POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) PART II EXAMINATION
JANUARY, 2008

Date : 21st January 2008
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. Mention how you would clinically identify

1.1.1. chronic constipation
1.1.2. encopresis
1.1.3. Hirschsprung's disease

1.2. List causes of chronic constipation other than the conditions mentioned above.

1.3. Write the principles of management of

1.3.1. a 3 year old child with a 3 month history of chronic constipation.
1.3.2. a 6 year old child with encopresis.
1.3.3. Hirschsprung's disease.

Q.2.

2.1. Discuss the pathogenesis of physiologic anaemia of infancy.

2.2. Describe the sequence of biochemical and haematological events that lead to iron deficiency anaemia.

2.3. Discuss the treatment of iron deficiency anaemia (including therapeutic response) in paediatric practice.
Q.3.

3.1. Discuss the implications of maternal thyroid disease on fetal development. (40 marks)

3.2. Discuss the causes of goitrous cretinism. (30 marks)

3.3. Write on musculoskeletal manifestations of congenital hypothyroidism. (30 marks)

Q.4.

4.1. Mention the risk of mother to child transfusion in HIV infection and detail the contributing factors that affect transmission. (35 marks)

4.2. Mention the types of antiretroviral drugs and their important adverse effects. (30 marks)

4.3. You are the paediatrician called into attend on a newborn of a HIV positive mother. Describe how you would manage this baby with regard to breast feeding and immunization. (35 marks)

Q.5.

5.1. Define primary ciliary dyskinesia and list its clinical manifestations. (30 marks)

5.2. List the extrapulmonary manifestations of *Mycoplasma pneumoniae* infection. (30 marks)

5.3. Discuss the principles of management of a child with non resolving pneumonia. (40 marks)
A 10 year old boy presented to a District General Hospital with a history of intermittent fever, generalized body aches and lethargy of three weeks duration. On examination he was febrile, pale, anicteric and systems examination was unremarkable. His haemoglobin was 6.8 g/dl and serum bilirubin 1.2 mg/dl.

He was given a blood transfusion. On the following day he passed red urine and had mild icterus.

1.1. Mention the most likely cause for the dark urine observed at the District General Hospital?

(10 marks)

As he was not improving he was transferred to a tertiary care hospital for further management. Over the next few days he became more ill, developed high fever and painful swelling of the right knee joint. On examination he looks ill, is febrile and pale but not icteric. There is no lymphadenopathy or rash. The right knee joint is swollen, warm and tender. There is no hepatomegaly. Spleen is felt with difficulty and is tender. Cardiovascular, respiratory and neurological systems are normal.

He is the first born of non consanguineous parents. He has had no significant illness in the past and other siblings are well.

Investigations

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>6.0 g/dl</td>
</tr>
<tr>
<td>WBC</td>
<td>2.000 x 10^9/L, N – 30%, L – 70%</td>
</tr>
<tr>
<td>Platelet count</td>
<td>100 x 10^9/L</td>
</tr>
<tr>
<td>CRP</td>
<td>96 mg/L</td>
</tr>
<tr>
<td>ESR</td>
<td>1st hour - 110</td>
</tr>
<tr>
<td>Urine analysis</td>
<td>Albumin - trace</td>
</tr>
<tr>
<td></td>
<td>Pus cells – 2-5/high power field</td>
</tr>
<tr>
<td></td>
<td>Red cells - nil</td>
</tr>
<tr>
<td>Urine culture</td>
<td>No growth</td>
</tr>
<tr>
<td>Coombs test</td>
<td>Negative</td>
</tr>
</tbody>
</table>
1.2. List five other investigations that will help you to arrive at a definitive diagnosis? (30 marks)

1.3. What is the most likely diagnosis? (30 marks)

1.4. What is the pathophysiology behind his deterioration at the tertiary care hospital? (10 marks)

1.5. Outline the immediate supportive care. (20 marks)
2. A term non asphyxiated infant delivered vaginally by vacuum extraction due to prolonged labour was noted to be tachypnoeic at 4 hours of age and is transferred to special care baby unit at 12 hours. She is the first born to non consanguineous parents. Except for a febrile illness of three days during the first trimester, antenatal period was uneventful. Birth weight was 3 kg and vitamin K was given soon after birth.

