Examination for Master Degree in: Pediatrics
Course Title: Pediatrics
Date: October 7, 2019 (Paper I)
Time allowed: 3 Hours
Total Assessment Marks: 100 (4 Pages)

Tanta University
Faculty of Medicine
Department of Pediatrics

All questions should be tried:

Q 1) Pediatric Emergencies (20 marks)

Discuss the potentially treatable conditions associated with cardiac arrest.

Q 2) Pediatric Cardiology (16 marks)

A. Mention the clinical presentations of juvenile rheumatoid arthritis. (5)

B. Enumerate the causes of pulmonary hypertension. (4)

C. Problem solving: (3)

An infant aged 5 months was presented with central cyanosis. Oxygen saturation was 65% with past history of recurrent blue spells. Echocardiographic examination revealed classic tetralogy of Fallot.

1. **What is the normal oxygen saturation?**
2. **Mention the most dangerous complication of this infant.**
3. **What is the best line of treatment of this infant?**

D. MCQs :

1. Long QT syndrome is characterized by: (2)

a. QT interval longer than 0.44 second
b. QT interval longer than 0.12 second
c. QT interval longer than 0.47 second
d. QT interval longer than 0.20 second

2. One of the signs of large pericardial effusion is : (2)

a. Water hammer pulse
b. Pulsus pardoxicus
c. Thready pulse
d. Pulsus alternans

Q 3) Respiratory System (16 marks)

A. Write a short essay on the treatment of pneumothorax. (5)

B. Enumerate the causes of hemoptysis in children. (4)

C. Problem solving: (3)

A 4-years old male begins sudden coughing and wheezing while at a birthday party. Chest examination reveals coarse wheezing but no other abnormalities. No skin rashes or swellings. He has no personal history of asthma and, also, the child has no history of chronic illness. The child exhibited no symptoms of a respiratory infection prior to the party.

1. **What is the most appropriate initial diagnostic technique?**
2. **What is the most appropriate next step in diagnosis and management?**
3. **What are the complications of this condition?**

D. MCQs:

1. **A fully immunized 2-years old male; presents with several days of low-grade fever, barking cough, and noisy breathing. Over the past few hours he has developed a fever of 40°C and looks toxic. He has inspiratory and expiratory stridor. The family has not noticed drooling, and he seems to be drinking without pain. Direct laryngoscopy reveals a normal epiglottis. The management of this disease includes which of the following? (2)**
   - **a.** Intubation and intravenous antibiotics
   - **b.** Inhaled epinephrine and oral steroids
   - **c.** Intravenous methylprednisolone
   - **d.** Observation in a cool mist tent
2. **A previously well 1-year-old infant has had a runny nose and has been sneezing and coughing for 2 days. Four hours ago, his cough became much worse. On physical examination, he is in moderate respiratory distress with tachypnea and nasal flaring. Upon auscultation, he has easily audible wheezing bilaterally. Which of the following is the appropriate action? (2)**
   - **a.** Monitoring oxygenation and fluid status
   - **b.** Inhaled epinephrine and a single dose of steroids
   - **c.** Acute-acting bronchodilators and a short course of oral steroids
   - **d.** Emergent intubation, mechanical ventilation, and antibiotics

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Q 4) CNS & Neuromuscular (16 marks)

A. **Mention etiology, clinical picture, diagnosis and treatment of brain abscess. (5)**

B. **Enumerate the causes of tremors in children. (4)**

C. Problem solving: (3)

A 16-years old male presented to our emergency department with a 3-week history of severe lower back pain radiating around his right flank and abdomen, which became more intense 1 week prior to evaluation. He denied trauma, but there was bowel or bladder incontinence, with focal limbs weakness. The patient's history was significant for a high fever, headache and generalized body malaise 4 weeks prior to admission. Based on the history of constitutional symptoms, on hospital admission, his neurological examination was significant sensory level to below T7 dermatome to temperature. Strength was normal along with other sensory modalities. Due to the severity, persistence and abrupt worsening of the patient's back pain despite conservative measures and analgesics, a lumbar and thoracic MRI study without contrast was obtained. MRI revealed a diffuse signal abnormality of greater than two thirds of the cross-sectional area of the thoracic cord from T7 down almost to the level of the conus, predominantly involving the white matter consistent as well. Brain MRI showed no intra- or extra-axial masses, enhancing lesions, hydrocephalus, and areas of restricted diffusion or white matter abnormalities.

