



COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF BIOMEDICAL AND MEDICAL LABORATORY SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE

NSLS407: HAEMATOLOGY II

END OF FIRST SEMESTER FINAL EXAMINATIONS

2nd DECEMBER 2020

LECTURER: MR MENARD MUTENHERWA

DURATION: 24 HOURS

INSTRUCTIONS

1. Write your candidate number on your answer sheets.
2. Answer any **one** question of your choice from the given three questions.
3. Each full question carries 100 marks.
4. Submit your answer scripts as word documents.
5. Use the following specifications in your answer scripts:
 - Font: Times New Roman
 - Font size: 12
 - Line spacing: 2.0
6. Credit will be given for logical, systematic and neat presentations.

Question 1

Give an account of the incidence, cytogenetics, pathogenic mechanism, common morphologic changes and treatment of Chronic Myelogenous Leukaemia. [100 marks]

Question 2

A 25-year-old woman was brought to the emergency department with a 2-day history of fever, chills, excessive sweating, nausea, and general malaise. Because she had recently returned from a 3-week family trip to Ghana in Western Africa, the treating physician ordered a complete blood count (CBC) and examination of thin and thick peripheral blood films, Figures 1 and 2 respectively. The following are the patient's laboratory results:

Patient results		Reference values
WBC ($\times 10^9/L$)	11.2	4.5-11
HGB (g/dl)	8	12-15
HCT (%)	26	35-49
MCV (fL)	93	80-100
Platelets ($\times 10^9/L$)	182	150-450

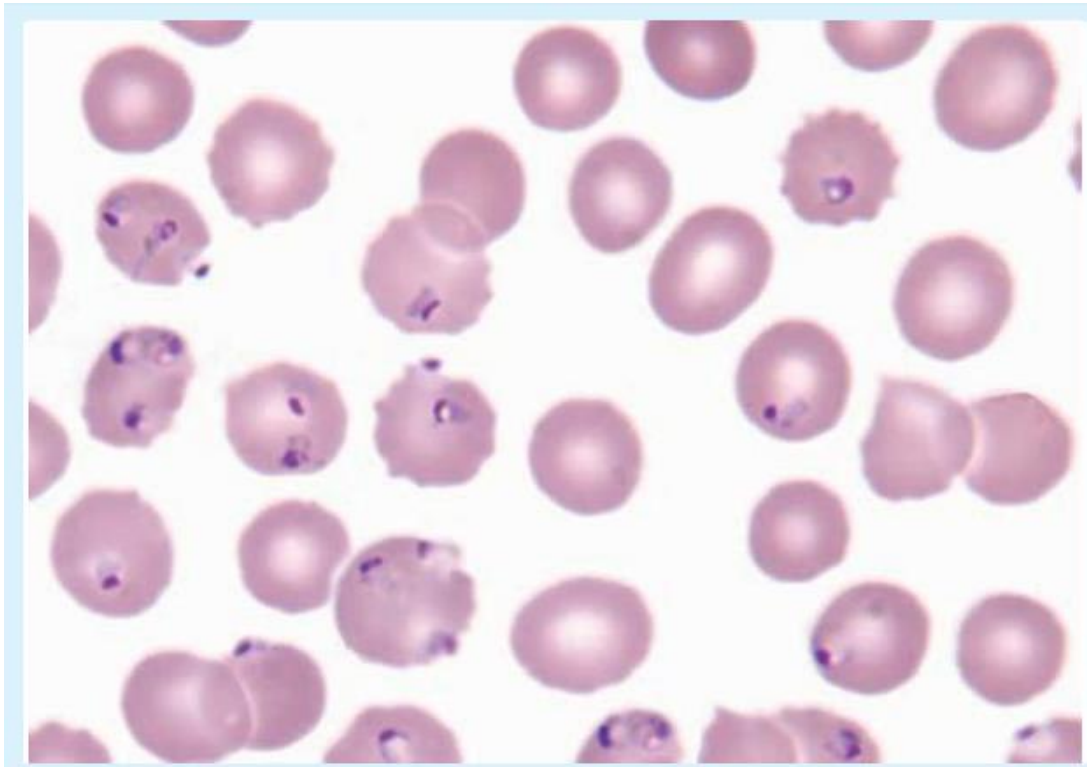


Figure1.

