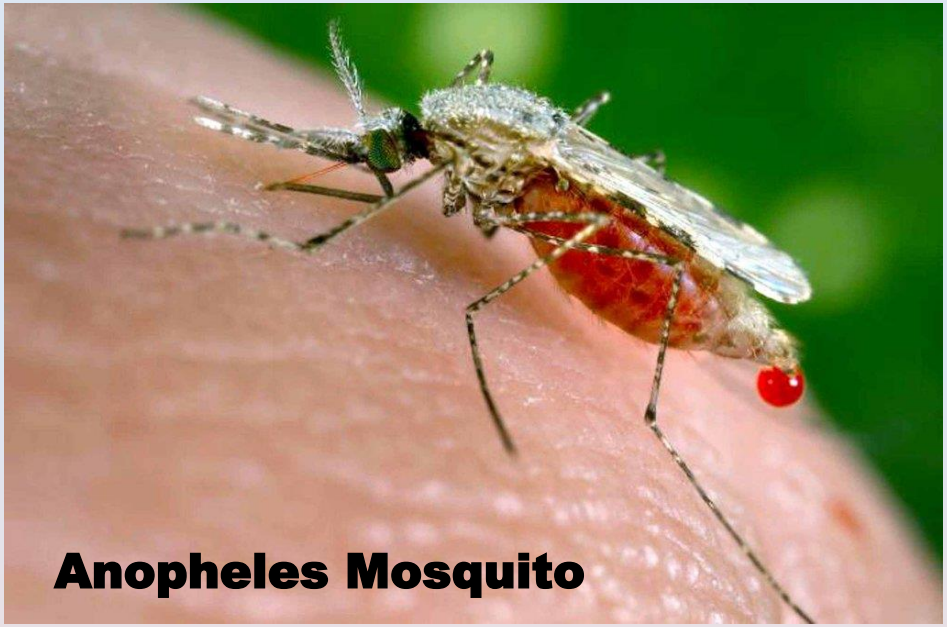
BLOOD AND TISSUE PARASITES

Microbiology Practical Class

MALARIA



➢LABORATORY DIAGNOSIS OF MALARIA

Malaria Can Be Diagnosed Commonly By:

1- MICROSCOPY (LIGHT MICROSCOPE):

Uses a blood smear to identify whether parasites are present in the patient's blood.

- **Thick film**: for screening
- **Thin film**: for different speices identification

2 - RAPID DIAGNOSTIC TESTS (RDTs):

RDTs are quick tests for screening that use a drop of blood from the finger tip to identify whether parasites are present in the patient or no.

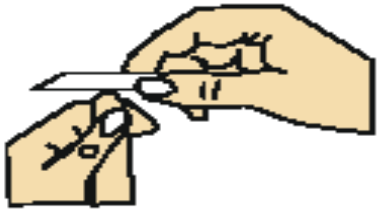
3- SEROLOGY

4- PCR

➢ LABORATORY DIAGNOSIS OF MALARIA

LIGHTMICROSCOPY

1- Preparing blood film (Thick & Thin)



1

Touch the blood drop with a clean slide.

2

Using the corner of another slide, spread the blood drop into the shape of a circle or square of ~1cm².

3

Gently squeeze the patient's finger again, and touch the edge of a clean slide to the newly formed blood drop.

4

Take this slide and hold the edge that has the blood drop at an ~45° angle against the surface of the first slide. Wait until the blood completely spreads along the edge of the second slide.

5

While holding the second slide at the same angle, rapidly and smoothly push the slide forward.

6

Write the identification number on the slide. Wait until the thick film is completely dry before staining it.

➢LABORATORY DIAGNOSIS

LIGHTMICROSCOPY

2- Video showing Preparing of Thin and Thick blood film

https://youtu.be/aEAXYJ7XaCg

➢LABORATORY DIAGNOSIS

LIGHT MICROSCOPY

3- Interpreting Thick and Thin Films

THIN FILM

- fixed RBCs, single layer
- smaller volume
- good for species identification
- requires more time to read

