

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PEADIATRICS) EXAMINATION – (OLD REGULATION)
JULY / AUGUST 2011

Date : 18th July 2011

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. Describe the physiology of glucose homeostasis in children (20 marks)
- 1.2.
 - (a) List **eight (08)** causes of persistent hypoglycaemia in infants. (25 marks)
 - (b) List **five (05)** causes of transient hypoglycaemia in infants. (Exclude the neonatal period). (10 marks)
- 1.3 Discuss what is meant by “hyperglycaemia” ? (20 marks)
- 1.4 Outline the pathogenesis of the **two (02)** most important metabolic sequelae of type I diabetes. (25 marks)

Q.2.

- 2.1 List the aetiologic classification of shock in children, giving two (02) examples for each category. (30 marks)
- 2.2 Briefly describe the pathophysiology of compensated shock. (30 marks)
- 2.3 Outline the emergency management protocol for a child with anaphylactic shock. (40 marks)

Q.3.

- 3.1 Explain what is meant by “Millennium Development Goals”. (MDG)
(25 marks)
- 3.2 List the MDG’s which will **directly** affect child health in **Sri Lanka**.
(30 marks)
- 3.3 Comment on the present status of “Under Five Mortality” in Sri Lanka
(25 marks)
- 3.4 Briefly describe important interventions that will have a major impact in reducing “Under Five Mortality” in Sri Lanka. (20 marks)

Q.4.

- 4.1. Discuss the risk factors for fungal infection of a neonate.
(30 marks)
- 4.2. Describe (with examples)
- (a) invasive fungal disease in the neonate
 - (b) disseminated fungal disease in the neonate (30 marks)
- 4.3. Outline the management of a sick neonate with candidemia.
(40 marks)

Q.5.

- 5.1 What is “autoimmune hepatitis”? (20 marks)
- 5.2 Describe the basis for the classification of autoimmune hepatitis.
(20 marks)
- 5.3 List **four (04)** investigations you would perform to help confirm the diagnosis of autoimmune hepatitis. (30 marks)
- 5.4 Outline the specific therapeutic options for autoimmune hepatitis.
(30 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PEADIATRICS) EXAMINATION – (OLD SYLLABUS)
JULY / AUGUST 2011

Date : 19th July 2011

Time : 9.00 a.m. – 12.00 noon

PAPER II – CASE HISTORIES

Answer all five questions.

Answer each question in a separate book.

Write old syllabus on the front cover of each book.

1. A 21 day old baby girl was transferred to Lady Ridgeway Children's Hospital (LRH) because of poor feeding, vomiting and irritability.

She had been treated at a base hospital since age seven days for poor feeding, jaundice and lethargy. She had been successfully resuscitated and after taking blood for investigations had been treated with IV cefotaxime, IV fluids and kept nil orally for 48 hours. Blood culture had grown E.coli.

Subsequently She had shown improvement clinically, had fed at the breast and passed normal colour stools. Urine output had been adequate.

She was the firstborn to unrelated parents, weighing 2.9 Kg. She was born at term and birth events had been normal. She passed meconium and urine within 24 hours of birth. Neonatal examination was normal and she had been discharged home on exclusive breast feeding, until the admission at seven days of age.

On the 10th day of her antibiotic course she became irritable and started vomiting and fed poorly again. Weight was 2.4 kg. Antibiotic was changed to intravenous meropenam but due to lack of improvement she was transferred for further management

Investigations done at one week of age :

FBC	WBC	15.8 x 10 ⁹ /L	N – 60%,	L – 40%
Hb		14g%		
Platelet count		124 x 10 ⁹ /L		
CRP		28 mg/dl		(0 – 6)
Blood group		Baby B+		Mother B+
RBS		1.8 mmol/l		
Serum bilirubin	Total	320 µmol/l		
	Indirect	308 µmol/L		
	Direct	12 µmol/L		
CSF		normal with sugar of 1.2 mmol/L		

Investigations done after admission to LRH:

Full blood count		normal		
Blood culture		negative		
CRP		2 mg/dL		(0 - 6)
S.Bilirubin		280 µmol/L		
	Direct	90 µmol/L		
	Indirect	190 µmol/L		
ALT		90 IU/I		(10-40)
AST		110 IU/I		(9-48)
Prothrombin time		16 sec		(control 12sec)
INR		1.3		
RBS		2.2 mmol/L		
Serum protein		6 g/dl		(6.4 – 8 g/dl)
TORCH screen		negative		
TSH		3 µmol/L		(1.5 – 8)
USS of abdomen		Enlarged liver with increased echogenicity and normal portal flow, Spleen normal size. Kidneys normal.		

