

Difference Between Malaria and Yellow Fever

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Key Difference - Malaria vs Yellow Fever

Malaria and yellow fever are two common diseases seen abundantly in the tropical regions. Malaria is an [infectious disease](#) caused by [protozoa](#) that are transmitted by the anopheline mosquitoes. On the other hand, Yellow fever caused by a flavivirus is a disease of widely varying severity. **Although malaria is caused by a protozoan, yellow fever is caused by a [virus](#) of flavivirus category.** This is the **key difference** between the two diseases.

What is Malaria?

Malaria is an infectious disease caused by protozoa that are transmitted by the anopheline mosquitos. There are four main types protozoa that can cause human malaria namely;

- *Plasmodium vivax*
- *Plasmodium falciparum*
- *Plasmodium malariae*
- *Plasmodium ovale*

The rate of incidence and prevalence of malaria in the tropical countries is higher because of the climate and monsoon rains that favour the breeding of vector mosquitoes as well as the survival of the disease-causing protozoan.

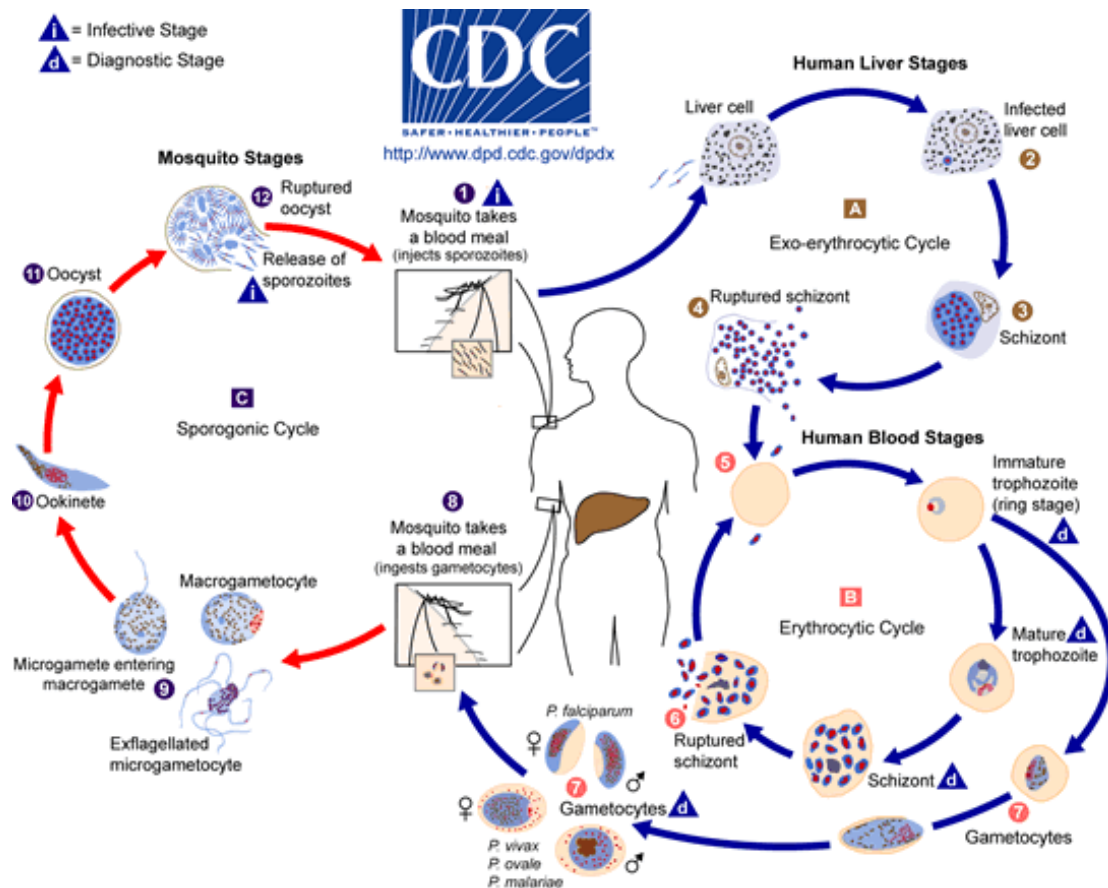


Figure 01: Life cycle of malaria-causing protozoan

Clinical Features

There is an incubation period of 10-21 days. Initially, there is a persistent fever. The typical tertian or quaternary fever appear afterwards. Along with fever, the patient can also suffer from malaise, nausea, vomiting, and [diarrhea](#). However, the clinical manifestation may vary according to the type of protozoan causing the disease.

Plasmodium vivax and *Plasmodium ovale*

Usually, there is a mild infection with progressively worsening [anemia](#). The hallmark feature of the disease caused by these protozoa is the tertian fever. In addition to that, Hepatosplenomegaly can also be present. Recurrence of these can occur due to the reactivation of hypnozoites that remain dormant.

Plasmodium falciparum

Plasmodium falciparum is the most severe form of malaria. In many occasions, the disease is self-limiting, however, it can give rise to fatal complications in lesser cases. The condition of the patient can deteriorate rapidly, and death can occur in a matter of

few hours. High parasitemia is a reliable indicator of disease severity. Cerebral malaria is the most feared complication of falciparum malaria. Altered consciousness, confusion, and convulsions are the suggestive signs of cerebral malaria.