THICK FILM

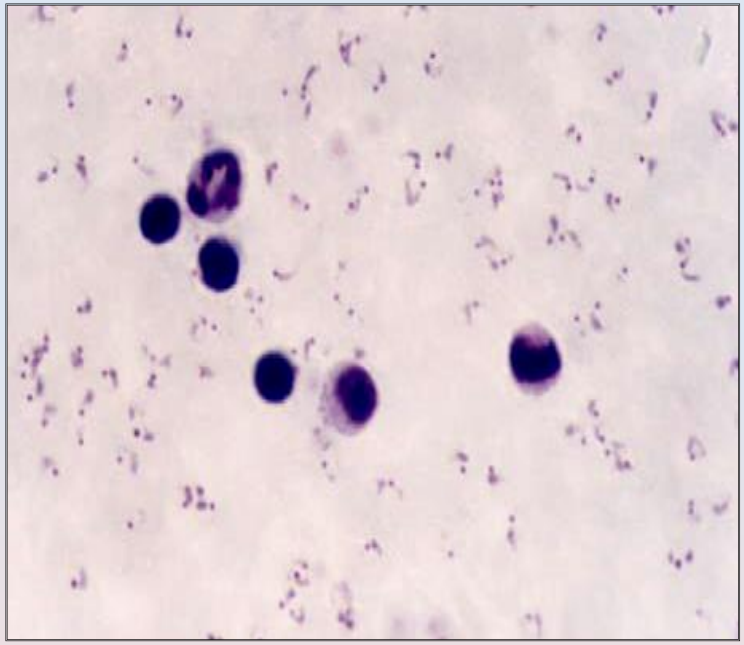
- lysed RBCs
- larger volume
- good screening test
- positive or negative

➢LABORATORY DIAGNOSIS

LIGHT MICROSCOPY

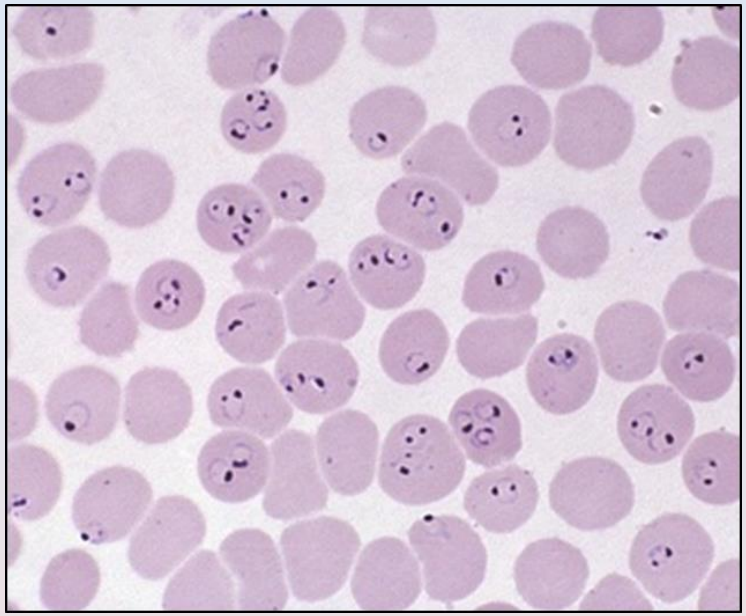
4- Microscopic image for Thick film VS Thin film

Plasmodium falciparum



Plasmodium falciparum

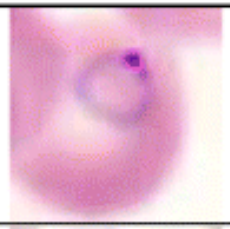
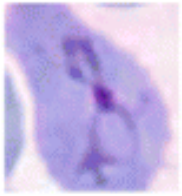
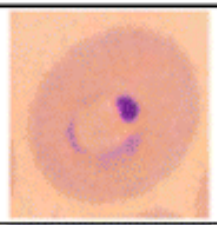
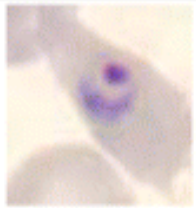
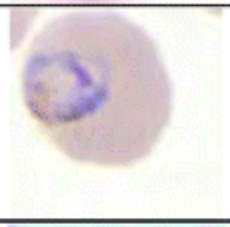
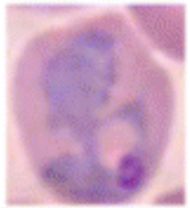
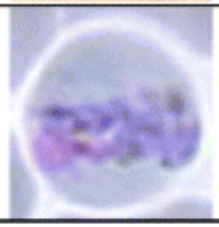
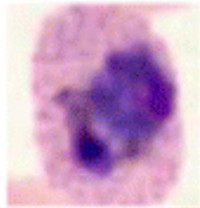
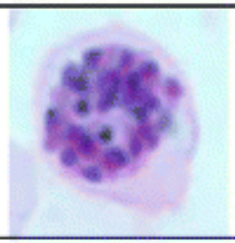
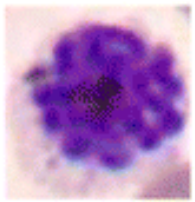
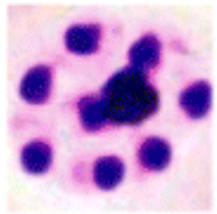
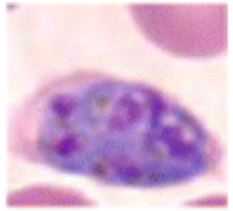
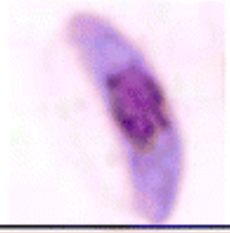
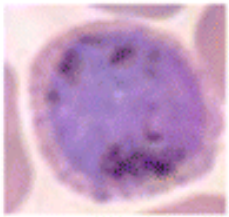
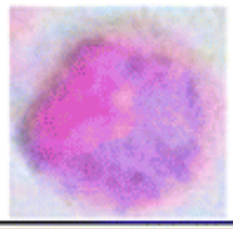
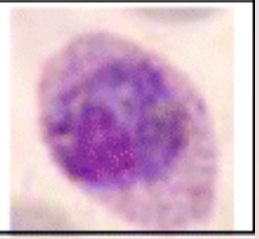
(Ring stage in thin smear)