- 1.1 Mention two (02) differential diagnoses at this stage. (20 marks)
- 1.2 Mention other clinical and laboratory findings that will help you to arrive at a definitive diagnosis, describing the diagnostic procedures/tests, / their value and possible yield. (40 marks)
- 1.3 What is the most likely diagnosis of this baby's illness?(15 marks)
- 1.4. Outline the treatment. (15 marks)
- 1.5. Mention one long term problem, directly related to her underlying illness, that she may develop despite adequate treatment.
 - (a) during primary school days (05 marks)
 - (b) during her adolescent years (05 marks)

2. A 4 year old girl was admitted with a history of a generalized tonic clonic seizure lasting 30 minutes, During the past one month she has been unwell with mild fever on and off. She had taken treatment from the Estate Hospital with no improvement in her condition. She vomited three to four times and became more irritable over the last two days.

She was born at term at home. Her development and immunization have been up to-date. She has been well apart from a simple febrile seizure at the age of 18 months, which was managed at the local hospital.

Both parents are unrelated, estate labourers. Her only sibling a 6 year old brother is apparently healthy. They live in a two roomed estate accommodation together with the maternal grandmother who has poorly controlled asthma.

On physical examination :

Weight	9.5 kg (<3 centile)
Height	90 cm (3 rd centile)
Irritable, drowsy, temperature 101° F	
Mild pallor, no icterus, mild dehydration, no skin rashes or bleeding manifestations	
No lymphadenopathy.	
Pulse	100/min
BP	90/60
Heart	dual rhythm with no murmurs.
Chest	Few rhonchi heard over both lungs.
Abdomen	Liver is palpable 1.5 cm below costal margin and is non tender.

Investigations

WBS	12.5 x 10 ⁹ /L	N 41%, L 53%, E 06%
Hb	10g /dl	
Platelet count	400 x 10 ⁹ /L	
CRP	36 mg/dl	(<6 mg/dl)
Urine analysis		
Protein	Trace	
pus cells	4- 6/hpf	
SGPT	20 iu/L	(< 40)
SGOT	17 iu/L	(< 40)
Blood Urea	3.1 mmol/l	(1.8 – 6.4)
Na ⁺	132 mmol/l	(135 – 145)
K ⁺	3.5 mmol/l	(3.5 – 4.5)
Chest X ray	Prominent hilar shadows +	

- 1.2 Mention **four (04)** differential diagnoses. (20 marks)
- 2.2 What further clinical examination would you perform to help arrive at a diagnosis. (20 marks)
- 2.3 List **five (05)** investigations you would perform on this child and give the expected results of each. (30 marks)
- 2.4 Which of the above diagnoses is most likely ? (10 marks)
- 2.5 What is the treatment for the most likely diagnosis ? (20 marks)

3. A 36 hour old baby boy was transferred from a private hospital to the Lady Ridgeway Hospital for management of persistent hypoglycaemia. He was the 2nd child of non-consanguineous parents. The mother had an uneventful pregnancy and the baby was born by a caesarean section at 39 weeks. Birth weight was 3.03 kg (3-10th centile), OFC 35.5 cm (10th centile) and length was 51 cm (centile 25th). Apgar was 9 at 1 min and 10 at 5 min. There was a small cleft in the soft palate and rest of the neonatal examination was normal. He was put to the breast soon after and was able to suck well.

At 6 hours of age baby was found to be jittery and capillary blood sugar was 1.2 mmol/l. As IV access was difficult 10% Dextrose 10 ml has been given orally. Capillary blood sugar 30 minutes later was 1.1 mmol/l and the baby was transferred to LRH. Baby arrived, without a drip, and was cold and jittery on examination. Capillary blood sugar was recorded as low repeatedly.

- 3.1 List two (02) immediate therapeutic actions you would take. (10 marks)
- 3.2 List the immediate investigations you would carry out. (15 marks)

Despite being on a 12.5% Dextrose infusion and breast feeds, his blood sugar remained below normal.