Features of severe falciparum malaria include;

- CNS – prostration, cerebral malaria
- Renal – uremia, oliguria, hemoglobinuria
- Blood – severe anemia, disseminated intravascular coagulation, bleeding
- Respiratory – [tachypnea](#), acute respiratory distress syndrome
- Metabolic – [hypoglycemia](#), metabolic acidosis
- Gastrointestinal – diarrhea, [jaundice](#), splenic rupture

Diagnosis

Identification of parasites in thick or thin blood films is the diagnostic test. In endemic areas, malaria should be suspected whenever a patient presents with a febrile illness.

Management

Uncomplicated malaria

Chloroquine is the drug of choice. Primaquine is started once the parasitemia has been successfully eliminated in order to eradicate the hypnozoites. The drug course should be continued for 2-3 weeks.

Treatment of Complicated Malaria

Using intravenous artesunate is more effective. Intensive care may be needed. Transfusion is advocated in severe anemia.

What is Yellow Fever?

Yellow fever caused by a flavivirus is a disease of widely varying severity. This disease is prevalent in the African and South American continents only and is transmitted by *Aedes africanus* in Africa and *haemogonus* species in South America.

Clinical Features

There is an incubation period of 3-6 days.

Classically there are three stages of disease progression. Clinical manifestations begin with a high fever which is resolved within 4-5 days. There can be associated retrobulbar pain, myalgia, flushed face, arthralgia and epigastric discomfort. From the second day onwards there is relative [bradycardia](#). There is an intervening phase known as the phase of calm where the patient feels well and makes an apparent recovery. After this phase

patient develops a high fever, hepatomegaly, jaundice, and bleeding from the gums. The patient usually goes into a coma few hours before death.

Diagnosis

- Yellow fever is diagnosed clinically by the history vaccination status of the patient and recent traveling to endemic regions
- Virus can be isolated from blood within 3 days from the onset of symptoms to confirm the diagnosis



Figure 02: *Aedes africanus* mosquito

Treatment

- There is no definitive treatment. Supportive treatment includes maintenance of the fluid and electrolyte balance with bed rest.

What are the Similarities Between Malaria and Yellow Fever?

- Both diseases are febrile illnesses
- Both malaria and yellow fever are transmitted by mosquitoes

What is the Difference Between Malaria and Yellow Fever?

Malaria vs Yellow Fever	
Malaria is an infectious disease caused by protozoa.	Yellow fever caused by a flavivirus is a disease of widely varying severity
Cause	
<p>Malaria is caused by protozoa. There are four main types of malaria-causing protozoa</p> <ul style="list-style-type: none"> · <i>Plasmodium vivax</i> · <i>Plasmodium falciparum</i> · <i>Plasmodium malariae</i> · <i>Plasmodium ovale</i> 	Yellow fever is caused by a flavivirus
Agent	
Malaria is transmitted by the anopheline mosquitos.	The virus is transmitted by <i>Aedes africanus</i> in Africa and <i>haemogonus</i> species in South America.
Diagnosis	
Identification of parasites in thick or thin blood films is the diagnostic test. In endemic areas, malaria should be suspected whenever a patient presents with a febrile illness.	<ul style="list-style-type: none"> · Yellow fever is diagnosed clinically by the history vaccination status of the patient and recent traveling to endemic regions · Virus can be isolated from blood within 3days from the onset of symptoms to confirm diagnosis
Clinical Features	
<p>There is an incubation period of 10-21days.</p> <p>Usually, there is a persistent fever initially. Later the typical tertian or quaternary fever appears. Along with fever, the patient can have malaise,</p>	Classically there are three stages of disease progression. Clinical manifestations begin with a high fever which is resolved within 4-5days. There can be associated retrobulbar pain, myalgia, flushed face, arthralgia and epigastric discomfort. From the second day onwards there is relative bradycardia. There is

<p>nausea, vomiting, and diarrhea. Clinical picture can vary according to the type of protozoan that causes the disease.</p> <p>In vivax and ovale malaria,</p> <p>There is a tertian fever with Hepatosplenomegaly</p>	<p>an intervening phase known as the phase of calm where the patient feels well and makes an apparent recovery. After this phase patient develops a high fever, hepatomegaly, jaundice, and bleeding from the gums. The patient usually goes into a coma few hours before death.</p>
Treatment	
<p>Treatment of uncomplicated malaria</p> <p>Chloroquine is the drug of choice. Primaquine is started once the parasitemia has been successfully eliminated in order to eradicate the hypnozoites. The drug course should be continued for 2-3 weeks.</p> <p>Treatment of complicated malaria</p> <p>The use of intravenous artesunate is more effective during the treatment. Intensive care may be needed. Transfusion is advocated in severe anemia.</p>	<p>There is no definitive treatment. Supportive treatment includes maintenance of the fluid and electrolyte balance with bed rest.</p>

Summary - Malaria vs Yellow Fever

Yellow fever caused by a flavivirus is a disease of widely varying severity. Malaria is an infectious disease caused by protozoa that are transmitted by anopheline mosquitos. The difference between the two diseases is that malaria is due to a protozoal infection whereas yellow fever is due to a viral infection.

Reference:

1. Kumar, Parveen J., and Michael L. Clark. Kumar & Clark clinical medicine. Edinburgh: W.B. Saunders.

Image Courtesy:

1. 'Malaria lifecycle-CDC' By [Centers for Disease Control and Prevention \(CDC\)](#), (Public Domain) via [Commons Wikimedia](#)

2.'Yellow Fever mosquito? (4220922584)'By John Tann from Sydney, Australia ([CC BY 2.0](#)) via [Commons Wikimedia](#)

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