

Examination for Master Degree in: Pediatrics
Course Title: Pediatrics (PED800)
Date: April 27 2022 (Paper II)
Time allowed: 3 Hours
Total Assessment Marks: 270 (4 Pages)



Tanta University
Faculty of Medicine
Department of Pediatrics

All questions should be tried:

Q 1) Nephrology (30 marks)

How to manage a three year-old child with acute kidney injury?

Q 2) Behavioral (20 marks)

A. Give an account on enuresis and encopresis in children. (6)

B. Enumerate behavioral milestones in the first 4 years of life. (4)

A. Problem solving : (6)

A 4 year-old boy coming to outpatient Neuro-Psychiatry Clinic of Pediatric Department with his parents were complaining of his delayed speech and lack of sociality with absence of social smile. Consciousness was normal but the boy looks somewhat confused and drowsy. He failed to cooperate with nurse handling with recurrent high pitched cries. No abnormalities on laboratory investigations .He gives any answers even about questions about name, sex, home-address. General condition was very good. His parents complained of his repetitive thumb suckling and head rocking by hands. No words can be explained by both parents and by speech specialist. IQ score was 45.His big sister suffered similar but less severe developmental delay and school failures. Dietetic history and examination showed normal anthropometric measures.

1. What is the most likely possible diagnosis?

2. What are the investigations to be requested?

3. What are medications and foods that may help?

D. MCQs :

1. Foods preferred in Attention deficit hyperactivity disorder (ADHD) are: (2)

- a. Junk foods
- b. Sweetened foods
- c. High protein diet
- d. Sea foods, tuna and fish

2. Most possible factor of behavioral disturbances in children is: (2)

- a. Genetic
- b. Environmental
- c. Idiopathic
- d. All of the above

Q 3) Neonatology (70 marks)

A. Discuss in brief noninvasive ventilation in neonates. (35)

B. Give short account on pharmacological therapy of neonatal unconjugated hyperbilirubinemia. (25)

C. Problem solving: (6)

Antenatal review at 33 weeks' gestation of a mother with systemic lupus erythematosus (SLE) reveals that the fetus is bradycardic and developing heart failure. Steroids are given and delivery planned for the following day. At delivery the neonate is difficult to intubate and ventilate. Drainage of 50 mL of peritoneal fluid relieves abdominal distension and improves ventilation.

1. What is the diagnosis?
2. Cause of bradycardia in this case?
3. Expected type of peritoneal fluid drained?

D. MCQs:

1. The MOST common physical finding of the pulmonary examination in bronchopulmonary dysplasia (BPD) is: (2)
 - a. Tachypnea
 - b. Mouth breathing
 - c. Increased anteroposterior diameter of the chest
 - d. Intercostal retractions
2. A 9-day full term baby is admitted to the hospital with lethargy, fever and jaundice. Physical examination reveals hepatomegaly. Laboratory results reveal a blood glucose value of 10mg/dl, total and direct bilirubin 15 and 7mg/dl, respectively. Elevated liver enzymes. The next day blood culture is positive for gram negative rods. **The most likely diagnosis is:** (2)
 - a. Necrotizing enterocolitis.
 - b. Galactosemia.
 - c. Neonatal hepatitis
 - d. Glycogen storage disease

Q4) Hematology & Oncology (50 marks)

A. Give a short essay about staging of Wilms' tumor. (25)

B. Mention management of inhibitors in hemophilic child. (15)

C. Problem solving: (6)

A 5-year-old boy presented to the emergency department with sudden onset of skin ecchymoses and single attack of epistaxis. The examination showed an active healthy looking boy with diffuse skin petechial rash and ecchymoses over both lower and upper limbs, no lymphadenopathy and no organomegaly. The initial CBC is as follows: Hb 7.0 g/dl, WBC 7.600/cmm, N 45%, L 51%, plt 17.000/cmm, and normal looking film except for rarely seen platelets.

1. What is the most likely diagnosis?
2. What is the sure diagnostic test?
3. What is the treatment?

D. MCQs:

1. Which of the following criteria is included in the definition of severe aplastic anemia? (2)
 - a. Reticulocyte count less than 100.000/ μ l
 - b. Neutrophil count less than 500/ mm^3
 - c. Platelets count less than 50.000/ mm^3
 - d. Bone marrow cellularity less than 50% of normal

2. In disseminated intravascular coagulation, which of the followings is reduced? (2)
- Prothrombin time
 - Partial thromboplastin time
 - D-dimer
 - Fibrinogen

Q 5) Health Care (40 marks)

A. Discuss clinical and radiological manifestations of scurvy in children. (18)

B. Enumerate indications of total parenteral nutrition. (12)

D. Problem solving: (6)

Previously unvaccinated child aged 20 months. The parents want to catch-up vaccination.

