

Family ⇒ Parasites ↘ blood para

# Malaria and Babesia

replicat intracellular Parasites  
in RBCs and hepatocellular cell

## Malaria

\*The causative agent

\*Type

most severe

← Plasmodium falciparum

تشن يوم بطن اعراض

← Plasmodium vivax

(at the same day)

← Plasmodium ovale

← Plasmodium malariae

↳ every 3 days

2 يوم بطني الاعراض (اول يوم مرتفع - فتره 3 ايام ثم يعود)

Clinical signs patterns ← تبعض ← (\*)

← بطن كل يوم عرض بشكل ← اول يوم حرارة و بطن  
← ثانی يوم طاق اسن  
و سکتا

↳ or malarial Paroxysm

← تم تشخیص (\*)

according to the clinical presentation

\* حسب شدتها اذا كانتا

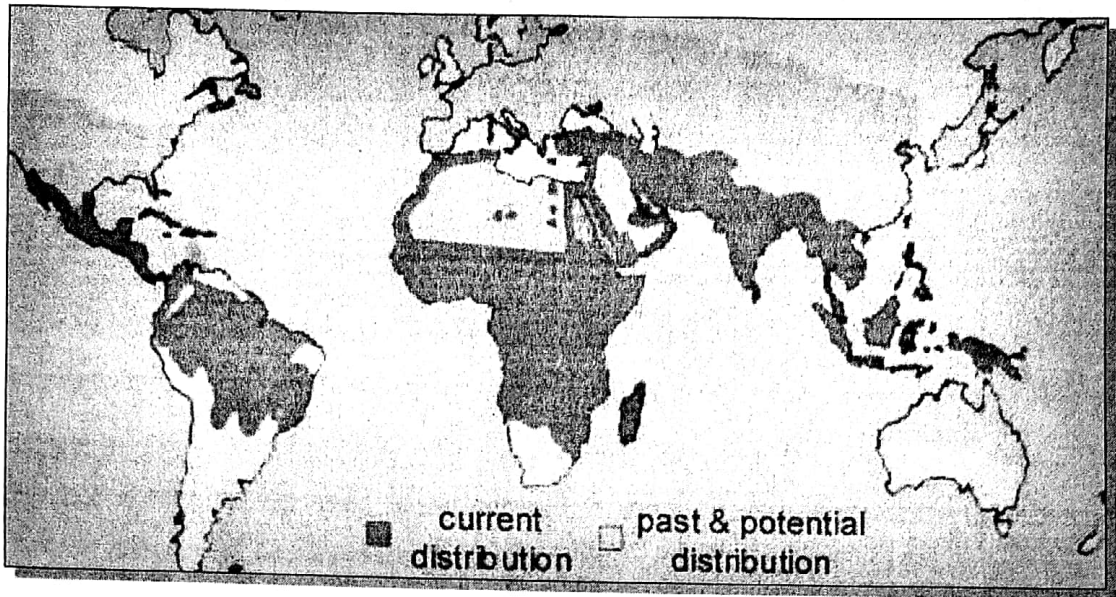
falciparum ← قویون لپا -

vivax ← بس -  
ovale ←

malariae ← ضعیف -

# Malaria

geographic distribution  $\Rightarrow$  all over the world



$\hookrightarrow$  رطوبت زیاد اور گرمی سے تیار ہونے سے  $\leftarrow$  hot weather  $\leftarrow$  وہاں لاکھوں کی تعداد میں لاکھوں  
 علاقوں میں / (افریقا) (transmitter of plasmodium)  $\Rightarrow$  a lot of mosquitoes  $\Rightarrow$  لاکھوں لاکھوں کی تعداد میں لاکھوں  
 wet weather

## Malarial parasites: morphology

Life cycle  $\Rightarrow$

	① trophozoite Common ring form	② schizont مستطیلہ	③ gametocyte	
RBCs $\leftarrow$ یہ تو داخل ہونے والے وندھن کے ذریعے <u>P. falciparum</u>				$\Rightarrow$ * according to the severity of <u>Malignant tertian malaria</u> قوی و شدید (مستطیلہ)
<u>P. vivax</u>				$\Rightarrow$ <u>Benign tertian malaria</u> weak وندھن کے ذریعے
<u>P. ovale</u>				$\Rightarrow$ <u>Ovale tertian malaria</u>
<u>P. malariae</u>				$\Rightarrow$ <u>Quartan malaria</u>



