



POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) EXAMINATION – JANUARY/FEBRUARY 2022

Date:- 18th January 2022

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. List ten (10) risk factors associated with necrotizing enterocolitis (NEC) in a preterm newborn. (10 marks)
 - 1.2. Briefly outline the pathophysiology of development of NEC in a term neonate with,
 - 1.2.1. hypoxic ischaemic encephalopathy. (15 marks)
 - 1.2.2. polycythaemia. (15 marks)
 - 1.3. Outline five (05) radiological abnormalities seen in NEC. (15 marks)
 - 1.4. Describe the medical management of NEC in a two-week old preterm baby. (35 marks)
 - 1.5. List five (05) late complications of NEC in extreme preterm neonates. (10 marks)
2.
 - 2.1. Describe the role of platelets in haemostasis. (15 marks)
 - 2.2. State ten (10) congenital causes of thrombocytopenia. (20 marks)
 - 2.3. Outline the classical clinical manifestations of a child with acute idiopathic thrombocytopenic purpura (ITP). (15 marks)
 - 2.4. Briefly describe the natural history of acute ITP. (10 marks)
 - 2.5. Discuss the therapeutic options available for management of ITP indicating the rationale and mechanisms of action of each therapeutic option. (40 marks)

Contd..../2-

3.
 - 3.1.
 - 3.1.1. Define 'Pica.' (15 marks)
 - 3.1.2. List five (05) underlying aetiological factors associated with pica. (15 marks)
 - 3.2.
 - 3.2.1. Define constipation using ROME IV criteria. (15 marks)
 - 3.2.2. List five (05) investigations you would undertake in a child with intractable constipation. (15 marks)
 - 3.2.3. Outline the management of functional constipation. (40 marks)
4.
 - 4.1. List five (05) absolute indications for a renal biopsy in a child with nephrotic syndrome. (20 marks)
 - 4.2. State one (01) expected underlying primary disease for each of the indications mentioned in 4.1 (responses cannot be repeated). (20 marks)
 - 4.3. Outline four (04) disease-specific haemostatic abnormalities that increase the risk of thrombosis in idiopathic nephrotic syndrome. (20 marks)
 - 4.4. Briefly describe how you would advise on the vaccination of a child with frequent relapsing nephrotic syndrome. (30 marks)
 - 4.5. Outline two (02) other measures you would take, to minimize the risk of infections in a child with nephrotic syndrome. (10 marks)
5.
 - 5.1. Define the term 'syncope'. (10 marks)
 - 5.2. Outline the pathophysiological mechanisms of vasovagal (neurocardiogenic) syncope. (20 marks)
 - 5.3. Discuss the factors that would help you to clinically differentiate syncope from a seizure. (30 marks)
 - 5.4. List six (06) red flag features in the evaluation of a 7-year-old boy with syncope. (30 marks)
 - 5.5. List five (05) life-threatening cardiac causes of syncope. (10 marks)

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MD (PAEDIATRICS) EXAMINATION – JANUARY/FEBRUARY 2022

Date:- 19th January 2022

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 12-year-old girl presented with fever and watery diarrhoea of 4 days duration. She was lethargic and was not feeding well and had reduced urine output. Previously she had been well with no significant past medical history apart from on and off respiratory tract infection. During COVID-19 pandemic, when she was off school, she had fallen ill only once about 4 weeks ago with an upper respiratory tract infection.

Examination revealed, a febrile, ill looking child with severe dehydration, nonspecific erythematous skin rash and hyperpigmentation around neck, axillary region and cubital fossa. There was conjunctival suffusion but no jaundice or pallor. Prominent cervical lymphadenopathy with inflamed oral mucosa. Height 157.0 cm (median to +1SD), weight 64.5kg, BMI 26.2kg/m² (>+2SD).

Pulse rate 115/minute, regular, low volume. Blood pressure 70/50mmHg dual rhythm and no murmurs. Respiratory rate 45 breaths/minute, bilateral air entry is normal with no added sounds. Abdomen soft, tender hepatomegaly of 2 cm and spleen not palpable.