The following investigation results are available

Hb	14.4 g/dl	
WBC	10.4 x 10 ⁹ /L	N – 32, L – 66, M – 2
Platelets	198 x 10 ⁹ /L	
Random venous blood sugar	0.9 mmol/l	(3.8 – 7.7)
Serum electrolyte		
Na ⁺	139 mmol/L	
K ⁺	4.5 mmol/L	
Cl ⁻	99 mmol/l	
Serum bilirubin		
Total	212 mmol/l	
Indirect	199 mmol	

ALT	26 iu/L	(10-40)
AST	90 iu/L	(9-48)
Serum insulin	< 2 µ/ml	(upto 28.4)
Serum creatinine	43 mmol/L	(27-88)
Blood urea	3.4 mmol/l	(1-2.5)

US scan of abdomen

No focal lesions seen in the liver and the spleen. Gallbladder appears normal. Minimal fullness of the pelvicalyceal system of both kidneys noted. Normal bladder contour. No ascites. No supra renal mass or adrenal hyperplasia. Right testis is 1.1 x 0.5 cm Left testis is retractile and measurer 1.1 x 0.4 cm

US scan of brain - normal

- 3.3 List three (03) conditions which you would consider as possibilities in this new born. (15 marks)
- 3.4 Name two (02) specific clinical features that support your diagnosis (20 marks)
- 3.5 List four (04) other investigations that you would now perform to establish the underling aetiology giving reasons. (40 marks)

4. A baby boy was born vaginally at 29 weeks of gestation at a District General Hospital following spontaneous rupture of membranes 10 hours prior to delivery. Apgar scores were 5 and 7 at 1 and 5 minutes respectively. He weighed 1.2Kg. As the baby was in respiratory distress, he was transferred to a tertiary care hospital for further management.

He is the 2nd child of non related healthy parents. Mother received one dose of dexamethasone 6 hours before delivery.

On arrival in the tertiary care hospital baby was dusky with cold peripheries.

Temp 35°C, Heart rate 140/min, CRT 3 sec. RR – 68/min

He was grunting with intercostals and subcostal recessions.

Abdomen was soft with no organomegaly.

He was intubated and given surfactant at 14 hours of age.

Ventilator settings and arterial blood gas 2 hours after surfactant therapy are given below.

Mode SIMV		Arterial blood gas	
F _{IO₂}	0.6	pH	7.18
PIP	18	pCO ₂	25 mmHg
PEEP	5	pO ₂	70 mmHg
Ti	0.32	HCO ₃	10 mmol/L
RR	40	SpO ₂	93-95%

- 4.1. What is the conclusion you arrive at from this blood gas analysis ?
(10 marks)
- 4.2. Write five (05) steps you would take to correct the above abnormality/ies ?
(25 marks)

The baby improved and was stable after interventions.

He self –extubated at 72 hours of age. The Paediatric Registrar on call kept him on 0.5L/min nasal prong O₂, since the baby was not distressed.

On day 5, baby looked pale with mild facial puffiness. RR – 80/min,

HR – 170/min, CRT – 3 sec, SpO₂ 90%

Lungs- Air entry equal, but mild chest recessions were noted.

Abdomen was mildly distended but soft. Liver was palpable 2 cm below the right cost margin. You are called to see this neonate. By the time you arrive you find that the baby has suddenly developed bleeding from nose, mouth and via the NG tube. SpO₂ has dropped to 70%.

- 4.3 Write four (04) possible causes for this deterioration ? (20 marks)
- 4.4 List five (05) investigations that you would perform to confirm the diagnosis (20 marks)
- 4.5 How would you manage this deterioration ? (25 marks)

5. An 8 year old girl has had repeated episodes of sudden onset irritability and “uncomfortable feeling in chest” for the past one year. The episodes occurred mainly during play, lasted for about 5 minutes and she had been noticed to look pale.

She gave no other past medical history. Her family was healthy. She was in an age appropriate class.

She was admitted to the Emergency Treatment Unit, with another episode lasting about 30 min. You are called by the nurse saying “the blood pressure is not recordable and the pulse is very feeble”

You find greyish pallor around the mouth. She was adequately grown for age and floppy on examination.

Radial pulse was weak and rapid. Capillary refill time was 4 seconds. Blood pressure was not recordable. Respiratory rate was 60/min, with basal crepitations. Liver was palpable 3 cm below the costal margin with upper border at the level of 5th rib.

- 5.1 Give the complete diagnosis for this child’s clinical presentation. (20 marks)
- 5.2 Outline the immediate management of this child. (40 marks)
- 5.3 List two (02) underlying pathologies that could have led to this condition. (10 marks)
- 5.4 What is the long term management ? (30 marks)