Sporozoites  $\Rightarrow$  merozoites  $\Rightarrow$  trophozoites  $\rightarrow$  mero

male female

- mature  
- ring form

erythrocytic cycle  $\Rightarrow$  دورة

hepato cycle  $\Rightarrow$  دورة

# Malarial parasites: life cycle

منها ينقلها بالكلية بدون ما يحولها اسن / وسن ينقل

infective stage

Female mosquito  
 malarial parasites  $\rightarrow$  mosquito  $\rightarrow$  hepatocyte  
 infect the liver cells  $\rightarrow$  may remain dormant (hypnozoites)  $\rightarrow$  asexual  $\Rightarrow$  no differentiation to gametocyte  
 multiplication (merozoites)  $\rightarrow$  liver cells rupture  $\rightarrow$  released into blood  $\rightarrow$  RBC  $\rightarrow$  In red cells  $\rightarrow$  trophozoites  $\rightarrow$  merozoites  $\xrightarrow{\text{differentiation}}$  male and female (Sexual) gametocytes while others enter red cells to continue the erythrocytic cycle.

gametocytes (male and female)  $\rightarrow$  female mosquito  $\rightarrow$  female gametocyte  $\rightarrow$  ookinete  $\rightarrow$  oocyst in the gut  $\rightarrow$  sporozoites  $\Rightarrow$  human being  $\rightarrow$  go to blood  $\rightarrow$  multiplication  $\rightarrow$  go to salivary gland of mosquito

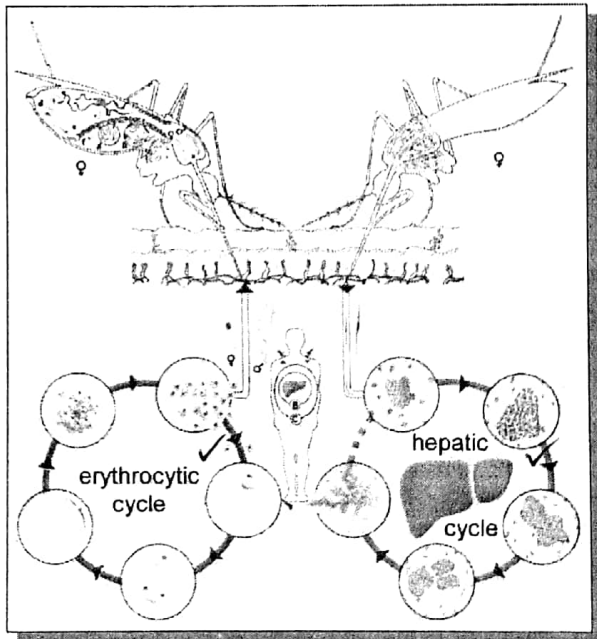
⊗ كما انفجرة الخلايا في ال RBC و Liver  $\Leftarrow$  Fever  $\Leftarrow$  Fever chills

Toxic substance

## Malarial parasites: life cycle

substance  
 chemical  
 immune syst  
 malarial spikes  
 - 11 Paroxysm

تسببها  $\checkmark$   
 له يوم آه ويلي  
 13 يوم



# Malarial symptoms

type	organ Involved	symptoms
tertian (vivax and ovale)	spleen, liver, erythrocytes systemic	headache, lassitude, vague aching of bones and joints, chills and high fever (103-106 F), nausea and vomiting, convulsion, euphoria, profuse sweating. Symptoms <u>every other day</u> and last 8-12 hours. Spontaneous recovery on يوم off يوم ← مظهر متناوب مركب حتى بالوضع الطبعي مثل المخدرات
falciparum (malignant tertian)	← كل سوي	same as above but no tertian pattern: there may be <u>daily spiking</u> ; no spontaneous recovery and ultimately fatal. <u>Renal &amp; CNS</u> involvement له اذا خالجا لبح يكون
quartan (malariae)		same as tertian, but paroxysm occurs <u>every three days</u> (2 clear days) + one clinical