➢LABORATORY DIAGNOSIS

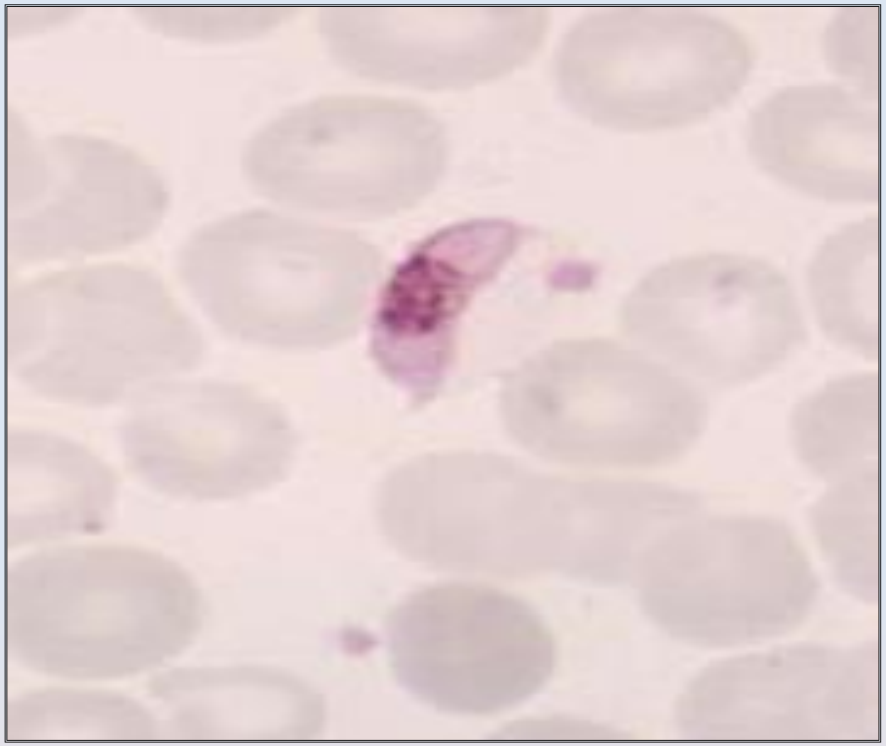
LIGHT MICROSCOPY

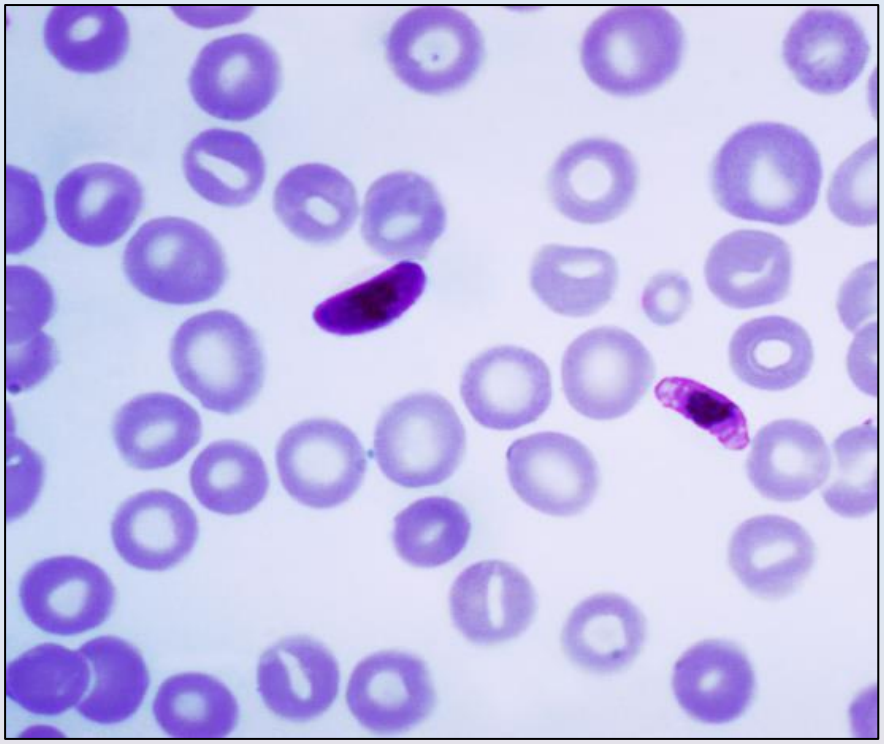
5- Species of Malaria (*Plasmodium Spices)* is identified by its characteristic microscopic appearance:

Species / Stage	Falciparum	Vivax	Malariae	Oval
Ring Stage				
Trophozoite				
Schizont				
Gametocyte				

➢LABORATORY DIAGNOSIS

LIGHT MICROSCOPY





Plasmodium falciparum

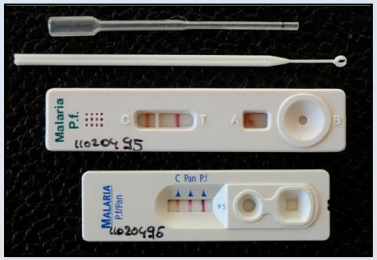
Gametocyte stage in thin smear

(characteristic banana-shaped or crescent –shaped gametocyte stage in thin smear)