On admission to SCBU, baby is severely pale, afebrile and not jaundiced. There is no cephalhaematoma or other external injuries. Two haemangioma 2 x 2 cm are present on back of chest. Respiratory rate 70/min, air entry equal and lungs clear. Rest of the examination is normal. Oxygen saturation remains > 92% in air.

Hb - 3.5g/dl
WBC - 10,000/cumm, N 60%, L 35%, E- 5%
Platelet count - 260,000/cumm
Baby's blood group - B positive

2.1. Mention four important steps in the immediate management. (30 marks)

2.2. Write three mechanisms you would consider in differential diagnosis giving two examples for each. (30 marks)

After initial management baby was stable at 48 hours. At 72 hours of age, there was bleeding per rectum which was profuse at the start and mild intermittent bleeding continued for a further 48 hours. There was no excessive bleeding from venepuncture sites. There was no abdominal distension or vomiting. Respiratory rate was 72/min. Liver was enlarged 2 cm below costal margin and was tender.

Investigations at 72 hours of age showed

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>9 g/dl</td>
</tr>
<tr>
<td>Reticulocyte count</td>
<td>2%</td>
</tr>
<tr>
<td>Blood picture</td>
<td>Normocytic normochromic red cells</td>
</tr>
<tr>
<td></td>
<td>WBC normal, platelets adequate</td>
</tr>
<tr>
<td>Prothrombin time</td>
<td>15 sec. (control 13)</td>
</tr>
<tr>
<td>INR</td>
<td>1</td>
</tr>
<tr>
<td>SGPT</td>
<td>10 IU/L</td>
</tr>
<tr>
<td>SGOT</td>
<td>30 IU/L</td>
</tr>
</tbody>
</table>

2.3. What is the most likely diagnosis? (10 marks)

2.4. Write two investigations to confirm your diagnosis. (10 marks)

2.5. List four steps in further management. (20 marks)
3. A 3 month old previously well exclusively breast fed baby boy was admitted with a history of profuse watery diarrhoea for 5 days and vomiting for past 12 hours. Mild fever was noted on the first day of illness. On examination his weight is 5.5 Kg and he is severely dehydrated. Pulse 100/min and BP 85/55, capillary refill time is < 2 secs.

Investigations

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Sodium</td>
<td>124 mmol/L</td>
</tr>
<tr>
<td>Serum Potassium</td>
<td>3.5 mmol/L</td>
</tr>
<tr>
<td>Blood urea</td>
<td>10 mmol/L</td>
</tr>
<tr>
<td>Stool smear</td>
<td>no pus cells or red cells, no organisms</td>
</tr>
<tr>
<td>Stools for Rota virus</td>
<td>positive</td>
</tr>
</tbody>
</table>

3.1. Write the fluid management of this baby in the first 12 hours. (15 marks)

3.2. What is the electrolyte composition of the WHO "improved oral rehydration solution"? (10 marks)

His fever settled but watery diarrhoea continued during the stay in hospital for further 8 - 10 days.

3.3. What other clinical features would you look for in this baby at this stage? (10 marks)

Subsequent investigations revealed

- Stool Culture - No growth
- Stools reducing substances - orange
- Stools electrolytes - Na - 30 mmol/L, K - 30 mmol/L
- Stools osmolality 400 mOsm/L

3.4. What is the pathophysiological basis for the above abnormalities and the continuing diarrhea? (20 marks)

3.5. List five steps in the clinical management at this stage. (25 marks)

Three weeks after admission he continued to have profuse watery diarrhoea. His weight reduced to 4.5 Kg He also developed a low grade fever and was started on cefotaxime after blood culture. In spite of treatment for further 72 hours he continued to have profuse diarrhoea.