1. **Mention the diagnosis.**
2. **Mention further investigations.**

3. **Mention the treatment.**

D. **MCQs:**

1. **The drug of choice in infantile spasm is:** (2)
   a. Vigabatrin
   b. Lacosamide
   c. Topiramate
   d. Valproic acid
2. **In Pompe disease, one of the following is wrong:** (2)
   a. Cardiac muscle is not affected
   b. CPK is elevated
   c. Muscle biopsy is diagnostic
   d. Hepatomegaly is usually present

Q 5) Hematology & Oncology (16 marks)

A. Give an account on the management of hemophilia in children. (5)

B. Enumerate the complications of acute leukemia and its treatment. (4)

C. **Problem solving:** (3)

A child aged 3 years complaining of red skin spots especially on both lower limbs and fever 38.5 c and colicky abdominal pain. The condition was regressed spontaneously. After 3 months; the patient admitted to hospital with bloody diarrhea and red colored urine, normal CBC.

1. **What is the possible diagnosis?**
2. **What are the investigations you need?**
3. **What are the main lines of treatment?**

D. **MCQs:**

1. **All conditions causing macrocytic anemia except:** (2)
   a. Pernicious anemia
   b. Chronic liver disease
   c. Post hemorrhagic state
   d. G6PD deficiency
2. **Which of the following combination of immunological markers when positive indicates diagnosis of bi-phenotypic leukemia?** (2)
   a. CD 3 and TDT
   b. CD 10 and TDT
   c. CD 3 and CD 22
   d. CD 13 and MPO

Q 6) Infectious Diseases (16 marks)

A. Discuss the clinical presentation and diagnosis of cytomegalovirus infection. (5)

B. Mention the causes of fever without localizing sign. (4)

C. **Problem Solving:** (3)

A five-year old female patient was admitted to Children Hospital due to abdominal pain, fever, and fistulized mass in submandibular area as suppurative lymphadenopathy.

History of immunomodulatory agents as azathioprine and prednisolone for leukocytoclastic vasculitis 3month ago, admitted 2 months ago due to fever and severe abdominal pain, mimicking acute abdominal manifestations. She had received cefixime 2 times because of abdominal pain and fever. Last time the appendectomy was performed since pathological reports showed appendicitis and necrosis. Abdominal sonography revealed several accumulated lymphadenopathies, some of which were necrotic with a maximum dimension of 33 × 15 mm in the para-aortic region; along with inflammatory evidence. Normal results were obtained in the evaluation of other organs such as heart, eye, and immune system.

a. **What is the possible diagnosis?**
b. **How can you confirm diagnosis?**
c. **Prevention.**

D. MCQs:

1. **Which of these is NOT a treatment for chickenpox? (2)**
   a. Acyclovir
   b. VZIG
   c. Lotrimin
   d. Wet compresses
2. **The characteristic rash of measles usually appears: (2)**
   a. 2 to 4 days after onset of the prodromal symptoms
   b. 10 to14 days after onset of the prodromal symptoms
   c. 2 weeks after onset of the prodromal symptoms
   d. 2 months after onset of the prodromal symptoms

==========**Good Luck**========

Chairman of Department
Prof. Abdelrahman Elmashad

Examination for Master Degree in: Pediatrics
Course Title: Pediatrics
Date: October 13, 2019 (Paper II)
Time allowed: 3 Hours
Total Assessment Marks: 100 (4 Pages)

Tanta University
Faculty of Medicine
Department of Pediatrics

All questions should be tried:

Q 1) Behavioral Pediatrics (20 marks)

Discuss the behavioral and communicational milestones of infants and children in the first 4 years of life.

Q 2) GIT (16 marks)

A. Give a short account on the treatment of gastroesophageal reflux disease. (5)

B. Mention the differences between retentive constipation and Hirschsprung disease. (4)

C. Problem solving : (3)

A newborn presented with severe vomiting (greenish in color) and epigastric distention which began within a few hours of birth. He passed meconium normally for few days then stopped. There was a history of maternal polyhydramnios where prenatal ultrasound revealed congenital cardiac and renal anomalies, in addition to dilated stomach and an upper bowel loop.