➢LABORATORY DIAGNOSIS

RAPID DIAGNOSTIC TESTS (RDTs)

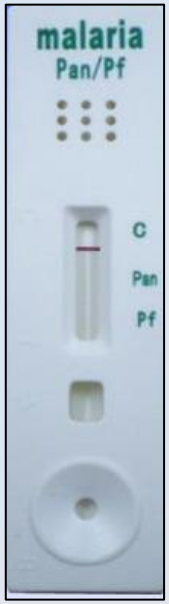
1- The RDTs Test (for screening)



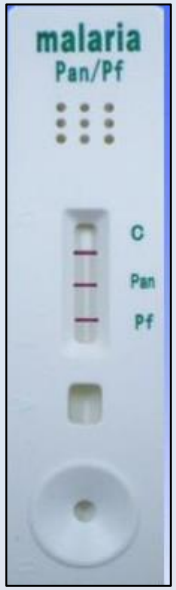
➢ LABORATORY DIAGNOSIS OF MALARIA

LIGHT MICROSCOPY

3- RDTs Result



Negative



Positive

LEISHMANIA

Sand Fly

➢LABORATORY DIAGNOSIS OF LEISHMANIA

Leishmania Can be Diagnosed Commonly By:

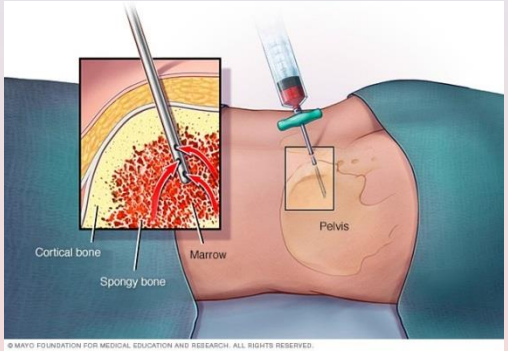
- **Microscopy (Light Microscope)**
- **Culture in NNN Medium**

Used Samples:

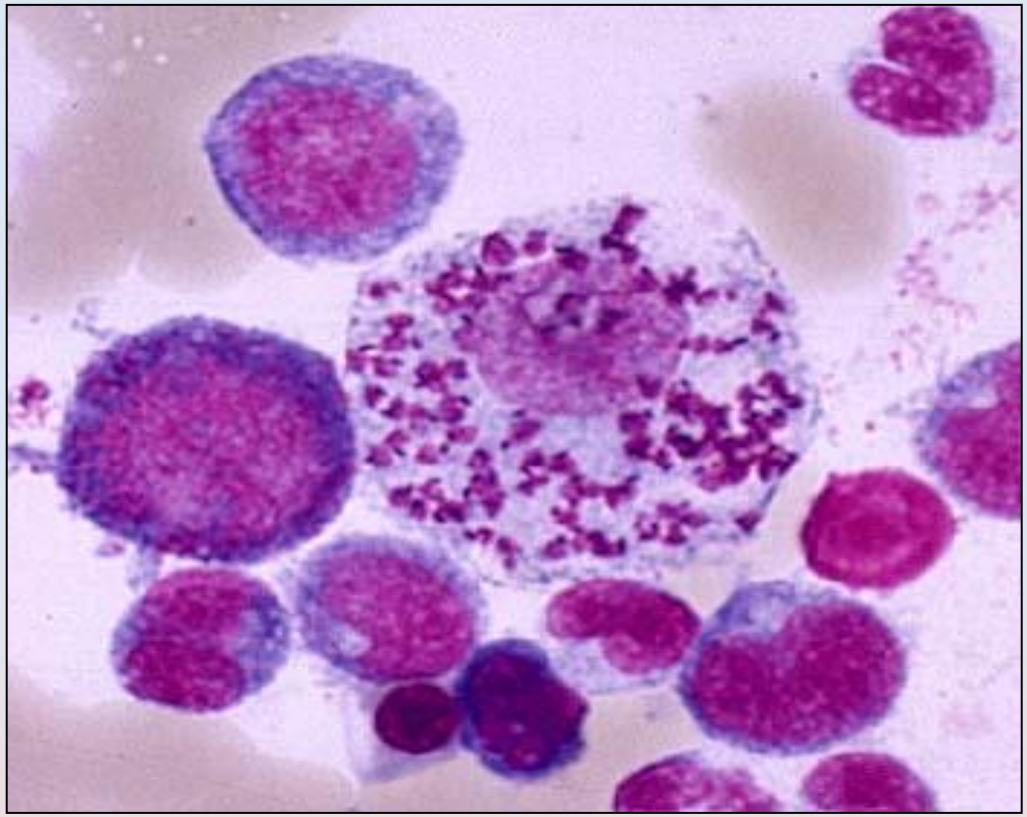
- **Bone Marrow aspirate**
- Splenic aspirate
- Lymph node
- Biopsy

➢LABORATORY DIAGNOSIS OF LEISHMANIA

Bone marrow aspiration



➢LABORATORY DIAGNOSIS OF LEISHMANIA



Bone marrow aspirate

(Amastigotes)

Case1:

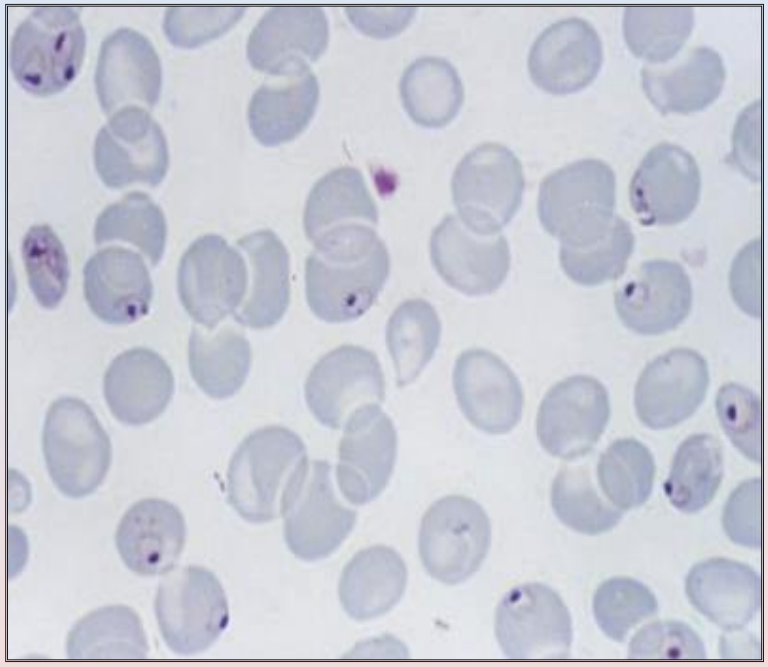
A 25 year-old male from India, who came 3 months ago was admitted in KKUH with a history of severe anaemia and intermittent high grade fever for the last two months not responding to antibiotics.

