

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) EXAMINATION – JULY/AUGUST 2013

Date :- 23rd July 2013

Time :- 9.00 a.m. - 12.00 noon

PAPER I
STRUCTURED ESSAY QUESTIONS

Answer **all five** questions.

Answer each question in a **separate book**.

Q.1

- 1.1. Briefly discuss the laboratory tests available for the confirmation of dengue viral infection at different stages of the illness explaining their usefulness. (20 marks)
- 1.2. Discuss how the values of the following laboratory parameters help to determine the clinical course in dengue infection. (40 marks)
 - 1.2.1. White blood cell count and differential count
 - 1.2.2. Haematocrit
 - 1.2.3. Platelet count
- 1.3. Explain the usefulness of ultrasound scanning in management of dengue infection. (15 marks)
- 1.4. Outline the difficulties in eliminating dengue infection in Sri Lanka. (25 marks)

Q. 2.

- 2.1. Briefly describe the molecular basis and pathogenesis of homozygous sickle cell disease. (20 marks)
- 2.2. List three (03) laboratory tests that are useful in establishing a diagnosis of sickle cell disease and describe the expected findings in each of them. (15 marks)

- 2.3. Mention two (02) life threatening complications in a child with sickle cell disease and outline the treatment of each of them. (30 marks)
- 2.4. List common problems encountered by adolescents with sickle cell disease. (15 marks)
- 2.5. Outline the long term management options available to a child with sickle cell disease. (20 marks)

Q. 3.

- 3.1. "Human breast milk is unique", discuss this statement. (40 marks)
- 3.2. List the steps in the "Baby Friendly Hospital Initiative" that was introduced in Sri Lanka in 1992. (30 marks)
- 3.3. Mention the steps taken by the Government of Sri Lanka to protect and promote breast feeding. (30 marks)

Q. 4.

- 4.1. Discuss briefly the factors responsible for initiation of breathing in the neonate. (15 marks)
- 4.2. List eight (08) causes of respiratory distress within the first four hours of life. (15 marks)
- 4.3. Outline the pathogenesis of surfactant deficient lung disease. (25 marks)
- 4.4. Briefly discuss preventive and treatment strategies of surfactant deficient lung disease. (25 marks)
- 4.5. Discuss the constraints in management of surfactant deficient lung disease in Sri Lanka. (20 marks)

Contd..../3-

Q. 5

- 5.1. Define Acute Kidney Injury (AKI). (15 marks)
- 5.2. List the causes of AKI in a newborn. (15 marks)
- 5.3. What is the fractional excretion of sodium (FENa) and its usefulness in AKI. (20 marks)
- 5.4. Outline the principles of management of the following complications of AKI.
- 5.4.1. Metabolic acidosis
- 5.4.2. Hyperkalaemia (30 marks)
- 5.5. Mention five (05) definitive indications for dialysis in AKI. (20 marks)

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MD (PAEDIATRICS) EXAMINATION – JULY/AUGUST 2013

Date: 24th July 2013

Time: 9.00.a.m-12.00 noon

PAPER II - CASE HISTORIES

Answer **all five** questions.

Answer each question in a **separate book**.

1. A ten year old girl is admitted to the paediatric ward as she was behaving abnormally. She has had several episodes of screaming and irrational behaviour over the past 2 days. She has had two episodes of vomiting on the day of admission. She has been apparently well and has not had any fever. She was born at term. There were no antenatal or postnatal complications. No past history of any other significant illnesses and she is average in her school performance. However, the mother had noted that she tends to be forgetful over the past four weeks.

Parents are from a non consanguineous marriage and she is the eldest of three siblings.

On examination her weight was on the 25th centile and height was on the 10th centile. She was afebrile, drowsy, not pale and not icteric. Her pulse was 90/min, BP 140/90 mmHg and no murmurs were detected. On examination of the abdomen liver and spleen were not palpable. Her Glasgow Coma Scale was 12/15 and no focal neurological signs were noted. After admission to the ward she developed a generalized tonic clonic convulsion which lasted for 4-5 minutes.

Investigations:

Haemoglobin	9g/dl (11- 16)
WBC/DC	5.0x10 ⁹ /L N 65%, L 34%, M 1%
Platelet Count	150 x 10 ⁹ /L (150-400)
Blood picture	Normocytic, normochromic red cells. Normal white blood cells with low platelets. No abnormal cells detected
Blood urea	5 mmol/L (4-6 mmol/L)
Serum sodium	142 mmmol/ (135- 145)
Serum potassium	3.8 mmol/L (3.5-4.5)
Serum chloride	92mmol/L (96-106)
Blood sugar	5mmol/L

Contd...../2-

Serum ammonia	20 mcg/dL	(15 -45)
ESR	118mm	
ALT	40 IU/L	(20-40)
AST	60 IU/L	(20-40)
CSF	WBC - Nil, RBC-Nil	
	Protein- 40mg/dl	
	Sugar - 4 mmol/L	
EEG	Generalized non specific slowing. No focal changes	
<i>Herpes simplex virus</i> PCR	Negative	

- 1.1 State the most likely complete diagnosis. (20 marks)
- 1.2 Mention the other investigations you would carry out in this girl giving reasons. (30 marks)
- 1.3 List three important immediate steps you would take for neuro-protection (15 marks)
- 1.4 Enumerate the principles of management in this girl. (35 marks)

2. A 11 year old girl is admitted with a history of vomiting, abdominal pain and drowsiness for the previous 36 hours.

There is a history of increased frequency of micturition and secondary nocturnal enuresis over the past 2 weeks. The general practitioner had treated her for a urinary tract infection in view of these symptoms one week prior to the admission.

There is also a history of weight loss.