1. **What is the most likely diagnosis?**
2. **What is the most important diagnostic test?**
3. **Mention two other common associations.**

D. MCQs :

1. **The most appropriate investigation to diagnose neonatal volvulus with intestinal malrotation is: (2)**
   a. Plain abdominal film
   b. CT scan
   c. Upper GI contrast study
   d. Contrast enema.

2. **Severe watery diarrhea since the first week of life with villous atrophy occurs in: (2)**
   a. Celiac disease
   b. Cystic fibrosis
   c. Congenital chloride diarrhea
   d. Microvillus inclusion disease

Q 3) Hepatology (16 marks)

A. Give a short account on the management of bleeding esophageal varices in children. (5)

B. Enumerate the different causes of pediatric space occupying lesions of the liver. (4)

C. **Problem solving:** (3)

A 15-year old female adolescent presented to her general practitioner with a 2-week history of increasing jaundice and lethargy. She was not on medication. A diagnosis of acute hepatitis was made but over 10 week period there had been no improvement and the symptoms of jaundice and lethargy persisted. On examination, the liver was enlarged 4 cm below the costal margin but there were no other positive physical findings. Her medical history revealed that she has had two similar episodes over the last 2 years both of which subsided spontaneously within a few weeks. Family history for similar condition was negative. Initial laboratory investigations are shown (ALT 660 U/L, AST 460 U/L, Total bilirubin 7.07 mg/dl, direct bilirubin 4.02 mg/dl, ALP 100 U/L). All virological and metabolic markers were negative.

1. **What is the most likely diagnosis of such case?**
2. **How to confirm this suspected diagnosis?**
3. **What are the lines of treatment of this case?**

D. **MCQs:**

1. **Recently, the FDA approved the first potent oral directly-acting antiviral agents (DAAs) to treat chronic HCV infection (for 12 weeks) in children and adolescents aged 12 years and older or weighing at least 35 kilograms that included: (2)**
   a. Interferon and ribavirin
   b. Half the adult fixed-dose of ledipasvir/sofosbuvir, 45 mg/200 mg ± ribavirin
   c. Ledipasvir/sofosbuvir in the adult fixed-dose, 90 mg/400 mg, ± ribavirin
   d. Ledipasvir/sofosbuvir in the adult fixed-dose, 400 mg/90mg, ± ribavirin
2. **A 16-year-old girl has hepatosplenomegaly, an intention tremor, dysarthria, dystonia, and deterioration in her school performance. She also developed abnormal urine with excess glucose, protein, and uric acid. She has a several-years history of elevated liver enzymes of unknown etiology. Which of the following best explains her condition? (2)**
   a. Indian childhood cirrhosis
   b. α1-Antitrypsin deficiency
   c. Wilson disease
   d. Menkes syndrome

Q 4) **Nephrology** **(16 marks)**

A. **Discuss the management of recurrent urinary tract infections in children. (5)**

B. **Define and tabulate stages of acute kidney injury. (4)**

C. **Problem solving:** (3)

A seven weeks old infant was presented by a mass in the lower abdomen. The mother noted a dribbling urinary stream since shortly after birth. Ultrasonography revealed bilateral hydronephrosis with bladder wall hypertrophy and an enlarged prostatic portion of the urethra.

a. **What is the most likely diagnosis?**
b. **How to confirm diagnosis?**
c. **What is the best treatment of this child?**

D. MCQs:

1. **Hypercalciuria in children is diagnosed by: (2)**
   a. 24-hr urinary calcium excretion exceeding 4 mg/kg
   b. 24-hr urinary calcium excretion exceeding 0.2 mg/kg
   c. A spot urine calcium to creatinine ratio (mg/mg) exceeding 4
   d. A spot urine calcium to creatinine ratio (mg/mg) exceeding 2
2. **An 8 week old infant presented by massive generalized edema, proteinuria +4 and hypercholesterolemia. The best treatment of this patient is: (2)**
   a. Corticosteroids
   b. Cyclosporine
   c. Fluid restriction and diuretics
   d. Bilateral nephrectomy and peritoneal dialysis

Q 5) Genetics (16 marks)

A. **Discuss mutagens and teratogens. (5)**

B. **Give short account on methods and indications of antenatal diagnosis. (4)**

C. Problem solving: (3)

A 10 day old child manifests profound coma 1 day after an illness characterized by emesis, poor oral intake, and hypotonia. Laboratory findings reveal 4+ ketonuria; arterial blood gas, 6.9 mm Hg; PCO2, 19 mm Hg; PO2, 95 mm Hg; anion gap, 37 mEq/L; and absolute neutrophil count, 400/mm3.