- How to give him the required doses of Hepatitis B vaccine?
- How to give him the required doses of Sabin vaccine?
- How to give him the required doses of Haemophilus influenza type b vaccine?

D. MCQs:

1. Which of the following is a reason to avoid or discontinue breast feeding? (2)

- Mother on heparin
- Breast engorgement
- Maternal HIV infection
- Maternal Hepatitis B infection

2. Full fat cow's milk may be introduced into a child's diet at which age? (2)

- 6 months
 - 9 months
 - 12 months
 - 18 months
-

Q 6) Genetics (20 marks)

A. Discuss different modes of inheritance. (6)

B. Give short account on teratogens and mutagens. (4)

C. Problem Solving: (6)

1. A 13-years old boy presented with poor school performance. His family history reveals that his mother didn't do well in school with low normal IQ. Physical examination reveals large ears, a long narrow face, and large testes.

- What is the most likely diagnosis?
- How to confirm diagnosis?
- What is the genetic mechanism of this case?

D. MCQs:

1. Congenital hypertrophic pyloric stenosis is an example of : (2)

- Autosomal dominant inheritance
- Mitochondrial inheritance
- Multifactorial inheritance
- Sex linked inheritance

2. A 4-months old boy presented with failure to thrive, rapid breathing, and repeated vomiting. On examination, there is hepatomegaly and abdominal sonography revealed renal calcification. **The MOST likely urine odor of this infant is: (2)**

- a. Mousey
- b. Rotting fish
- c. Sweaty feet
- d. Boiled cabbage

Q 7) CNS & Neuromuscular (40 marks)

A. Mention the different neurocutaneous syndromes in pediatrics and discuss in details one of them. (18)

B. Definition and etiology of macrocephaly in children. (12)

C. Problem solving: (6)

An 8-year-old boy was presented with visual loss 8 months' duration and weakness of the lower extremities of one week's duration. No history of reddening of eyes, vomiting or neck stiffness. The patient had bilateral optic atrophy on fundoscopic examination, and flaccid paraplegia with sensory loss below T4 level. Serological tests for syphilis, HIV and SLE were negative. T2-spine MRI revealed long central thoracic segment (T3 to T6) hyperintense lesion with mild cord expansion. On examination the patient was conscious, and oriented in time, place, and person. No objective memory deficit. The patient could count fingers at two meters. There was no other cranial nerve palsy. Flaccid paraplegia with sensory loss below T4 was detected. No meningeal irritation signs. Findings on other systems were unremarkable. On investigation, complete blood count, urinalysis, and serum liver biochemical and renal function tests were within normal limits. Serological tests for HIV, hepatitis B and hepatitis C viruses were negative.

1. **Mention the diagnosis**
2. **What are the investigations?**
3. **What are the lines of treatment?**

D. MCQs :

1. **Steven Johnson syndrome is common side effect with one the following ant seizure drug: (2)**

- a. Lamotrigine
- b. Valproic acid
- c. Topiramate
- d. Vigabatrin

2. **Zolgenesma is used for treatment of one of the following: (2)**

- a. Spinal muscular atrophy
- b. Absence seizures
- c. Multiple sclerosis
- d. Acute disseminated encephalomyelitis

=====Good Luck=====

Chairman of Department

Prof. Mohamed Elshanshory



Examination for Master Degree in: Pediatrics
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All questions should be tried:

Q 1) GIT (40 marks)

Discuss definition, pathogenesis, clinical manifestations, complications, differential diagnosis, diagnostic tests and management of gastroesophageal reflux disease (GERD) in children.

Q 2) Hepatology (20 marks)

- A. Give a short account on the diagnosis of and management of pediatric autoimmune hepatitis (AIH). (6)
B. Mention disorders that may lead to liver tumors in children. (4)
C. Problem solving: (6)

A 3-year-old first order female child, born out of second-degree consanguineous marriage was presented by gradual abdominal distension. Examination showed that huge hepatomegaly without splenomegaly, short stature and fat cheeks were the only relevant findings with normal other body systems. History revealed delayed motor milestones and repeated previous 8-10 admissions at another hospital for repeat convulsions, hypoglycemia and severe lactic metabolic acidosis starting at the age of 4 months. Investigations showed that CBC, liver and renal function tests, and ABG were normal. Random blood sugar: 88 mg/dl, S. Cholesterol: 304 mg/dl, Triglycerides: 1320 mg/dl, S. Uric acid: 10.3 mg/dl, Abdominal ultrasound: diffuse huge hepatomegaly, and fundus examination: normal. All virological tests were negative.

