

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) EXAMINATION – JULY 2020

Date:- 21st July 2020

Time:- 9.00 a.m. – 12.00 noon

PAPER I
(STRUCTURED ESSAY QUESTIONS)

Answer all **five (05)** questions.

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

1.

- 1.1. Define Chronic Kidney Disease (CKD). (10 marks)
- 1.2. Enumerate four (04) broad aetiological categories of CKD in children giving two (02) examples for each category. (20 marks)
- 1.3. 'Renal injury can progress despite removal of the original insult'. Outline three (03) reasons that would support the above statement. (15 marks)
- 1.4. Briefly describe the pathophysiology of
 - 1.4.1. renal osteodystrophy. (15 marks)
 - 1.4.2. anaemia in CKD. (15 marks)
- 1.5. Outline the management of CKD. (25 marks)

2.

- 2.1. Describe the process of normal sexual differentiation of a foetus. (30 marks)
- 2.2. Name two (02) genetic disorders which could affect sexual differentiation of a fetus. (10 marks)
- 2.3. State five (05) first line diagnostic tests with their importance in the management of a child with a Disorder of Sexual Differentiation (DSD). (30 marks)
- 2.4. Discuss the factors that need to be considered in the gender assignment of a child with DSD. (30 marks)

Contd.../2-

3.

- 3.1. Describe the risk classification of a patient with beta thalassaemia major for allogenic hematopoietic stem cell transplantation (HSCT). (20 marks)
- 3.2. State five (05) indications other than beta thalassaemia major for HSCT in children. (20 marks)
- 3.3. Enumerate five (05) categories of potential donors considered for allogenic HSCT. (20 marks)
- 3.4. List the investigations performed to evaluate the suitability of a donor awaiting HSCT. (20 marks)
- 3.5. Define the following and describe their significance briefly, in relation to HSCT. (20 marks)
 - 3.5.1. HLA sensitization.
 - 3.5.2. Graft versus tumor effect.
 - 3.5.3. Acute graft versus host disease.
 - 3.5.4. ABO incompatibility between donor and recipient.

4.

- 4.1. Explain the term "Pandemic". (10 marks)
- 4.2. List five (05) reasons that have contributed to an increase in the likelihood of the occurrence of pandemics over the last century. (20 marks)
- 4.3. Describe the adverse impacts of a pandemic on health care system in relation to children. (30 marks)
- 4.4. Briefly outline the non-pharmacological aspects of infection prevention and control of pandemic prone acute respiratory diseases. (40 marks)

Contd...../3-

5.

5.1. "The Child Health Development Record (CHDR) is a tool in monitoring children for developmental delays and disorders in the community. But it is not the optimal screening tool".

Briefly discuss the above statement. (20 marks)

5.2. Explain the term neural plasticity with relevance to child development.

(20 marks)

5.3. List six (06) principles of early intervention programmes for a high risk infant at discharge.

(30 marks)

5.4. Define the main diagnostic criteria in autism spectrum disorder with examples for each sub-category.

(30 marks)

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MD (PAEDIATRICS) EXAMINATION – JULY/AUGUST 2020

Date :- 22nd July 2020

Time:- 9.00 a.m. – 12.00 noon

PAPER II – CASE HISTORIES

Answer **all five (05)** questions.

Answer each question in a separate book.

1. A 2 year and 5 month old boy presented to the paediatric ward with a history of repeated episodes of vomiting for the last 24 hours.

He was born by a normal vaginal delivery and had a birth weight of 2.8 kg. He has had recurrent bouts of vomiting every 2-3 months needing hospital admissions in each time, and these were associated with mild cold or cough. He is unable to walk alone. Speech is limited to babbling. He does not have a good understanding on the surroundings.

The parents are non-consanguineous, and the first male child born to them had died at 3 months due to intractable seizures. The investigation reports of the brother who died are not available.

He is afebrile, appears ill, has a pulse rate of 110/minute and a capillary refill time of 2 seconds.

On examination

Weight	8kg (<3 SD)
Height	67cm(<3SD)
OFC	2 nd - 10 th centile

He is drowsy. Not pale or icteric. No hepatosplenomegaly.