1. **What is most likely the diagnosis?**
2. **How diagnosis to be confirmed?**
3. **What are the Differential diagnoses of this condition?**

D. MCQs:

1. **Medium-chain acyl-coenzyme A dehydrogenase deficiency is characterized by all of the following EXCEPT: (2)**
   a. Autosomal recessive inheritance
   b. Hypoketotic hypoglycemia
   c. Cardiomyopathy
   d. Episodes associated with fasting
2. **Features of tyrosinemia type I include all of the following EXCEPT: (2)**
   a. Hepatic carcinoma
   b. Coagulopathy
   c. Acute peripheral neuropathy
   d. Congenital heart disease

Q 6) Endocrinology (16 marks)

A. Discuss briefly the approach to an infant with ambiguous genitalia. (5)

B. Enumerate the features and laboratory findings of Leydig cell hypoplasia. (4)

C. Problem Solving: (3)

An 18-mo female with SCD develops pneumococcal meningitis. Her initial vital signs on presentation are pulse 160, RR 45, BP 65/35 mm Hg, and Temp40°C. Initial Serum electrolyte values were normal. After IVF and antibiotics, she begins to improve. On the 2nd day of the illness, S/E results reveal Na+ = 115 mEq/L, K+ = 2.9 mEq/L, plasma glucose= 90 mg /dL, and BUN 5. Her urine sodium level is 86.

1. **What is the most likely diagnosis of the developing state on the 2nd day?**
2. **What is her blood osmolality level?**
3. **What is the treatment of such state?**

D. MCQs:

1. **Gonadotropin-dependent precocious puberty (true precocious puberty) is associated with all of the following EXCEPT: (2)**
   a. Female predominance
   b. Hypothalamic hamartoma
   c. Hypothyroidism
   d. Menstruation as the first sign
2. **All of the following are associated with Klinefelter syndrome EXCEPT: (2)**
   a. 47 XXY karyotype
   b. Precocious puberty
   c. Small testes and penis
   d. Mental retardation

==========**Good Luck**========

Chairman of Department
Prof. Abdelrahman Elmashad

Examination for Master in: Neonatology /Health Care
Course Title: Pediatrics
Date: October 17, 2019 **(Paper III)**
Time allowed: 3 Hours
Total Assessment Marks: 100 **(3 Pages)**

Tanta University
Faculty of Medicine
Department of Pediatrics

All questions should be tried

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Neonatology **(75 marks)**

Q 1) ***Long essay:*** **(15)**

Discuss the management of hyperbilirubinemia in preterm baby.

Q 2) ***Short essay:*** **Give short notes about: (3 for each one)**

1. **Neonatal pneumonia**
2. **Neonatal polycythemia**
3. **Neonatal congenital cyanotic heart diseases**
4. **Neonatal neutropenia**
5. **Neonatal DIC**

Q 3) ***Short answer:*** **Mention: (3 for each one)**

1. **Four complications of nasal CPAP**
2. **Causes of neonatal hypoglycemia**
3. **Criteria of BPD**
4. **Complications of TPN in neonates**
5. **Indications of surfactant injection**

Q 4) ***Problem Solving:*** **(3 for each one)**

A. 2100-g infant of a diabetic mother experiences seizures on the first day of life. Pregnancy was complicated by severe diabetic vasculopathy and placental insufficiency, with the development of late decelerations and the need for emergency cesarean section. The Apgar scores were 8 and 9 at 1 and 5 minutes, respectively. During the first 6 hr of life, the child was well and tolerated formula feedings well. Jitteriness developed at 10 hr of age and progressed to tonic-clonic seizures at 18 hr of age. Laboratory studies revealed blood glucose of 80 mg/dL and calcium of 6.0 mg/dL. Thereafter, calcium gluconate (10%), 2 mL/kg, was given repeatedly without affecting the frequency of seizures.