There is no past history of note.

On examination she has dry mucous membranes, reduced skin turgor and sunken eyes. The pulse volume is low with a rate of 148 /min. The capillary re-fill time is 4 seconds.

Her weight is 22 Kg.

The following investigation results are obtained:

Full blood count:

Total white cell count	18.5 10^3 /uL (4-11)
	N 79.9%, L 15.4%, M 4.4%, E 0.1%
Haemoglobin	14.7 g/dL (11-16)
HCT	47.5%
Platelets	372 10^3 /uL (150-400)

Blood urea	60.8 mg/dl (10-50)
Serum sodium	130 mmol/l (137-145)
Serum potassium	5.6 mmol/l (3.5-5.1)
Blood sugar	582 mg/dl
Urine analysis	sugar brick red, Ketones +++

Arterial blood gas analysis

pH	7.04 (7.35- 7.45)
pCO ₂	19.4 mmHg (35- 45)
pO ₂	80 mmHg (80 -100)
HCO ₃	4.8 mmol/L (22 - 26)

2.1 Mention the complete diagnosis. (15 marks)

2.2 Describe in detail the steps you would take in the management of this child over the next 48 hours. (45 marks)

At 6 hours after initiation of therapy the house officer informs you that the child's condition is 'deteriorating.'

2.3 How would you objectively asses and manage this child at this stage? (20 marks)

She recovers from the acute illness.

2.4 Outline the further management in the next 5 days. (20 marks)

3. A six week old baby boy is brought to the Paediatric clinic by his adoptive parents due to failure to gain weight. The baby had been born at 36 weeks of gestation with a weight of 2.2 Kg. His present weight is 2.4 kg. BCG was given on day one. He was breastfed only for one week and has been on formula milk since he was adopted. He had been born by an uneventful vaginal delivery with no birth asphyxia. Parents were concerned that child is crying excessively. Cuddling made him more distressed. Parents also complained that the child has breathing difficulty due to persistent nasal discharge. There are no details of the biological parents.

On examination there is a paucity of limb movements. He is pale. There is a generalized erythematous skin rash with bullae. The rash is more prominent around the mouth. He has generalized lymphadenopathy and hepatosplenomegaly. His cardiovascular system and respiratory systems are normal.

- 3.1 State the most likely diagnosis (15 marks)
- 3.2 Discuss how you would confirm the diagnosis (30 marks)
- 3.3 Outline the management of this clinical situation (25 marks)
- 3.4 List two (02) possible causes for pallor in this child (10 marks)
- 3.5 State four (04) late complications of this condition (20 marks)

4. A one year and seven month old boy, born to non-consanguineous parents was referred by an Eye surgeon for the management of a respiratory problem while he was waiting in the eye ward for assessment of poor vision. He has had 2 episodes of wheezing at 9 months and at one year.

His immunization was age appropriate.

In his motor development he could walk without support. He did not reach for objects. His vision was poor and the parents were concerned about his hearing. He speaks two to three single words.

On examination:

OFC	47cm (75 th percentile)
Weight	9.4 kg (10 th percentile)
Height	82 cm (10 th percentile)

He was pale, afebrile, there was no lymphadenopathy. He had poor eye contact. He had moderate hepatosplenomegaly.

His respiratory rate was 30/min, air entry was equal with few rhonci.

Fundoscopy was difficult. The rest of the central nervous system examination was normal. His cardiovascular system did not reveal any abnormality.

The results of the investigations are as follows:

Full blood count

Hb	6.8g/dl	(10.5-14)
WBC	4.1x 10 ⁹ /L	(4.5-11)
	N 31%, L 67%	
Platelet count	110x10 ⁹ /L	(150-400)
CRP	<6 g/L	(<6 g/L)
ESR	10 mm/1 st hr	

4.1 What is the diagnosis? (30 marks)

4.2 What are the reasons for diminished vision and hearing? (10 marks)

4.3 What investigations would you do to confirm the diagnosis? (20 marks)

4.4 Outline the steps in the management. (40 marks)

Contd...../6-

5. A previously healthy 3 year old boy was admitted to a Paediatric ward at a base hospital with fever and irritability of five days duration. He had no cough, vomiting, diarrhoea or urinary symptoms.

On examination he was ill looking with capillary refilling time of less than two seconds. Ear, nose and throat examination were normal. His pulse was 120/ min. Rest of the cardiovascular system was normal. No abnormalities were detected in respiratory, central nervous system and abdomen.

The following investigation results were available.

Full Blood Count

Hb	10.4g/dl (10.5-14)
WBC	18.2 X 10 ⁹
	Neutrophils 75%, Lymphocytes 25%
C- Reactive proteins	96g/L (< 6)
ESR	75mm/1 st hour
Urine full report	Normal

He was commenced on intravenous antibiotics with which he showed some improvement, however the fever continued. He was transferred to a Teaching Hospital for further management. Examination findings remained same on admission to the Teaching Hospital.

Two days after admission the child became breathless and had remittent fever of 103°F-104 °F. His pulse was 140/min, good volume, and the blood pressure was 90/30Hgmm. A murmur was heard, which was best heard over the left lower sternal edge. His respiratory rate was 60/min. Air entry was equal. Breath sounds were vesicular with bilateral fine crepitations. Abdominal examination revealed tender hepatomegaly.

- 5.1 State the most likely explanation for his acute deterioration at the Teaching Hospital. (25marks)
- 5.2 Outline the acute management of this child. (35marks)
- 5.3 Despite the medical management fever continued over next two weeks.
- 5.3.1 List the possibilities for unresponsiveness to treatment (15 marks)
- 5.3.2 Outline the management at this stage (25 marks)