1. What is the most likely diagnosis of such case?
2. Explain why.
3. What are the further investigations needed to confirm this suspected diagnosis?

D. MCQs :

1. A 5-years-old child on long-term aspirin therapy for Kawasaki disease develops sudden onset of high fever, chills, diarrhea, and irritability. A rapid swab in your office identifies influenza A. Over the next few days, she slowly improves and becomes afebrile. However, 5 days later, she has presented to the emergency center with disturbed consciousness and evidence of liver dysfunction. Which of the following statements about her current condition is correct? (2)
 - a. With proper supportive care, the overall mortality rate is low.
 - b. With her progressive liver dysfunction, increased total serum bilirubin is anticipated.
 - c. Seizures are uncommon with this condition.
 - d. Death is usually associated with increased intracranial pressures and herniation.
2. Which of the following represents the most common complication of gallstone disease in children? (2)
 - a. Cholecystitis.
 - b. Choledocholithiasis.
 - c. Pancreatitis.
 - d. Cholangitis

Q 3) Cardiology (60 marks)

A. Discuss in brief clinical manifestation and diagnosis of hypertrophic cardiomyopathy.(30)

B. Enumerate the indications of surgical intervention of infective endocarditis. (20)

C. Problem solving: (6)

A 2 year-old child with secundum ASD of 1 cm.

1. What are the auscultatory findings that we can hear on the precordium of this patient?
2. What are the hemodynamic derangements in this condition?
3. What are the treatment options?

D. MCQs:

1. The first line drug to be tried in supraventricular tachycardia is: (2)
 - a. Adenosine
 - b. Quinidine
 - c. Propranolol
 - d. Amiodarone
2. One of the following is not a line of treatment of PDA: (2)
 - a. Surgical closure
 - b. Trans catheter closure
 - c. Follow up till spontaneous closure
 - d. Some drugs may be tried

Q 4) Respiratory (45 marks)

A. Write short essay on management of Mycoplasma pneumonia. (20)

B. Illustrate Classification of asthma severity in children. (15)

C. Problem solving: (6)

A 7-month-old boy is referred to the pediatric emergency department because of recurrent chest infections. He also has had diarrhea on and off for three months. His birth weight at term was plotted on the 75th centile and has dropped to the 25th centile. Mother reports that he usually has a very good appetite but has taken only 75% of feeds over the last three days. On clinical examination, respiratory rate was 50/minute, mild intercostal recessions and bilateral crepitations. Abdominal examination is unremarkable except for distension.

1. What is your likely diagnosis?
2. Mention 3 other respiratory manifestations of this disease.
3. Give common organisms that colonize the airways in this disease.

D. MCQs:

1. Ten-year-old boy has a 1-year history of cough that is worse at night and with exercise. Which one of the following tests is most likely to assist you to make a diagnosis? (2)
 - a. Barium swallow
 - b. Bronchoscopy.
 - c. Chest radiograph.
 - d. Spirometry.
2. Pneumatocoles on chest radiograms in a child with pneumonia are seen in infection with: (2)
 - a. Staphylococcus & Klebsiella
 - b. Pneumococcus
 - c. Streptococcus
 - d. Hemophilus influenza

Q 5) Infectious Diseases (45 marks)

- A. Discuss pathogenesis, diagnosis and treatment of Pneumocystis carinii in children. (20)**
- B. Give an account on Infection associated with medical devices in children. (15)**

C. Problem solving: (6)

A 6-year-old boy with history of a trip 15 days ago. Has fever up to 41°C of two weeks of evolution, associated with abdominal pain, headache and repeated fetid watery non-bloody stools. The days before the consultation; he presents anorexia, asthenia, nausea and vomiting. Initially he is handled with hydration, analgesia and antipyretics, without improvement, so hospitalization was decided. Physical examination, he was febrile, pale, with moderate dehydration, skin without lesions or lymphadenopathy. He had a distended abdomen, slightly depressible deep and painful to palpation, with hepatomegaly, bowel sounds diminished and Blumberg sign absent. The rest of examination showed no findings. In this first instance a surgical cause was discarded. Laboratory tests showed: CRP 14.68 mg/l, Hb 9.9g/dl, MCV 76.9fl, MCH 27pg, WBC's 11,000 cells/mm³ (segmented 77%, platelets 157,000/mm³, ESR 23mm/hr, AST 180.9U/L, ALT 67.8U/L, LDH 497U/L, albumin 3.4g/dl, Renal function, coagulation, venous gases and urine sediment were normal. Occult blood test in stools was positive.