1. **What is the cause of seizures?**
2. **How to manage it?**
3. **What the pathophysiology of this defect?**

B. A 3.5-kg girl is delivered by spontaneous vaginal delivery, with Apgar scores of 2 and 3. Respiratory distress is apparent in the delivery room, with diminished breath sounds on the left and heart tones displaced to the right. With scaphoid abdomen.

1. **What is the best maneuver to be done?**
2. **What is the cause of this condition?**
3. **How to confirm the diagnosis?**

C. A 32-wk gestational age infant develops grunting, flaring, and retraction after birth. He requires 50% oxygen (O2) by hood to keep his oxygen saturation above 85% .

1. **What is the next step in management, if he requires more O2?**
2. **What is the cause of this condition?**
3. **What is the accepted oxygen saturation in this age group?**

D. A 3 day old, 790-g female infant had been ventilated for respiratory distress syndrome (RDS) and was being weaned effectively from the ventilator. Today she is noted to have an active precordium, bounding pulses, and hypoxia with hypercarbia.

1. **What is the cause of this condition?**
2. **How to confirm the diagnosis?**
3. **How to manage this situation?**

E. A 30 wk old average-for-gestational-age male infant is born after 24 hr of ruptured membranes and another 10 hr of labor. After birth, he develops grunting, flaring, and restrictions, as well as cyanosis. He requires intubation, ventilation, and surfactant therapy. Despite these measures he is still hypoxic and hypotensive.

1. **What is the expected cause of this situation?**
2. **How to confirm the diagnosis?**
3. **What is the 1st measure need to be done?**

Q 5) *MCQs:* **(2.5 for each one)**

1. **In hypernatremic dehydration, a rapid correction results in seizures due to: (2.5)**
   a. Kernicterus has been reported
   b. Rapid fall of serum bilirubin after discontinuation of nursing
   c. Significant elevation of unconjugated bilirubin
   d. Nursing can be resumed after several days without return of Hyperbilirubinemia
2. **All are causes of neonatal cholestasis EXCEPT: (2.5)**
   a. Biliary atresia
   b. Choledocal cyst
   c. Crigler Najar syndrome
   d. Alagille syndrome
3. **All are most common micro-organism in early onset sepsis EXCEPT: (2.5)**
   a. Group B streptococci
   b. Escherichia coil
   c. Coagulase negative staph
   d. Listeria monocytogenes
4. **Polycythemia is associated with all of the following EXCEPT: (2.5)**
   a. Trisomy 21
   b. Donor twin in a twin-twin transfusion
   c. Neonatal Graves' disease
   d. Delayed clamping of the umbilical cord
5. **Treatment of pulmonary hemorrhage includes all of the following EXCEPT:(2.5)**
   a. Administration of surfactant
   b. Transfusion of blood products
   c. IV antibiotics

d. Suctioning of the airway

6. **Successful ventilation is determined by all of the following EXCEPT:**
   a. Zero reading of end-tidal CO2 measurement
   b. Improvement of color
   c. Rising heart rate
   d. Symmetric breath sounds

Health Care **(25 marks)**

Q1) Give a short account on the treatment of BCG-oma. (9)

Q 2) Mention the types of therapeutic special powdered milks. (6)

Q 3) Problem solving: **(6)**

A 10 years old obese girl, her height and weight are > 97th percentile. Her bone age is 11 years; her IQ is 92 with normal physical examination.

a. **What is the most likely cause of her obesity?**
b. **Mention 5 genetic causes of obesity.**
c. **What are the indications of bariatric surgery?**

Q 4) MCQs:

1. **The parents of an 8-year-old boy are concerned about their son's short stature. What should be the most important next step? (2)**
   a. Measurement of body mass index
   b. Determination of genital maturation stage
   c. Determination of height velocity
   d. Determination of weight/height ratio
2. **Which of the following problems is most likely to be the result of inappropriately rapid treatment of the severely malnourished child? (2)**
   a. Hyperkalemia
   b. Hyperglycemia
   c. Congestive heart failure
   d. Renal failure

==========**Good Luck**==========

Chairman of Department
Prof. Abdelrahman Elmashad