WHAT IS THE DIAGNOSIS?

Malaria or *Plasmodium Falciparum*

Mention other way for diagnosis?

RDTs, Serology or PCR

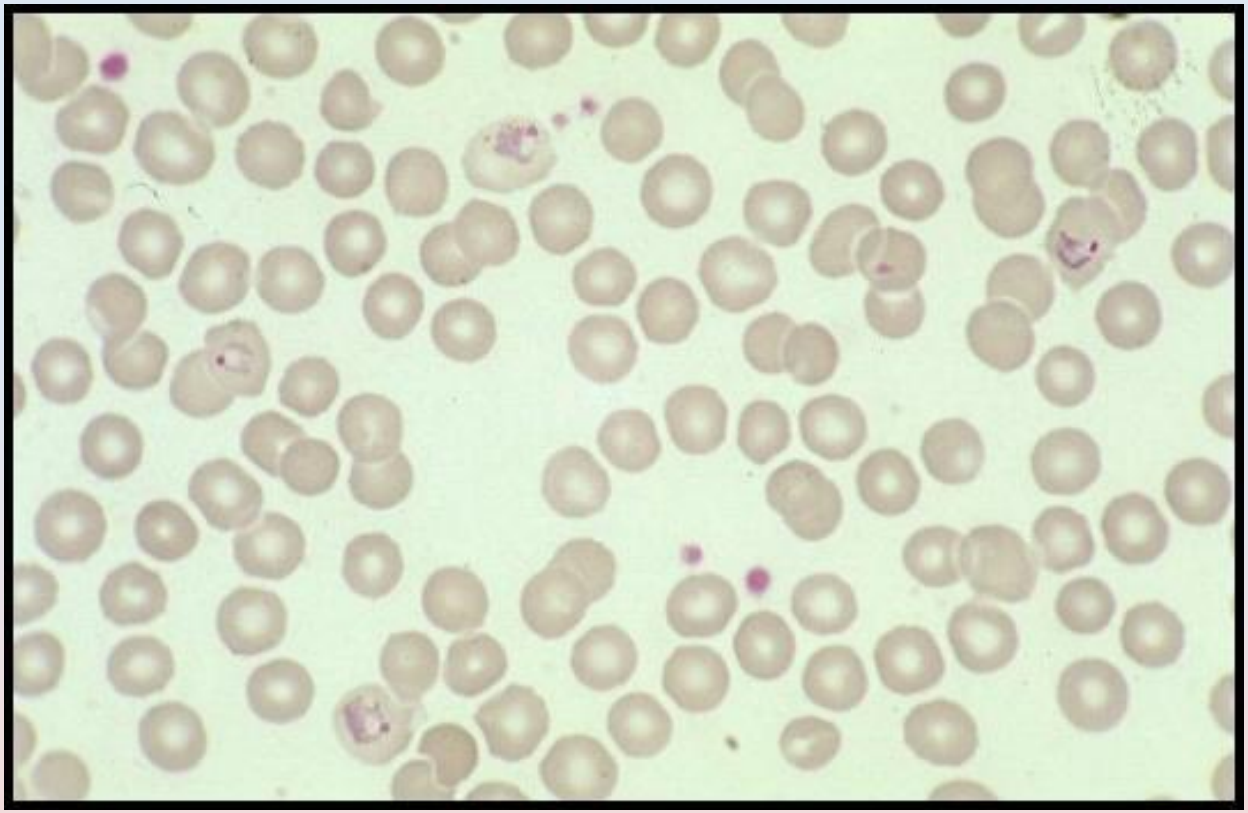


Case2:

A businessman who makes frequent trips to Thailand, presents with intermittent fever.

WHAT IS THE DIAGNOSIS?