1. **What is the possible diagnosis?**
2. **How can you confirm diagnosis?**
3. **Possible Treatment?**

D. MCQs:

1. **Which of the following org is primary treatment for invasive asperigellosis : (2)**
 - a. Caspofungin
 - b. Micaungin
 - c. Fluconazole
 - d. Voriconazole
2. **Measles virus is transmitted through airborne droplets and is one of the leading causes of respiratory infections mostly seen in children of developing countries. Which of the following statements is NOT-CORRECT about the epidemiologic features of measles? (2)**
 - a. More than one serotypes of the virus have been identified
 - b. Humans are the only reservoir
 - c. Infection confers lifelong immunity
 - d. Infection can be transmitted from mother to the fetus

Q 6) Emergencies (30 marks)

- A. Discuss muscle relaxants and hypnotics used in PICU. (12)**
- B. Mention classic stages in the clinical course of Acetaminophen toxicity. (8)**

C. Problem Solving: (6)

A 10-month-old boy was admitted to his local hospital having been nonspecifically unwell for 2 days with a fever. Initial blood results were unremarkable and he was admitted to the ward for observation. Two hours later, two petechial spots were noted on his neck. At this time, heart rate was 160b/min; he was normotensive and capillary refill time (CRT) <2 seconds. Four hours later, the rash became more florid, and maculopapular, petechial in nature; his skin was mottled, and CRT increased to 5 seconds. Heart rate 200 b/min, Blood Pressure 80/42mmHg, Respiratory rate 60 breaths/min, temperature 39.5°C, maintaining SpO₂ at 100% in 10min O₂ via facemask. He was responsive only to painful stimuli. Capillary blood gas showed a pH 7.1, with a base excess of 10mmol/l and pCO₂ of 26 kPa. Intravenous ceftriaxone 80mg/kg was administered. Over the preceding 30 minutes, he received intravascular fluid administration in three aliquots – one bolus of

10 ml/kg 4.5% Human Albumin Solution (HAS), and two boluses of 20ml/kg 4.5% HAS. He had not passed urine for 8 hours.

1. What is the possible diagnosis?
2. Mention the management in ER.
3. Mention the management in PICU.

D. MCQs:

1. The antidote for Calcium channel antagonist toxicity: (2)
 - a. Calcium salts
 - b. Sodium bicarbonate
 - c. Insulin and glucose
 - d. Benztropine
2. In pressure-controlled mechanical ventilation, there is: (2)
 - a. Leaked volume part of Tidal volume (VT)
 - b. Less uniform Distribution of ventilation
 - c. VT remains constant during weaning
 - d. More even gas distribution

Q 7) Endocrinology (30 marks)

A. Discuss in brief constitutional delay of growth and puberty (CDGP). (12)

B. Enumerate the features and laboratory findings of Leydig cell hypoplasia. (8)

C. Problem solving: (6)

A girl 12 years old always feels weak with noticed skin and mucus membrane pigmentation and body wasting. Her Hb 8.7g/dL, serum Na 127mEq/L, and K 6.2mEq/L. She is always craving for salt and salty foods. Her BP is 90/65 mmHg.

1. What is the probable diagnosis?
2. What are the suitable investigations needed for this girl?
3. What is the pH of her blood?

D. MCQs:

1. Factors which lead to cerebral edema in DKA are all of the following EXCEPT: (2)
 - a. Rapidly infused fluids
 - b. Excessive use of IV fluids
 - c. Little use of NaHCO₃
 - d. Excessive use of NaHCO₃
2. The most common cause of congenital hypothyroidism in children is: (2)
 - a. Thyroid hormone dysgenesis
 - b. Iodine deficiency during pregnancy
 - c. Thyroid gland dysgenesis
 - d. Pituitary gland hypofunction

=====Good Luck=====

Chairman of Department

Prof. Mohamed Elshanshory