Preliminary investigation results are as follows

Venous blood gas		
pH	7.453	(7.35 – 7.45)
pCO ₂	22.7 mmHg	(41 – 51)
pO ₂	34.4 mmHg	(30 – 55)
HCO ₃ ⁻	16.1 mmol/L	(23 – 29)
Lactate	2.8 mmol/L	(<2.2)
Serum electrolytes		
Sodium	132.0 mmol/L	(135 – 145)
Potassium	3.07 mmol/L	(3.5 – 5.5)
Chloride	97.0 mmol/L	(96 – 106)
Total Calcium	1.8 mmol/L	(2.2 – 2.6)

Contd.../2-

Full blood count		
WBC	11.9 × 10 ⁹ /L	(4 – 11)
	N - 76%, L - 14%, M - 4%, E - 4%, B - 2%	
Haemoglobin	10.3 g/dL	(11- 14)
Platelet count	183 × 10 ⁹ /L	(150 – 450)
CRP	297.3 mg/dL	(<6)
ALT	65.1 U/L	(<40)
AST	84.9 U/L	(<40)
ESR	45 mm/1 st hour	

- 1.1. Identify the most likely underlying condition for this clinical presentation. (20 marks)
- 1.2. List ten (10) investigations you would request for the management of the acute condition. (20 marks)
- 1.3. Identify five (05) important therapeutic steps in the management of the acute condition mentioned in 1.1. (30 marks)
- 1.4. Mention five (05) important aspects in the long-term management (30 marks)

Contd..../3-

2. A 2-week-old baby girl was brought in with fever and firm generalized subcutaneous erythematous nodules. Her BCG vaccine site was red with induration and ulcerated center. She was 3.620 kg at the time of admission and rest of the clinical examination was unremarkable.

She was the first born baby to non-consanguineous parents following a planned pregnancy via an uncomplicated normal vaginal delivery and was born with a birth weight of 3.220kg. She was discharged on day 2 of life on demand breast feeding.

Her investigation results at 2 weeks are as follows.

Full blood count		
Haemoglobin	12.2g/dl	(11-14)
WBC	13 x10 ⁹ /L	(4-11)
	N- 41%, L - 49%	
Platelet count	536 x 10 ⁹ /L	(150-450)
CRP	24mg/L	(<6)
ESR	36 mm 1 st hour	
Serum sodium	143 mmol/L	(135-145)
Serum potassium	4.3 mmol/L	(3.5-5.5)
Serum calcium	3.32 mmol/L	(2.2-2.6)
Serum phosphate	2.42 mmol/L	(1.4-3)
Serum alkaline phosphatase	312 IU/L	(80-350)
Serum albumin	43g/L	(35-53)
Albumin corrected calcium	3.2 mmol/L	(1.3 - 1.38)

She had 3 hospital admissions during the first 4 months due to febrile illnesses. The last admission was due to fever and a lump (2.5 x 3.5cm) in the left axilla. Ultrasound scan revealed a left side axillary necrotic lymph node with abscess formation.

- 2.1. Mention the most likely condition for the generalized subcutaneous erythematous nodules. (20 marks)
- 2.2. State three (03) common aetiologies for the condition that you mentioned in 2.1 (30 marks)
- 2.3. List three (03) important steps in the immediate management of this child at 2 weeks. (30 marks)
- 2.4. Mention the most probable cause for the left axillary lump at 4 months of age? (10 marks)
- 2.5. How would you treat the left axillary lump? (10 marks)

3. A 6-week-old baby boy was transferred to a tertiary care hospital for specialized management.

He was born to non-consanguineous parents as the first child with a birth weight of 2.1 kg. Mother was a 19-year-old garment factory worker and father was 21-year-old driver. Mother attended regular antenatal clinics and she did not have any complications during the antenatal period. Baby was born by normal vaginal delivery at term with a normal Apgar score. Neonatal examination was normal.

Baby was taken to PBU due to poor feeding with a blood sugar of 35 mg/dL at 12 hours of life. He was treated with antibiotics for 6 days.

Baby was discharged on breast feeding with top up expressed breast milk.

On day 16 his weight was 2.08 kg. He was referred to the lactation management unit. Day 18, he was brought to the local hospital with a history of a cyanotic episode. On examination he had a pustular rash over the groin area and four limb saturation on room air was normal.

Investigation results on **day 18** are as follows.

Full blood count		
WBC	12.7 x10 ⁹ /L	(4-11)
	N -38%, L- 49%	
Haemoglobin	19.5g/dl	(11-14)
Platelet count	495 x10 ⁹ /L	(150 - 450)
Haematocrit	55%	
Urine culture	No bacterial growth	

Toxoplasma IgG and IgM were negative on both mother and baby.

Child was treated with oral cloxacillin and fusidic acid for suspected impetigo and was discharged after 5 days with Gaviscon after correcting breast feeding technique.

At 6 weeks baby was brought to the hospital with 2 episodes of vomiting. On examination he was irritable and dehydrated with a dark complexion.