Malaria or *Plasmodium spices*



Case3:

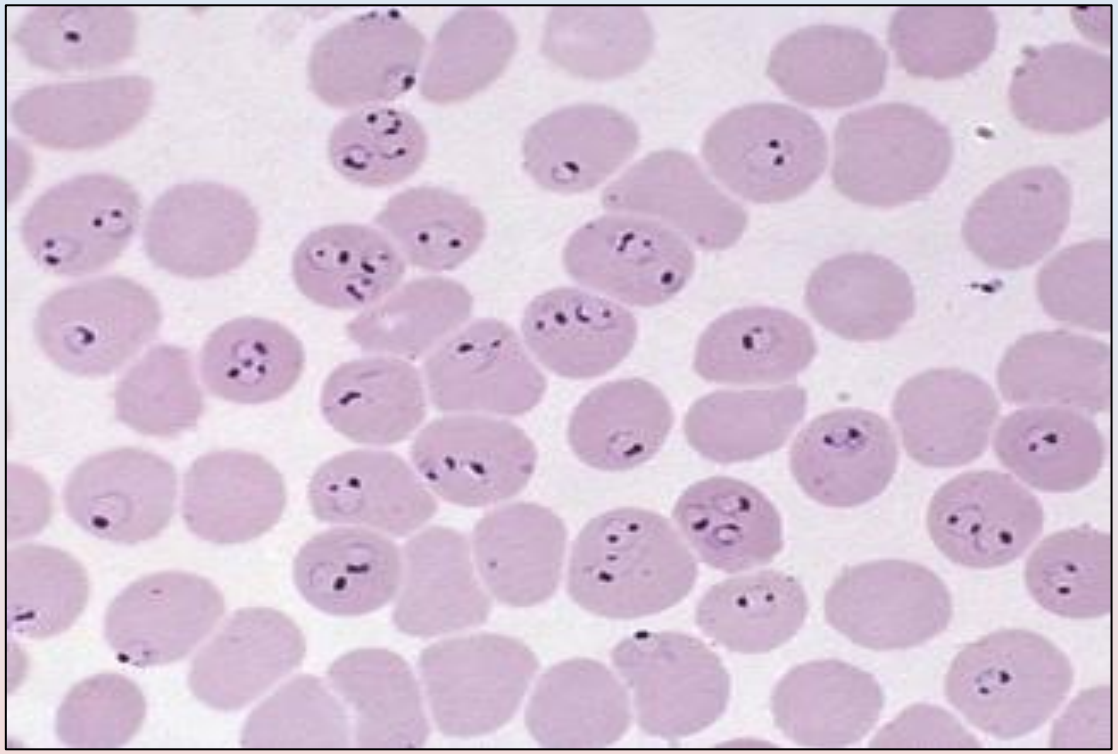
A student in KSU who returned three weeks from vacation in Africa, he developed intermittent fever last week and lost consciousness a short time ago.

WHAT IS THE DIAGNOSIS?

Malaria

WHAT IS THE PATHOGEN?

Plasmodium falciparum



Case4:

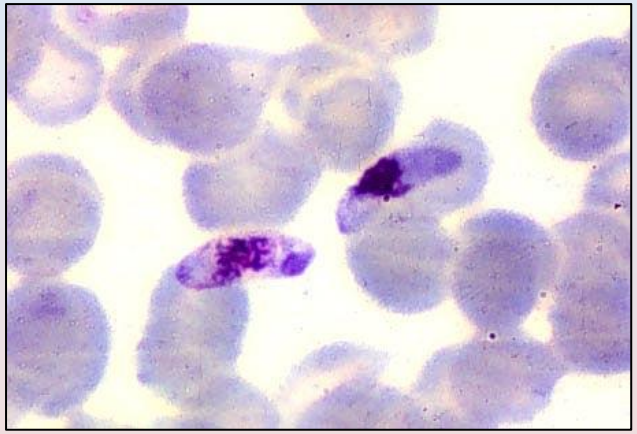
The patient was then treated with schizontocidal antimalarial drugs, a follow-up blood film is shown.