Contd..../2-

The investigation findings are as follows:

FBC		
Hb	11.0g/dL	(11-15)
WBC	9.3 x10 ⁹ /L	(4-11)
	N-35%, L - 65%, M -2%	
Platelet count	205 x10 ⁹ /L	(150-400)
Blood picture	Red cells are normochromic and normocytic. WBC and platelets normal.	
Serum creatinine	35 µmol/L	(45-80)
Serum Sodium	139 mmol/L	(135-145)
Serum potassium	3.5 mmol/L	(3.5-5.5)
Serum chloride	100 mmol/L	(96-106)
CRP	5mg/L	(<6)
AST	35 IU/L	(<40)
ALT	30 IU/L	(<40)
UFR		
Proteins	Nil	
Pus cells	3 - 4/hpf	
Red cells	2 - 3/hpf	
Urine culture	No growth	
Serum ammonia	198.1 µmol/L	(27.2–102)
Serum lactate	1.9	(<2.2)
Urine ketones	Absent	

1.1. List two (02) differential diagnoses? (20 marks)

Subsequent arterial blood gas showed the following result.

pH	7.47	(7.35–7.45)
PaO ₂	13.4 kPa	(10.3–13.3)
PaCO ₂	4.6 kPa	(4.7–6.0)
Bicarbonate	29 mmol/L	(22–28)

1.2. Briefly outline the management of this boy within the next 72 hours. (40 marks)

1.3. Mention the important aspects of the long-term management of this child. (40 marks)

Contd..../3-

2. A previously well 6 year old girl is admitted with high grade fever, vomiting, severe myalgia and abdominal pain for 2 days duration. She is the 2nd child of the family born to non-consanguineous parents. Her elder brother is well and there is no significant family history to note. Her immunization is up to date. No history of recent travel and muddy water contact.

Examination findings on admission are given below:

Ill looking, drowsy and febrile (39°C)
 conjunctival injections +
 diffuse erythematous tender skin+
 Throat – inflamed tonsils with pustules+
 cold peripheries
 Pulse rate 140/minute, low volume
 Blood pressure - 70/30 mmHg

- 2.1. Outline the immediate management of this girl on admission.
 (30 marks)

Investigation results are as follows:

WBC	18x 10 ⁹ /L	(5 - 11)
	N - 70%, L -28% , E - 2%	
Platelet count	100 x 10 ⁹ /L	(150- 450)
CRP	90 mg/dL	(<6)
RBS	80 mg/dL	
SGPT	120 IU/L	(<40)
SGOT	130 IU/ L	(< 50)
Creatine phosphokinase	800 U/L	(30- 300)
Blood urea	7 mmol/L	(2.5 -6.5)
UFR		
Pus cells	10 - 15/hpf	
Red cells	8 -10/hpf	
24 hour blood culture	Sterile	

- 2.2. What is the most likely diagnosis? (20 marks)

- 2.3. Mention two (02) other physical signs to support the diagnosis mentioned in 2.2. (20 marks)

- 2.4. List three (03) complications she could develop due to this condition.
 (30 marks)

Contd..../4-

3. A 10 year old girl is referred to the endocrinologist with a history of severe progressive low back pain not responding to analgesics for 3 months' duration. She gives a history of a fall from a chair 4 months before. She complains of generalized weakness, loss of appetite and intermittent headache for last 2 months.

Following investigations were done prior to the referral:

Serum calcium	8.5 mg/dL	(8.4 - 10.2)
Serum phosphate	1.65 mmol/L	(1.2 - 1.65)
Serum magnesium	0.92 mmol/l	(0.6 - 0.9)
Alkaline phosphatase	600 U/l	(60 - 425)
Serum albumin	38.9 g/L	(35 - 52)
Vitamin D	40 nmol/l	(Deficiency <50)
PTH	6.67 pmol/L	(1.59-7.21)

The radiography of the spine showed osteopaenia and compression fracture at L1 and L2 vertebral body.

She was born to non-consanguineous parents with a birth history of 2.9 kg. Immediate post-natal period was uneventful, and had normal developmental milestones. Other than one episode of simple febrile convulsion at 18 months of age there was no significant past medical history. Her family members are of normal health.

On clinical examination she is mildly pale and in severe pain. There is tenderness in the lumbar region.

