

Life Cycle of Malaria Parasites

Sedigheh Zakeri*

Department of Medical Sciences, Islamic Republic of Middle East, Iran

Perspective

Malaria is caused by the transmission of the plasmodium to humans by the bites of female Anopheles mosquitoes. Plasmodium parasites' primary hosts and transmission vectors are female Anopheles mosquitoes. Humans and other vertebrates are secondary hosts. The mosquitoes first absorb the parasite by feeding on the blood of an infected person.

In the mosquitoes' gut the gametocytes (male and female) from the infected person fuse to form an ookinete that penetrates the gut lining and produces an oocyte in the gut wall. When the oocyte ruptures, it releases sporozoites that migrate through the mosquito's body to the salivary glands sporozoites. This is the phase of sexual reproduction. The mosquito then becomes able to infect a replacement individual.

Only female mosquito's prey on blood, thus males don't transmit the disease. The mosquitoes bite in the dark between dusk to dawn. Transmission is additionally possible by blood transfusions from an infected person.

Pathology of malaria within human hosts, once within the humans, the plasmodium undergoes two phases - an exoerythrocytic and an erythrocyte phase.

Exoerythrocytic phase: The exoerythrocytic phase involves the maturation and development of the parasite within the liver. When an infected mosquito transmits the infection or sporozoites because it takes during a feed the sporozoites within the mosquito's saliva enter the bloodstream and migrate to the liver.

The process of migration takes around half-hour after a bite. These sporozoites infect hepatocytes. This is followed by a multiplication of the sporozoites. This is referred to as a gamogenesis or multiplication. It takes around 6–15 days for this multiplication.

The parasite then forms thousands of merozoites within the hepatocytes.

The numerous merozoites cause the rupture of their host cells and escape into the blood. Sometimes the sporozoites might not immediately enter the exoerythrocytic-phase merozoites, but instead, produce hypnozoites that lie dormant within the liver. This is seen with plasmodium and Plasmodium oval. The periods of dormancy may range over several months (typically 6–12 months to around 3 years). Hypnozoites are liable for long incubation and late relapses in these two species of malaria.

Erythrocyte phase: The involvement of the red blood cells is named the erythrocyte phase. In the RBCs the merozoites multiply further asexually and burst the RBCs as they multiply releasing the merozoites in blood. Each burst is related to a bout of fever. The new merozoites then invade fresh red blood cells resulting in further amplification.

Several such amplification cycles occur. Each such amplification is thus characterized by a wave of fever. Some of the merozoites develop into male and female gametocytes that may be further transmitted to mosquitoes. This completes the lifecycle.

Effect of malaria on the immune system: Plasmodium parasites exist in various forms within the liver and blood but manage to flee the system. This is because in most of its forms it resides within the liver and blood cells and is comparatively invisible to immune surveillance.

Normally the RBCs undergo destruction within the spleen at regular intervals. Infected RBCs especially those with Plasmodium falciparum escape this destruction by developing adhesive proteins on the surface of the infected blood cells, causing the blood cells to stick to the walls of small blood vessels. This results in sequestering the parasite from passage through the overall circulation and therefore the spleen.

These proteins also are thought to be the explanation for complications caused by this sort of plasmodium. They are called PfEMP1, for Plasmodium falciparum erythrocyte membrane protein 1 and have a spread and variety and thus can't be targeted by the antibodies formed within the body.

*Address for Correspondence: Sedigheh Zakeri, Department of Medical Sciences, Islamic Republic of Middle East, Iran E-mail: s.zakeris@yahoo.com

Copyright: © 2021 Sedigheh Zakeri. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received 03 November 2021; **Accepted** 17 November 2021; **Published** 24 November 2021

How to cite this article: Sedigheh Zakeri. "Life Cycle of Malaria Parasites." *Malar Contr Elimination* 10 (2021): 172.