← shedding الدم

systemic symptoms / sign

( Pattern of disease )

⊕ فهم من " تعرفا - )

له يعني هل هو

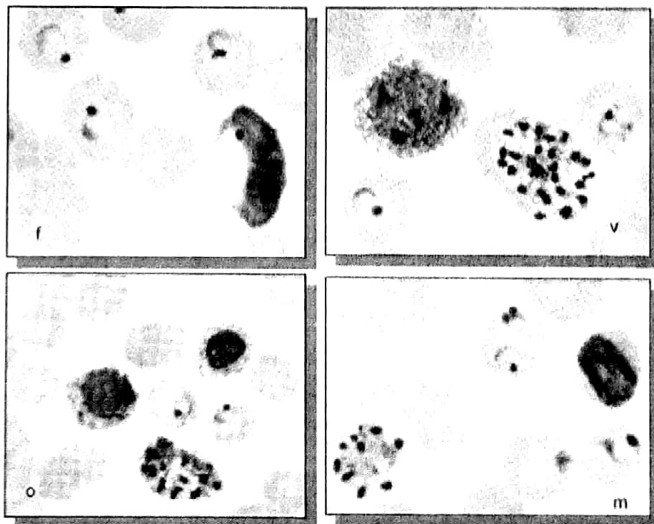
- every day
- daily
- every 3 day

• صفة اقدر امين النوع

# Malarial diagnosis

← Travel history  
 symptoms  
 Blood smear

← استنظف الحضانة  
 او الاعداد بكم



You can see different stages

لغني بوسيط العين واهر فقط وكذا اكثر

من مرحلة في نفس smear حاسا الباهيا

# Malaria control and treatment

## Treatment:

- Quinine derivatives

- *P. falciparum* often drug resistant

- Quinine can be use prophylactically

قوة وكمية  
لحم وارتقاء  
لحمه

combination of drug

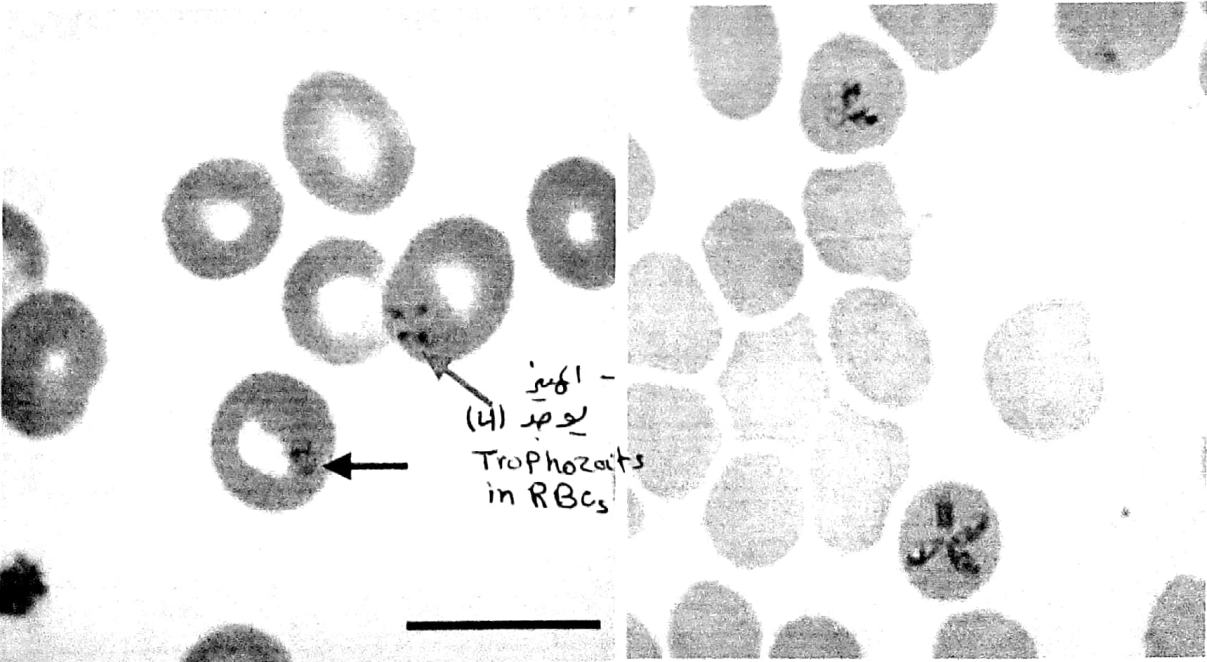
من اجل الوقاية لعدم ظهور مبيد

## Control

- Control mosquito population
- Mosquito netting

# Babesia

The actually inhibit the RBCs





name of disease

# Babesiosis

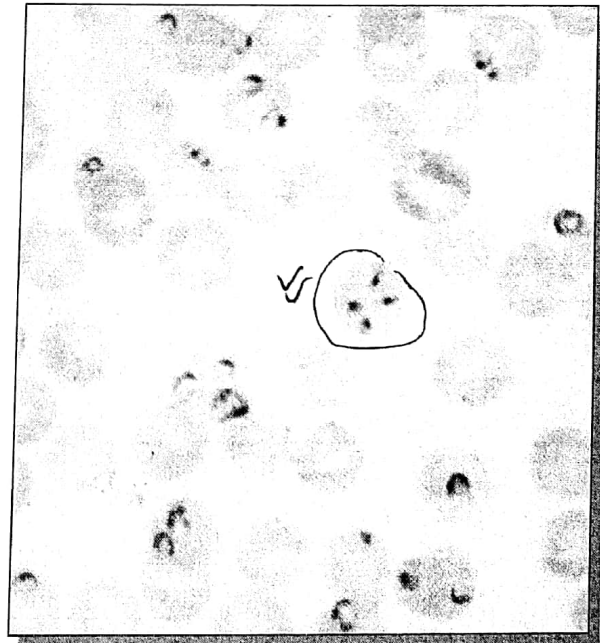