Height	124 cm on 10 th centile	
Weight	20 kg on 3 rd centile	
Blood pressure	98/60 mmHg	
Urine analysis		
Albumin	Nil	
Pus cells	1-2	
Red cells	Nil	
Sugar	Nil	
Ketone body	Nil	
Hemoglobin	8.2 g/dL	(11 - 15)
WBC	2.50 x10 ⁹ /L	(4 - 11)
	N -23%, L -74%, M - 02%, E - 01%	
Platelet count	95 x10 ⁹ /L	(150 - 450)
ESR	65mm in 1 st hour	
Serum sodium	135 mmol/L	(135 - 145)
Serum potassium	4.2 mmol/L	(3.5 - 5.5)
Serum creatinine	35 µmol/L	(30 - 60)

Contd.../5-

- 3.1. State the most likely diagnosis. (30 marks)
- 3.2. Enumerate four (04) physical signs you would elicit to arrive at the diagnosis mentioned in 3.1. (20 marks)
- 3.2. List three (03) important investigations with expected findings you would perform in this child. (15 marks)
- 3.4. Briefly outline the principles of management. (35 marks)

Contd..../6-

4. A 12 year old pre pubertal girl was brought to emergency department of a teaching hospital with severe abdominal pain and vomiting for two hours duration.

She was diagnosed as Type I Diabetes Mellitus at 5 years of age and on premixed insulin since then. Her diabetic control was poor due to poor compliance. However, there were no long term complications associated with Diabetes Mellitus on screening. She has not been to school for the last 1 year and is on antidepressants as prescribed by a psychiatrist. Her father has left the family recently and mother is working in a garment factory. She has a younger sibling who is 7 years old and healthy. Her mother is on iron supplements for anaemia.

On examination, she is afebrile, drowsy and pale with no icterus. There is no bleeding manifestations on the skin or mucus membranes. Oxygen Saturation on air is 97%. Her pulse rate is 150/minute and of low volume, blood pressure is 80/50 mmHg and the examination of the precordium is normal. Abdomen is not distended. There is marked epigastric tenderness with no organomegaly. Bowel sounds are present. There is no free fluid. Central nervous system and respiratory system are clinically normal.

After admission she developed hematemesis

Investigations

RBS	50 mg/dL	
Venous Blood gas		
pH	7.21	(7.35 -7.45)
PO ₂	60 mmHg	(50-70)
PaCO ₂	40 mmHg	(35-45)
HCO ₃ ⁻	13 meq/L	(20-24)
BE	-15	
Ketone bodies	Negative	
Hemoglobin	9.5 g/dL	
WBC	11x 10 ⁹ /L	N-60% , L- 35%
Platelet count	250 x 10 ⁹ /L	
CRP	4 mg/dl	(<6)
ALT	60 IU/L	(up to 40)
AST	30 IU/L	(up to 40)
Ultrasound scan abdomen	Normal	

4.1. Briefly outline the immediate management. (20 marks)

4.2. State the complete diagnosis. (20 marks)

- 4.3. Mention four (04) other useful investigations with expected findings
(20 marks)
- 4.4. List two (02) complications she could develop due to the condition you
mentioned in 4.2 (10 marks)
- 4.5. Briefly outline the further management of this child. (30 marks)

5. A 14 year old boy is admitted following a convulsion lasting for 10 minutes. On admission to primary care unit, the convulsion has stopped but remained drowsy. He has had low grade fever, lethargy and headache for last 7 days' duration, and he was prescribed a 5-day course of oral clarithromycin by a general practitioner. His fever appeared to settle but the day before the admission his headache worsened and vomited 3 times. He had two episodes of epistaxis and one episode of bleeding per rectum in the past. During the last 6 months' period he has had poor exercise tolerance.

On examination he is febrile and drowsy. He has central cyanosis and early clubbing. There are two well circumscribed red papules of 3mm on the under surface of tongue.

Cardiovascular system examination revealed a pulse rate of 86 beats/minute, Blood pressure of 110/70 mmHg and normal heart sounds. Respiratory rate is 20 breaths/minute, vesicular breathing and no added sounds. There is no organomegaly on examination of the abdomen. Central nervous system examination revealed a GCS of 13, weakness of left lower limb with exaggerated reflexes.

Hb	11g/dL
WBC	19x10 ⁹ /L
	N - 70%, L - 20%
Platelet count	225x10 ⁹ /L
CRP	60 mg/dL
ESR	50 mm 1 st hour
Serum sodium	134 mmol/L
Serum potassium	4.2 mmol/l
Clotting profile	Normal

Echocardiogram revealed a structurally normal heart and great vessels.

- 5.1. What is the most likely reason for his acute presentation? (30 marks)
- 5.2. Briefly outline the initial management of this boy. (40 marks)
- 5.3. What is the most likely underlying diagnosis? (15 marks)
- 5.4. List three (03) other investigations which are useful to evaluate this child. (15 marks)