

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (TRANSFUSION MEDICINE) EXAMINATION - JUNE 2022

Date: 20th June 2022

Time: 1.00 p.m. – 4.00 p.m.

PAPER I

Answer any five (05) questions.

Answer each question in a separate book.

1.
 - 1.1 Define 'Transplantation'. (10 marks)
 - 1.2 Briefly explain the role of cytokines in graft rejection. (15 marks)
 - 1.3. Outline the protocol for HLA immunological workup for renal transplantation in Sri Lanka and indicate your recommendations for further improvement. (60 marks)
 - 1.4. List three strategies used in desensitizing a highly sensitized renal transplant recipient. (15 marks)

2. A 27-year-old man complains of lethargy and extensive bruising. Investigations show Hb 6 g/dl, WBC $8.1 \times 10^9/L$, platelets $4 \times 10^9/L$. The blood film shows normal white cells without blast cells, some red cell fragments and thrombocytopenia. Coagulation screen and renal function tests are normal.
 - 2.1 Discuss what investigations you would undertake and what you consider to be the most likely diagnosis. (50 marks)
 - 2.2 Describe the pathogenesis of this condition and management of the patient. (50 marks)

3.
 - 3.1 List different mechanisms responsible for the molecular diversity of blood group systems and give one example for each mechanism. (15 marks)
 - 3.2 Briefly discuss the uses of DNA-based genotyping in Transfusion Medicine. (70 marks)
 - 3.3 Outline the clinical importance of genetic testing in haematological diseases including malignancies. (15 marks)

4.
 - 4.1 Briefly describe blood products and pharmaceutical products which can be used for treatment of Haemophilia A. (50 marks)
 - 4.2 Outline the principles of management in severe Haemophilia A. (30 marks)
 - 4.3 How do you manage an 18 year old boy diagnosed as severe Haemophilia A awaiting extraction of an impacted wisdom tooth? (20 marks)

5. As the consultant in charge of Donation Testing Laboratory, you need to implement a malaria microscopy Quality Assessment Programme (QAP) for public health laboratory technicians attached to the National Blood Transfusion Service.
 - 5.1. What are the essential elements of a malaria microscopy QAP? (40 marks)
 - 5.2 Discuss the strategies you can adopt to prevent transfusion transmitted malaria in a country. (60 marks)

6. A woman with high-risk Myelodysplastic Syndrome (MDS) underwent peripheral blood stem cell transplantation from an unrelated male donor with a 9/10 HLA antigen match. On day +32 after the transplant, she was transferred to a local hospital. On the following day her haemoglobin was 8.0g/dl, platelet count $85 \times 10^9/L$ and neutrophils $4.1 \times 10^9/L$. Two units of leucoreduced red cells were selected for transfusion to the patient. First unit was transfused uneventfully. Transfusion was stopped halfway through the second unit after the intervention of the duty consultant who realized that the units have not been irradiated.

A week later, the patient developed pyrexia ($38.2^\circ C$) and a rash on the thighs. On the following day her platelet count was $21 \times 10^9/L$, neutrophils $1.2 \times 10^9/L$ and haemoglobin 7.9g/dl.

 - 6.1 What is your diagnosis? (05 marks)
 - 6.2 Briefly explain the tests you would use to confirm the diagnosis. (30 marks)
 - 6.3 What is the purpose of blood product irradiation in this setting? (30 marks)
 - 6.4 Mention seven (7) indications by patient condition and three (3) indications by component type for irradiation of blood components. (10 marks)
 - 6.5 What measures can be introduced to prevent transfusion of non-irradiated blood units to patients who are at risk? (25 marks)

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Date: 21st June 2022

Time: 1.00 p.m. – 4.00 p.m.

PAPER II

Answer any five (05) questions.

Answer each question in a separate book.

1.

1.1 What are the benefits of establishing an effective in-house blood collection system? (30 marks)

1.2. What strategies would you suggest to establish an effective in-house blood collection system in National Blood Transfusion Service, Sri Lanka? (50 marks)

1.3. What are the limitations to achieve a successful in-house blood collection system in Sri Lanka? (20 marks)

2. As a recently appointed consultant transfusion physician of a general hospital, describe how you would do each of the following:

2.1. Find out whether transfusion practice in your hospital meets modern guidelines in view of optimizing the transfusion practices. (50 marks)

2.2. Ensure that the chain of transfusion from the time of issue from your blood bank to the patient is safe and secure. (50 marks)

3. Discuss the following clinical scenarios with regard to blood and blood component transfusions.
- 3.1 A 50 year old female patient with end stage renal disease and uremia awaiting renal biopsy. (40 marks)
- 3.2 A patient with aplastic anaemia awaiting drainage of liver abscess urgently. There was no increase in platelet count with platelet transfusions in previous occasions. (30 marks)
- 3.3 15 year old sickle cell anaemia patient awaiting major orthopedic surgery one week later. (30 marks)
4. A 28 year old primigravida with 20 weeks of gestation is referred by an obstetrician for your advice on the management.
- Her recent full blood count (FBC) showed Hb 11.2g/dl, WBC $10.2 \times 10^9/L$ & Platelet count $32 \times 10^9/L$.
Blood film confirmed thrombocytopenia with normal morphology.
Coagulation screen is normal.
FBC was normal 4 years ago.
She has no history of bruising or bleeding and her pregnancy is progressing well.
- 4.1 Enumerate the common causes of thrombocytopenia in pregnancy. (10 marks)
- 4.2 Outline clinical features and laboratory findings of **the most common cause** of thrombocytopenia in pregnancy. (10 marks)
- 4.3 Describe how you would assess this patient to arrive at a diagnosis. (40 marks)
- 4.4. Outline the plan of management of this pregnancy. (40 marks)

5. Experience at a single institution over a 10-year period showed that thirteen (13) transfused platelet units associated with septic transfusion reactions had a mean bacterial count of 2.2×10^6 colony forming units (CFU), compared to nineteen (19) contaminated units not associated with reactions which had a mean count of 1.6×10^4 CFUs.
- 5.1 Discuss the above statement. (50 marks)
- 5.2 What are the challenges of worldwide travel to a safe blood supply? (50 marks)
- 6.
- 6.1 Describe the factors you must address when you are planning to implement and practice Massive Transfusion Protocol in your hospital. (50 marks)
- 6.2 Compare and contrast the sources of fibrinogen available for fibrinogen replacement in bleeding patients with acquired hypofibrinogenemia. (40 marks)
- 6.3 Enumerate the advantages of viscoelastic testing (ROTEM/ TEG) in the management of massive haemorrhage. (10 marks)