## geography and etiology

- Etiologic agent is *Babesia microti* → inhibits the RBCs → transmits by vector
- Zoonotic infection
- Deer are primary reservoir
- Cases reported in north-eastern part of the US and Europe

# Babesiosis

## morphology

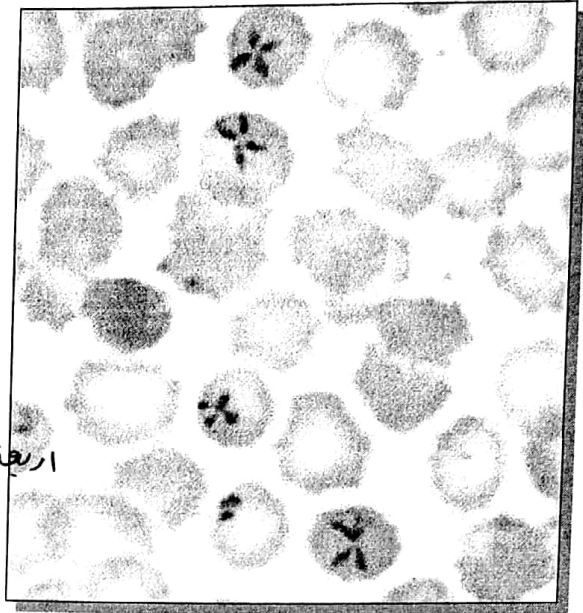
- Similar to malarial parasite, but no schizonts or gametocytes لا يوجد عندها هذه المرحلة
- Up to four trophozoites per cell (RBCs)





# Babesiosis diagnosis

- Symptoms
- History of tick bite  
لقد القراة / البراعنة وهكذا
- No malarial paroxysm
- Characteristic organisms in blood ⇒ اربعيات



لوفوفها المرفق وسفنا ال Smear وما فيها

iff evential ← babesis ← Paroxysm diagnosis

بدك تعرف من الطفيليات الي تبرز في ال لاريا

بال babesis و حسب ال clinical sign

# Babesiosis treatment

Clindamycin with quinine is effective

# Babesiosis prevention

- Avoid tick bites
- Recovery may be spontaneous because mild chill and fever and sometimes goes by themselves with out treatment