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POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) EXAMINATION – JULY/AUGUST 2016

Date :- 26th July 2016

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. A 6 year old asymptomatic boy was found to have a blood pressure of 120/80 mmHg in a clinic visit. What is the initial approach to this findings in the clinic? (20 marks)
- 1.2. List the categories under which you would classify the secondary causes of systemic hypertension. (10 marks)
- 1.3. Name the investigations you would perform in a child with chronic hypertension with reasons why you want to perform those investigations. (45 marks)
- 1.4. What useful information you could gather by “Ambulatory Blood Pressure Monitoring (ABPM)? (15 marks)
- 1.5. Discuss the importance of routine check of systemic blood pressure in children above three years of age. (10 marks)

Q.2.

- 2.1. Briefly discuss the patho-physiology of hypoxic- ischaemic encephalopathy. (40 marks)
- 2.2. Write the criteria which are useful in predicting the neurological outcome of an infant with hypoxic-ischaemic encephalopathy. (20 marks)
- 2.3. Discuss the principles of **treatment strategies** of an asphyxiated infant in the first twenty four hours. (40 marks)

Q.3.

3.1.

3.1.1. List two (02) clinical features found in a newborn with congenital Zika virus infection. (10 marks)

3.1.2. How will you confirm the above condition in the newborn? (10 marks)

3.1.3. List five (05) clinical features in a child with acquired Zika virus infection. (10 marks)

3.1.4. How will you confirm the diagnosis of Zika virus in a child? (05 marks)

3.2.

3.2.1. Describe eight (08) salient features in the pathophysiology of dengue haemorrhagic fever. (45 marks)

3.2.2. Mention three (03) mandatory features that should be present in an ideal dengue vaccine. (20 marks)

Q.4.

4.1. Briefly describe the pathophysiology of congenital spherocytosis. (40 marks)

4.2. Write the clinical presentation and complications of congenital spherocytosis in children. (20 marks)

4.3. Name the laboratory investigations with expected results you would perform in a child suspected to have congenital spherocytosis. (20 marks)

4.4. Outline the management of this disease and its complications. (20 marks)

Q.5.

5.1. "Infants are more likely to wheeze than older children"
Discuss this statement giving reasons. (40 marks)

5.2. Define asthma phenotypes. (10 marks)

5.3. What are the basic factors considered in identifying asthma phenotypes. (30 marks)

5.4. Discuss briefly the lung function abnormalities in children with asthma. (20 marks)

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Date :- 27th July 2016

Time :- 9.00 a.m. – 12.00 noon

PAPER II – CASE HISTORIES

Answer **all** questions.

Answer each question in a separate book.

1. A baby boy was born to a 30 year old mother in her third pregnancy at 39 weeks of gestation by vaginal delivery. Her membranes ruptured thirty minutes prior to delivery and liquor was heavily meconium stained. However the foetal heart rate had remained normal. The baby did not cry at birth and endotracheal suction was done. Bag and Mask ventilation was given for 1 minute.

Baby's elder sibling is 5 years old and healthy. Mother's second pregnancy was a miscarriage. She had no major health issues during the current pregnancy.

APGAR score at 1 minute 4
APGAR score at 5 minutes 9

The baby weighed 3.03 Kg and maturity was appropriate for dates. Baby was admitted to a neonatal intensive care unit (NICU). He remained tachypnoeic with a rate of 70 cycles per minute with minimal recessions. Blood gas analysis done half an hour after birth revealed,

Arterial

pH	7.25	(7.35 -7.4)
PaCO ₂	45 mmHg	(35-45)
HCO ₃ ⁻	15.9 meq/L	(20-24)
PO ₂	42 mmHg	(50-70)
SBE	(-11.6)	(+/-5)

- 1.1. Interpret this blood gas analysis in one sentence. (05 marks)
- 1.2. List five (05) most important measures you will consider as priority to stabilize this baby. (50 marks)

However the baby deteriorated with increased effort of breathing and a decision was made to ventilate him at the age of 3 hours. Chest x ray showed few patchy opacities with no evidence of pneumothorax.

Ventilator settings were as follows:

Rate	40/minute
PIP	16
PEEP	3
FiO ₂	0.7
Ti	0.3 seconds

- 1.3. List three (03) clinical observations you would make to assess the adequacy of ventilatory support of this baby? (30 marks)

- 1.4. What is the important complication this baby is most likely to have? (15 marks)

2. A 6 month old baby girl born to a teenage mother is transferred from a district hospital to a tertiary care centre with a history of fever, irritability and inconsolable crying. According to the mother the child had become irritable and developed fever following his six month vaccination at the local clinic two days before. However, the paternal grandmother claims that the baby has been irritable even before the vaccination.

On examination, the child is ill looking, febrile (37.8°C), irritable and appears to be in pain. ~~She~~ He is mildly pale and a tense bulging fontanelle is noted. Tender swellings are noted on both thighs and the baby seems more comfortable when not handled. The child health development record (CHDR) shows that his weight has been faltering since four months of age.

The mother seems extremely anxious and tearful and is worried that the baby's father employed as a waiter in Colombo has not visited them since admission to hospital and is not contactable.

- 2.1. List three (03) differential diagnoses for this clinical presentation. (30 marks)
- 2.2. List four (04) important investigation profiles you would perform within the first 24 hours of admission. (30 marks)
- 2.3. Briefly outline the management of this child during the first 48 hours of admission. (40 marks)

3. A 4 year old boy was admitted to the emergency treatment unit with a history of high fever, abdominal pain and loose stools for 2 days. He has had several episodes of vomiting prior to admission.

He had been followed up at the paediatric clinic during the last two years for poor weight gain.