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC</td>
<td>2,000/mm$^3$ , N - 35%, L - 63%</td>
</tr>
<tr>
<td>Blood culture</td>
<td>no growth</td>
</tr>
</tbody>
</table>

3.6. List three steps in the management at this stage. (10 marks)

3.7. Write briefly on (not more than 4 lines) about Rota virus vaccine currently available in Sri Lanka. (10 marks)
4. A baby boy born at term at Kegalle Hospital was diagnosed to have bilateral hydronephrosis on antenatal ultrasound scan.

4.1. List the possible underlying abnormalities (except the condition given below) that could give rise to the ultrasound scan findings in this baby.

(10 marks)

4.2. Outline the important steps in the postnatal management of this baby.

(10 marks)

At 3 weeks of age the baby is diagnosed to have a posterior urethral valve and undergoes ablation and vesicostomy at the Lady Ridgeway Hospital for Children. The baby develops high fever on the first post operative day. As the fever continues despite antibiotic therapy he is transferred to a medical unit the following day.

On arrival at the medical unit the baby has a temperature of 1 02°F, is severely dehydrated but not in shock and is not interested in feeding even though he is alert. The vesicostomy is draining satisfactorily.

On examination

Weight 3.1 kg (birth weight 3.2 kg)
Heart rate 120/min
Respiratory rate 50/min
Blood pressure systolic 80 mmHg
There were no other abnormalities detected.

Investigations

Serum Na 120 mmol/l
Serum K 5.2 mmol/l
WBC 32,000/mm³ N 80%, L 12%, E 6%
Blood urea 15.7 mmol/l (ref. range 1.5 – 3.0)
Serum creatinine 60 µmol/l (<44umol/l)
Arterial blood gas pH 7.28
PCO₂ 20.5 mmHg
PO₂ 140.4 mmHg
HCO₃ - 10.3 mmol/l
BE -15.8 mmol/L

Urine culture > 10⁵ coliform species
4.3. List three complications that this baby has developed. (10 marks)

4.4. Explain the pathophysiological basis for the biochemical abnormalities detected. (20 marks)

4.5. List five important aspects in the management of this baby in the next 24 hours. (20 marks)

Following successful management of the acute problems the baby is found to have a creatinine clearance of 40 ml/min/1.73m².

4.6. List the important aspects in the long term management of this baby. (30 marks)
5. An 8 year old boy was found to be unresponsive in the morning and was admitted to the Lady Ridgeway Hospital for Children. He has been having fever and headache for the last three days and had been treated with paracetamol 500 mg three times a day. Two weeks ago he has had viral gastroenteritis which resolved without medication. He has been otherwise well. There is no history of trauma and all EPI vaccinations including the Japanese Encephalitis have been given.

On examination he responds to commands but is drowsy, irritable and there is ptosis of the left eye. Pupils are equal and reacting to light. There is mild neck stiffness. He is unable to move the left leg. Tendon reflexes are brisk in all four limbs and plantar reflexes are extensor. Ear, nose, throat are normal. Pulse rate is 70/min, respiratory rate is 20/min and lungs are clear. Abdominal examination reveals a palpable bladder.

5.1. Mention four likely diagnoses. (20 marks)

5.2 List two other important bedside examinations. (10 marks)

5.3 List three investigations which will help to arrive at a diagnosis. (15 marks)

5.4 Describe specific abnormalities you look for in each investigation mentioned in 5.3. (15 marks)

5.5 Give five steps in the management at this stage. (20 marks)

5.6 List five aspects you would monitor in this child. (10 marks)

Over the next 24 hours the child deteriorates neurologically and the Glasgow Coma Scale is 8. He develops a generalized convulsion which lasts one minute.

5.7 List three further steps you would consider in your management now. (10 marks)