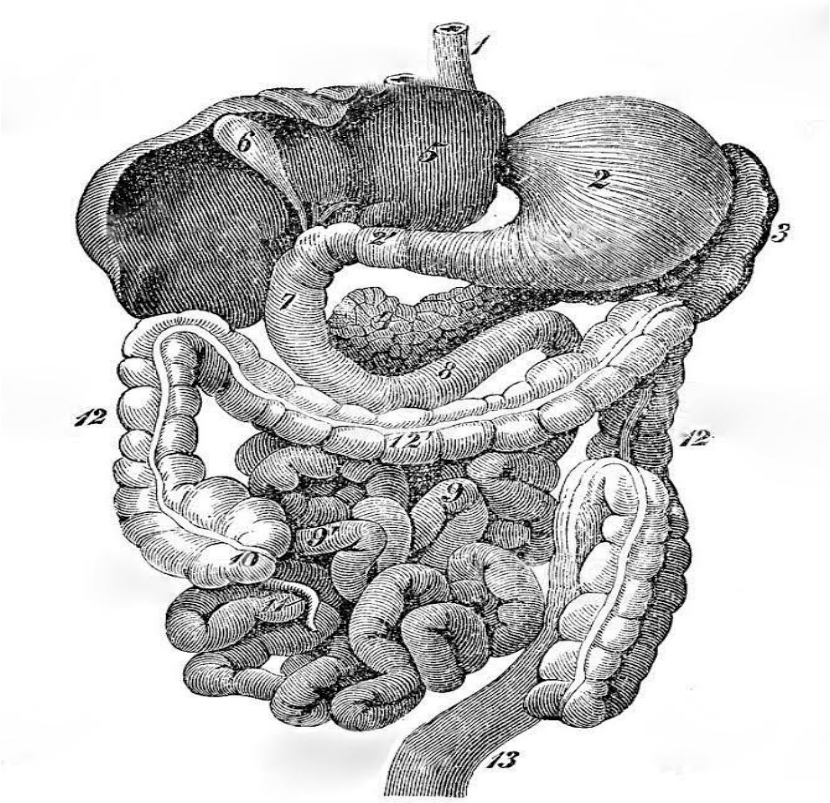
Microbiology

435's Teamwork
GastroIntestinal & Nutrition Block



- Kindly check our Editing File before studying the document.
- Please contact the team leaders for any suggestion, question or correction.
- Pay attention to the statements highlighted in red.
- Extra explanations are added for your understanding in grey.
- **Footnotes color code:** General | Females | Males.
- **color code:** Female's notes | Male's notes.

Revised by
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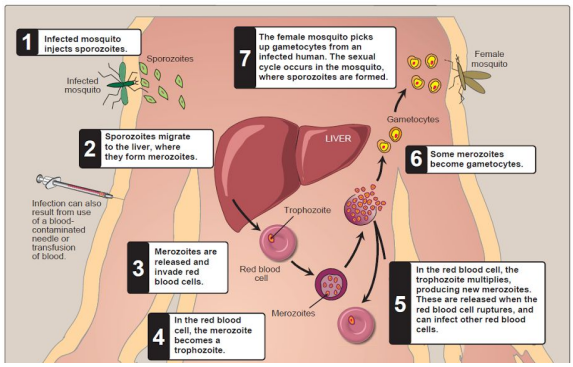
Malaria

Resources: DR.ALKHALIFA'S SLIDES

Five species of malaria infect human

- *Plasmodium falciparum* malignant malaria **(the most severe & dangerous form of malaria)**
- *Plasmodium vivax*
- *Plasmodium ovale*
- *Plasmodium malariae*
- *Plasmodium knowlesi* **the newest one**

Life cycle of malaria



Only female mosquito can infect u :))

اهم شي تعرف ان فيه سايكل بالكبد وفيه سايكل بالدم والموسكيتو تدخل لجسمك Sporozoite

وتاخذ منك gametocytes

- **First cell to be infected:**hepatocyte
- **Main pathology of malaria:** RBCs يعني لما تدخل خلايا الدم الحمراء تبدأ تتكاثر وتسوي lysis
- **Infective stage (to human):**sporozoite
- **Infective stage(mosquito):**gametocyte,mosquito is definitive host(gametes → *zygote*)inside the mosquito

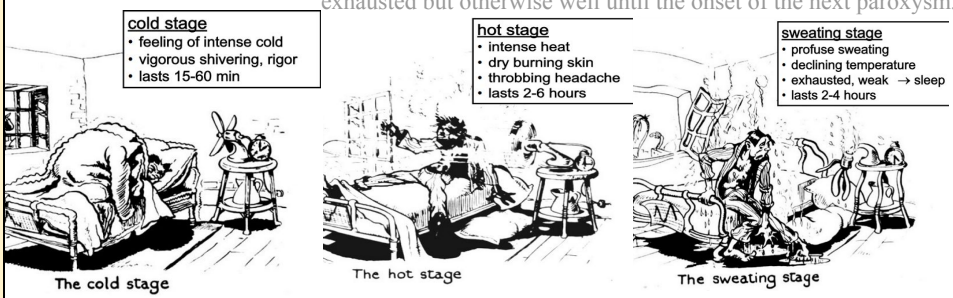
Pathogenesis

- Lysis of infected RBC → Anemia → **Tissue anoxia** (lack of oxygen)
- Structural changes in the infected red cells resulting increase in their rigidity and adhesiveness to endothelium → localized decreased microcirculation → **Tissue anoxia** (lack of oxygen)

Clinical picture

Malarial paroxysm(attacks)

Three successive stages:cold يقعد ساعه يرجف من البرد → *hot* → *sweats* → It leaves the patient exhausted but otherwise well until the onset of the next paroxysm.