His investigation results at **6 weeks** are as follows.

Arterial blood gas		
pH	7.2	(7.35 – 7.45)
HCO ₃ ⁻	9.3	(23 – 29)
Serum creatinine	88 µmol/L	(44 – 110)
WBC	18.9 x 10 ⁹ /L	(150 450)
	N - 57.6%, L-30.1%	
Haemoglobin	14.2 g/dL	(11- 15)

Contd..../5-

Serum sodium	116 mmol/l	(135 – 145)
Serum potassium	6.5 mmol/l	(3.5 – 5.5)
ALT	39.9 IU/L	(<40)
AST	43 IU/L	(<40)
Blood culture	No bacterial growth	
Ultrasound scan abdomen	Normal	

With the above investigations the baby was transferred to the tertiary care hospital.

- 3.1. Mention two (02) important investigations with the expected findings which you would perform urgently to help in the management. (20 marks)
- 3.2. How would you manage this child in the first 24 hours after admission? (20 marks)
- 3.3. What is the most likely diagnosis? (20 marks)
- 3.4. What important steps you would take in the long-term management? (40 marks)

4. A 4-month-old baby boy was admitted to the ward with shortness of breath. Baby was born at term following an uneventful antenatal period during which all antenatal screening tests were normal. His Apgar scores were normal and birth weight was 2.9 kg. He has an elder sister who is healthy. On admission his weight was on -3SD. He had an eczematous skin rash. He was febrile and tachypnoeic with mild respiratory distress. Auscultation of the chest revealed bilateral diffuse crackles and air entry was equal on both sides. His oxygen saturation was 88% on air. Heart sounds were normal. Despite intravenous cefotaxime and clarithromycin, the child failed to improve after one week.

Chest x-ray	Hyperinflated chest with pulmonary infiltrative shows in both lungs	
Haemoglobin	11.0 g/dL	(11-15)
WBC	5.1 x10 ⁹ /L	(4 -11)
	N - 76%, L - 16%, E - 08%	
Platelet count	255 x 10 ⁹ /L	(150 – 450)
CRP	20 mg/dL	(<6)

- 4.1. What is the most likely underlying diagnosis? (10 marks)
- 4.2. Mention five (05) important information that you would gather from the history and examination to arrive at the diagnosis you mentioned in 4.1. (20 marks)
- 4.3. Name two (02) important investigations that will be helpful to arrive at the above-mentioned diagnosis. (20 marks)
- 4.4. Briefly discuss the principles of management of this child. (50 marks)

Contd..../7-

5. A 12-year-old boy presented with acute retention of urine over the last 10 hours and a palpable bladder just above the umbilicus. He had no abdominal discomfort or backache. He did not have any numbness, pain or weakness of lower limbs and no visual impairment. His upper limb functions were normal. He denied any diarrhoea or respiratory tract infection in the past few weeks.

On examination he was well looking, not pale and anicteric. Cranial nerve examination was normal. Upper and lower limb examination revealed a normal tone and power of MRC grade 5 in all muscle groups. Sensory examination was normal in upper limbs. There was a sensory loss for pain and touch involving T7-L1 on both sides of trunk and lower limb. The knee reflex was diminished while the ankle reflex was intact. His gait was normal and there were no cerebellar signs. His retention of urine was released by using an indwelling catheter which was subsequently removed requesting him to pass urine every 3-4 hours.

Investigation results are as follows.

Full blood count		
Haemoglobin	12 mg/dL	(11-15)
WBC	5.6 x 10 ⁹ /L	(4 - 11)
	N -35%, L - 63%, E - 02%	
Platelet count	480 x10 ⁹ /L	(150 - 450)
Random blood sugar	75 mg/dL	
ESR	8 mm/1 st hour	
CRP	3mg/dL	(<6))
Serum sodium	143 mEq/L	(135-145)
Serum potassium	4.5 mEq/L	(3.5-5.5)
ALT	25 IU/L	(<40)
AST	33 IU/L	(<40)
Blood picture	hypochromic microcytic and normochromic normocytic cells. Normal white cells and plenty of platelets. No abnormal cells.	

5.1. List three (03) differential diagnoses. (15 marks)

5.2. Mention six (06) investigations to arrive at a diagnosis with the expected results. (30 marks)

Two weeks later he complained of gradual weakness of lower limbs and difficulty in reading. His sensory impairment has extended from T6 to L3. There was no respiratory compromise or weakness of upper limbs.

5.3. What is the most likely diagnosis? (15 marks)

5.4. Briefly discuss the principles of management of this boy. (40 marks)