own or in asymptomatic patients; however, it is not a definitive treatment. Physical therapy is not applicable in this context, as it does not provide any benefit for the structural abnormalities associated with coarctation of the aorta. Therefore, surgical

9. In the context of drug reactions, type I hypersensitivity reactions are characterized by which mechanism?

A. Delayed cell-mediated response

B. IgE-mediated immune response

C. Cytotoxic antibody-mediated response

D. Immune complex-mediated response

Type I hypersensitivity reactions are characterized by an IgE-mediated immune response. This type of reaction occurs when an individual is exposed to an allergen for the first time, leading to the production of immunoglobulin E (IgE) antibodies. These IgE antibodies bind to mast cells and basophils, sensitizing them to the allergen. Upon subsequent exposure to the same allergen, the allergen cross-links the IgE antibodies on these sensitized cells, triggering them to degranulate. This degranulation releases various mediators, including histamine, leukotrienes, and prostaglandins, which are responsible for the clinical features of immediate hypersensitivity, such as urticaria (hives), allergic rhinitis, asthma, and anaphylaxis. This mechanism is distinct from other types of hypersensitivity reactions. For instance, delayed cell-mediated responses involve T cells and occur over 24-48 hours, which is characteristic of Type IV hypersensitivity. Cytotoxic antibody-mediated responses involve IgG or IgM antibodies binding to antigens on cell surfaces, leading to cell destruction, typical of Type II hypersensitivity. Immune complex-mediated responses involve the formation of antigen-antibody complexes that deposit in tissues, causing inflammation and damage

10. What is the recommended treatment for bulimia nervosa?

A. Cognitive Behavioral Therapy or fluoxetine

B. Hospitalization and nutritional counseling

C. Behavior modification and high-calorie diets

D. Family therapy and exercise programs

The recommended treatment for bulimia nervosa primarily centers around Cognitive Behavioral Therapy (CBT) and the use of fluoxetine, an SSRI. CBT is a structured, goal-oriented psychotherapy that focuses on identifying and changing dysfunctional thought patterns and behaviors related to eating and body image. This approach helps patients develop healthier eating habits and coping strategies to manage their emotions, addressing the core issues contributing to the disorder. Fluoxetine has been found to be effective in reducing binge-eating and purging behaviors, as well as alleviating symptoms of depression and anxiety that often accompany bulimia nervosa. The combination of CBT and medication is particularly beneficial, as it addresses both psychological and biological aspects of the disorder. Other treatment options such as hospitalization or nutritional counseling may be necessary for individuals with severe cases or medical complications, but they do not represent the first-line treatment method. Behavior modification and high-calorie diets lack a strong evidence base specifically for bulimia nervosa treatment, and family therapy, while helpful for certain individuals, is not the primary recommended approach in the absence of a comprehensive treatment plan that includes CBT and medication. Thus, focusing on CBT and fluoxetine provides a targeted and effective strategy for managing bulimia nervosa.