Classically the attacks occur every second day with the "tertian" parasites (P. vivax, and P. ovale) and every third day with the "quartan" parasite (P. malariae),whereas P.falciparum show irregular attacks حاولت بالدكتور يحذفها بس عيا مابيي يحذف ولا نقطة -_-

According to the severity

complicated

Severe malaria is defined as symptomatic malaria in a patient with P. falciparum with one or more of the following complications: مابيكم تحفظون اذا عرفتم الباثوجنسس بتطلعونها بسهوله هي اسمها خبيثه لأنها اي خلية دم حمراء تشوفها تدخل فيها وتتكاثر فيها لين مايكبر حجم الخليه فتسد الاوعية الدمويه مما يؤدي الى نقص وصول الاوكسجين للاعضاء الحيوية (كالمخ مما يؤدي الى تشنجات ونحوها_والرئتين مؤديا الى اسيدوسس_والكليتين فيؤدي الى خلل في وظائف الكلى وعدم توازن الالكتروليت وربما الى فشل كلوي)ولما تكبر خلايا الدم الحمراء بزيادة سيؤدي الى انفجارها **(hemolysis anemia_septicmia…)**

- **CNS involvement:**

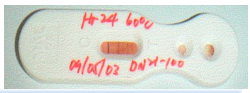
–Cerebral malaria (Can Lead to Death) –Generalized convulsions

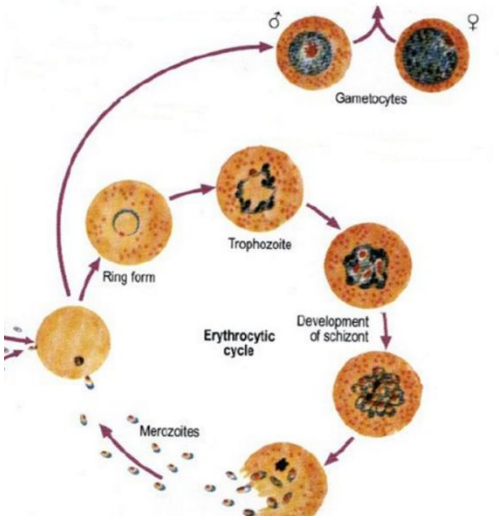
- **Due to Respiratory involvement:**

–Metabolic acidosis with respiratory distress –Acute pulmonary edema

- **Due to kidney involvement:**

–Acute renal failure–Fluid and electrolyte disturbances

			• **Due to hemolysis:** –Severe normocytic anaemia –Abnormal bleeding–Jaundice –Haemoglobinuria associated with malaria **("blackwater fever")** is uncommon and malarial haemoglobinuria usually presents in adults as severe disease with anemia and renal failure.يصير لون البول اسود من كثر تكسر خلايا الدم الحمراء –Circulatory collapse, shock, septicaema (algid malariaالملاريا الصاعقه) –Hyperparasitaemia –Hypoglycemia لان البرسايت تتغذى على الجلوكوز
		uncomplicated	defined as Symptomatic infection with malaria parasitemia without signs of severity and/or evidence of vital organ dysfunction. Caused by other species other than p.falciparum
	According to the onset	Acute disease	اذاكنت عايشه طول حياتي في بيئه غير موبوءة بالملاريا وفجأه طقت براسي اسافر لمنطقة فيها ملاريا زي افريقيا ,فإذا جتني الملاريا الاعراض بتصير اكيوت تبان بسرعه لان ماعندي انتي بوديز سابقه,طيب الحين شدة الاعراض تعتمد على نوع البرسايت اذا كانت P.falciparum فالله يرحمني:) • P.falciparum cause severe malaria (eg;cerebral malaria → deathالدكتور ركز عليها) • Other species cause Non-severe Acute Febrile disease
		Chronic disease	هنا تحصل اذا انا كنت عايشة ببيئة موبوءة بالملاريا او تعرضت لها بصغري فلما تدخل لجسمي فبما ان عندي انتي بوديز سابقه فتتطول الاعراض لين ماتطلع ويمكن تصير بس خفيفيه تعتمد على نوع البرسايت ومناعتي • Chronic Asymptomatic Infection,(Anemia → blood Transfusions cauld lead to Developmental Disorders) (sever Anemia → may lead to death)طبعا مو كلهم تصير لهم هالبلاوي تعتمد على نوع السبيشس ومناعة الشخص وهل اكل علاج ولا • Infection During Pregnancy → Placental Malaria(accumulation of parasites within the placenta) → Low Birth weight (because The parasite interferes with transmission of vital substances through the fetal placenta) → Increased Infant Mortality
Laboratory diagnosis of malaria U will be asked about it:))	**light Microscopy** (*the gold standard)*		Used for identify parasite density, species diagnosis & monitoring response to treatment.
	Rapid diagnostic tests		To detect malaria antigens  Plastic cassette format of RDT



MALARIA

CLINICAL CAPSULE

Malaria is a febrile illness caused by a parasitic infection of human erythrocytes transmitted by the bite of a mosquito. The fevers are accompanied by headache, sweats, malaise, and typically appear in paroxysmal episodes lasting hours and re-curring for weeks. Complications due to capillary blockade can be fatal, particularly in the brain.

EXTRA SKETCHES