On arrival at the emergency treatment unit (ETU) he was ill looking, febrile (40.4°C) and had colicky abdominal pain with tenesmus. His pulse rate was 160 beats per minute and the blood pressure was 60/40 mmHg. He was resuscitated immediately with a bolus of normal saline 20 ml/kg and started on maintenance intravenous fluid therapy thereafter. Since he became alert soon, oral sips were also started in addition to probiotics, zinc supplements and paracetamol. Then the baby was transferred to the casualty paediatric ward.

While continuing on the same management in the ward he continued to have high spiking fever and colicky abdominal pain. He also has had several bouts of vomiting and loose stools.

Laboratory investigation reports available were as follows:

WBC	24.6.x $10^9/\text{L}$	(4 – 11)
	N - 89%	
CRP	136 mg/L	(<6)
Serum electrolytes		
	Na ⁺	124 mmol/L (135 – 145)
	K ⁺	3.4 mmol/L (3.5 – 4.5)

After 18 hours of arrival to the casualty ward child appeared very ill and was noted to have a pulse rate of 168 beats per minute, a blood pressure of 55/30 mmHg and the capillary refill time was 4 seconds. Upon questioning it was revealed that the child had passed urine only twice since admission. Child was given another bolus of normal saline 20 ml/kg and a dose of intravenous cefotaxime after collecting blood for culture and ABST.

During the next few hours the child showed some improvement, however further 10 hours later the child became disoriented and developed significant abdominal distension and tenderness which was mainly noted in the left flank. However, bowel sounds were heard over the left flank.

The most recent investigation findings were,

WBC	24.8 x 10 ⁹ /L	(4 – 11)
	N - 90%	
Hb	9.4 g/dl	(12- 14)
CRP	275 mg/L	(<6)
Serum electrolytes		
	Na ⁺	125 mmol/L (135 – 145)
	K ⁺	3.2 mmol/L (3.5 – 4.5)

- 3.1. Explain the reason for the deterioration after 18 hours of arrival to the casualty ward. (20 marks)
- 3.2. What is the most likely acute condition leading to abdominal distension? (20 marks)
- 3.3. List three (03) causes for the condition you mentioned in 3.2. (30 marks)
- 3.4. How would you manage the condition mentioned in 3.2? (30 marks)

4. A 14-month old baby boy presented to the paediatric clinic with a history of jerk like movements of the body since the age of 7 months. These movements were very brief and were frequently associated with head nodding and would not last for more than 1-3 seconds. Initially they occurred only occasionally with only one or two such events on some days but now they occur every day with over 10-20 times a day. Both parents were graduate teachers and they said they cannot predict the onset of the jerks but had noticed them in response to sudden loud noises on some occasions and also when he is sleepy but not all the time. On questioning they denied having the episodes in clusters. He could not walk but was able to stand almost without support. He often dropped what is held in his hands with the jerks. However, he fell to the ground only rarely. The typical jerks described by the parents were upward and outward movements of the hands associated with a head drop. Though the magnitude of the jerks varied from more forceful jerks to subtle ones and they were confined to almost the same pattern. He never had other types of movements, jerks or seizure like episodes during the past 7 months. Occasionally they noticed the eyes rolling up.

He was born full term following an uneventful antenatal period and had no perinatal insult and had a birth weight of 3.2 kg. The parents thought he was slow compared to his elder sister who walked at 1 year. He has had his age appropriate routine immunizations except JE vaccine at 1 year.

Both his father and the elder sibling who is 5 years now, has had febrile seizures but there is no history of epilepsy or other neurological disease in the family.

Two 10 minute EEGs done within the last 2 months as sleep records were reported as normal. Non contrast MRI brain done 2 weeks ago was also normal.

- 4.1. What is the most likely diagnosis compatible with the described jerks?
(40 marks)
- 4.2.
- 4.2.1. What is your choice of initial drug therapy? (20 marks)
- 4.2.2. What is the expected response? (20 marks)
- 4.3. Name one (01) other investigation you would do to help your diagnosis.
(20 marks)

5. A 2 month old baby girl was admitted to hospital with severe respiratory distress and poor sucking of one day duration. She had been having high fever for two days.

She was the first born to non-consanguineous parents by normal vaginal delivery at term. The antenatal and perinatal period was uneventful. The birth weight was 3 kg. At six weeks of age she was admitted to the local hospital with features suggestive of bronchiolitis and needed intravenous fluids. Subsequently the baby developed a cannula site infection and it was treated with syrup Cloxacillin.

On admission the baby was drowsy and pale. Oxygen saturation was 80% in room air. The respiratory rate was 70 per minute and she had marked intercostal recessions. Air entry was reduced on the right hemithorax. Apex beat was felt on the 5th intercostal space 2cm lateral to mid clavicular line. No cardiac murmur was noted. Her heart rate was 170 beats per minute and pulse volume was poor. The capillary refilling time was 4 seconds. Liver was palpable 3 cm below the costal margin.

- 5.1. What is your immediate management of this baby? (25 marks)

With your management some clinical improvement was noted but the oxygen saturation remained around 89% in air. She was transferred to an intensive care unit for further management and needed high ventilatory settings to maintain saturation.

Initial investigations revealed,

Hb	15 g/dl	(12 – 16)
WBC/DC	2.4 x 10 ⁹ /L	(6-17.5)
	N -55%, L - 43%, M - 2%	
Platelet count	78 x 10 ⁹ /L	(150-450)
C-reactive protein	98 mg/L	(<6)
ESR	110 mm 1 st hour	(<20)
Acid fast bacilli for gastric aspirate	Negative	
HIV screening	Negative	

- 5.2. What is the most likely complete diagnosis? (20 marks)
- 5.3. Mention five (05) investigations you would do to arrive at the diagnosis. (15 marks)
- 5.4. List eight (08) other aspects in the management. (40 marks)