Thin peripheral blood film for the patient

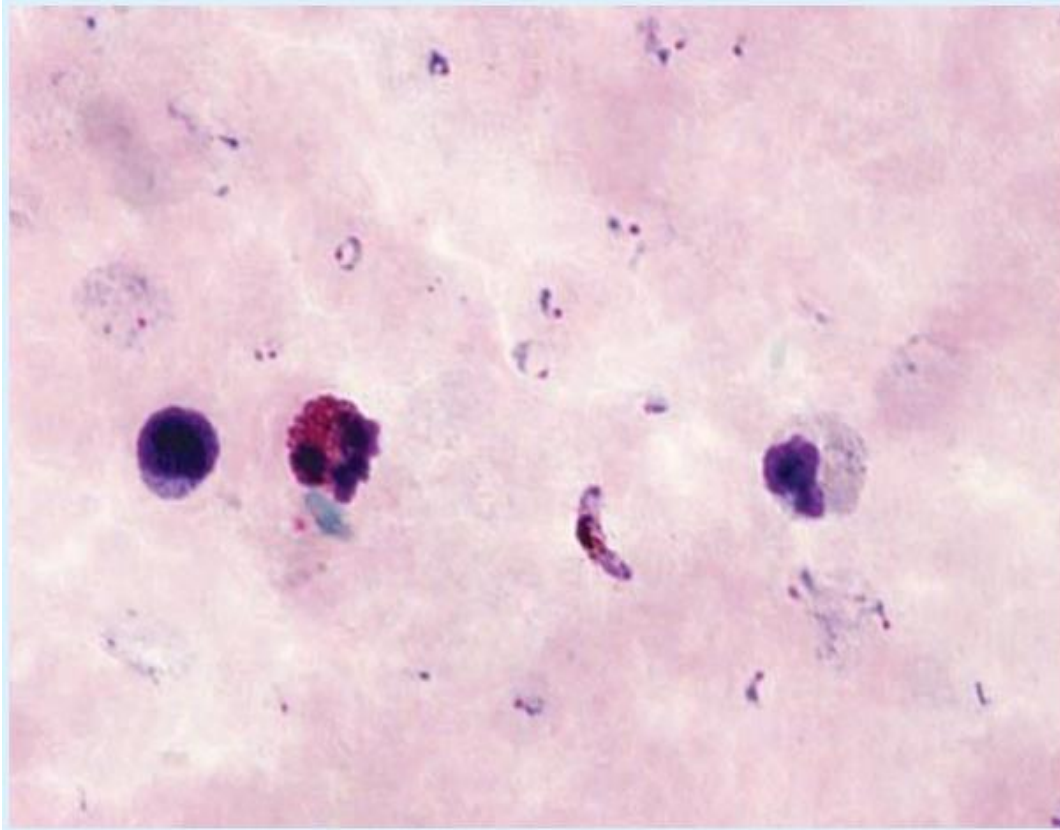


Figure 2. Thick peripheral blood film for the patient

Inclusions were noted on the thin and thick peripheral blood films. Based on the results of the CBC and peripheral blood films, the patient was treated with oral quinine sulfate and doxycycline.

- a. Describe the inclusions present on the thin and thick peripheral blood films. [20 marks]
- b. Comment on the likely diagnosis for this patient? [20marks]
- c. Comment on the clues in the history to support this diagnosis? [20marks]
- d. Give an account of the other forms of haemoparasites that might be found on the peripheral blood films in this disease? [20marks]
- e. Describe the pathophysiologic mechanisms for the anemia in this disease? [20marks]

Question 3

An 87-year-old slender, frail white woman, **Gid**, was hospitalized for diagnosis and treatment of anemia suspected during a routine examination by her physician, **Dr Mute**. **Dr Mute** noted that **Gid** appeared pale and inquired about fatigue and tiredness. Although the patient generally felt well, **Gid** admitted to feeling slightly tired when climbing stairs. A point-of-care hemoglobin performed in **Dr Mute's** office showed a dangerously low value of 3.5 g/dL, so **Gid** was hospitalized for further evaluation. **Gid's** complete blood count (CBC) results are as follows:

Gid results		Reference values
WBCs ($\times 10^9/L$)	8.5	4.5-11
RBCs ($\times 10^{12}/L$)	1.66	4.3-5.9
HGB(g/dl)	3	13.9-16.3
HCT (%)	11	39-55
MCV (fl)	66.3	80-100
MCH (pg)	18.1	26-32
MCHC (g/dl)	27.3	32-36
RDW (%)	20	11.5-14.5
Platelets ($\times 10^9/L$)	165	150-450
WBC differential	Unremarkable	
RBC morphology	Marked anisocytosis	
	marked poikilocytosis	
	marked hypochromia	
	marked microcytosis	

- Describe **Gid's** blood picture using the systematic approach to interpretation of a CBC. [30 marks]
- Evaluate the causes of anemia that you should consider based on the results of the CBC. [20 marks]
- If **Gid** has not been diagnosed with anemia at any other time during her life, explain how you would eliminate any of the conditions listed in the answer to question 3(b)? [20 marks]
- If **Gid** is otherwise healthy and experiencing only the common declines of sight, hearing, and mobility associated with aging, evaluate if any of the conditions listed in the answer to question 3(b) are more likely than the others? [20 marks]
- Give an account of the additional testing that you would recommend. Comment on the results that you would expect for **Gid**. [10]