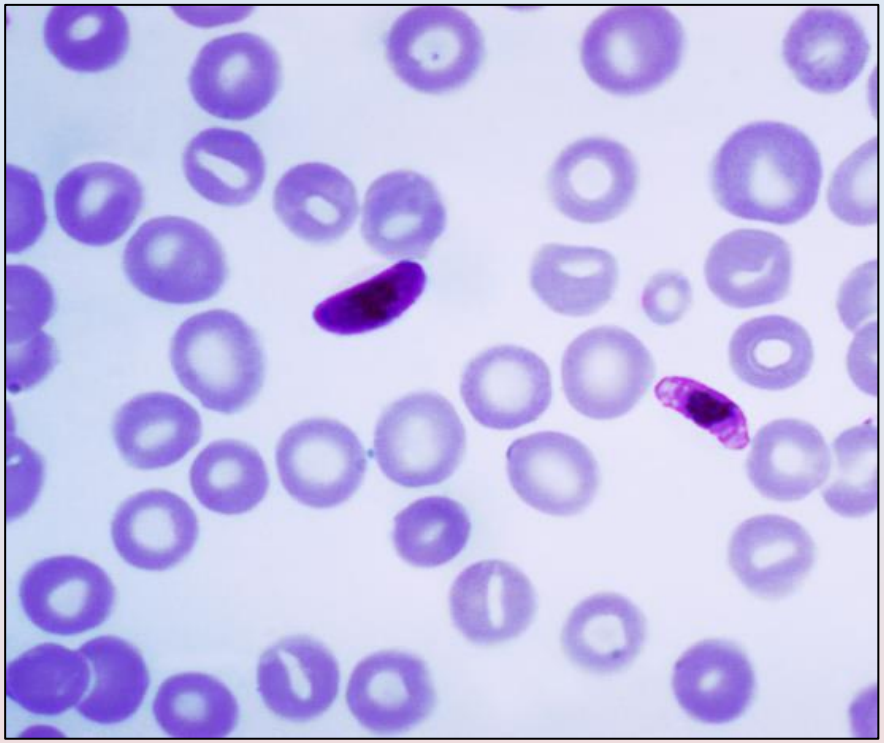
NAME THE PARASITE?

Plasmodium falciparum

IN WHAT STAGE ?

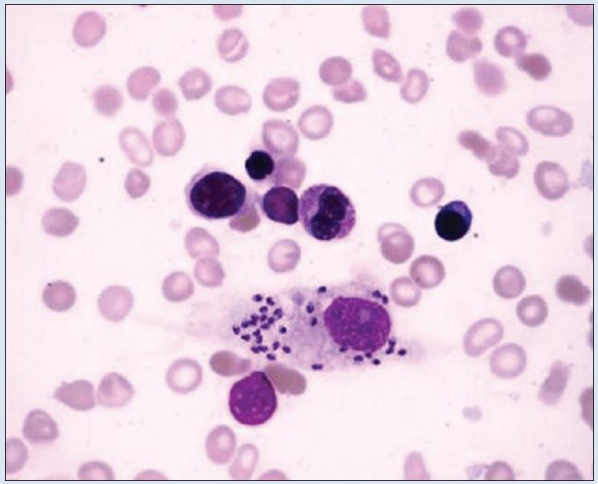
Gametocyte stage

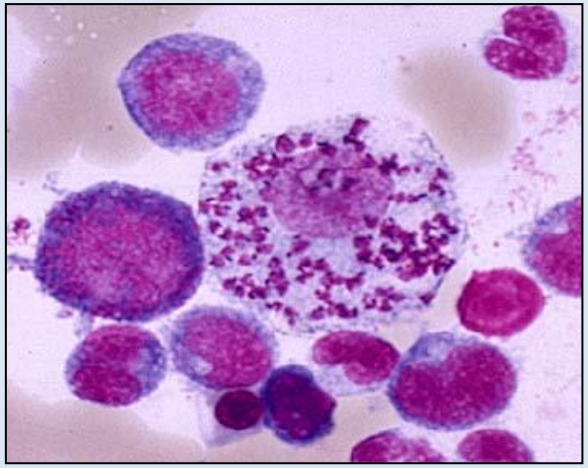


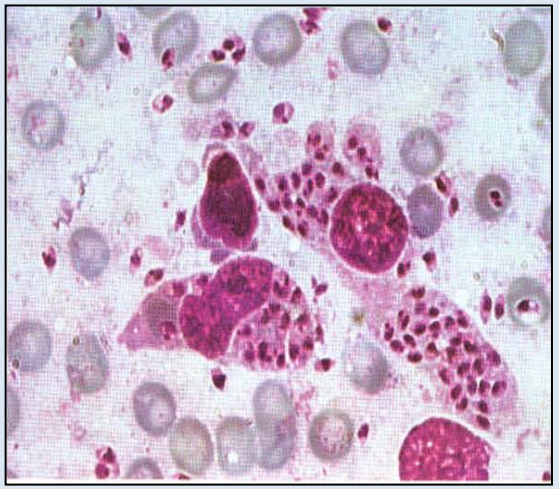


Case 5 :

A 7 year old child presented with anemia, hepatosplenomegaly and fever. Not responding to antimalarials and antibiotics. Bone marrow aspirate smear is shown:







WHAT IS THE DIAGNOSIS?

Visceral Leishmaniasis

IDENTIFY THE PARASITE STAGE?

Amastigote Stage

Malaria Life Cycle.mp4