



MALARIA

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ABSTRACT

Malaria is a major cause of death in tropical and sub-tropical countries, killing each year over 1 million people globally; 90% of fatalities occur in African children. Although effective ways to manage malaria now exist, the number of malaria cases is still increasing, due to several factors. In this emergency situation, prompt and effective diagnostic methods are essential for the management and control of malaria. Traditional methods for diagnosing malaria remain problematic; therefore, new technologies have been developed and introduced to overcome the limitations.

INTRODUCTION

Malaria is an infectious disease that is widespread in many tropical and subtropical regions. The disease is caused by a protistan parasite of the genus Plasmodium that is transmitted primarily by female Anopheles mosquitoes. Plasmodium invades and consumes the red blood cells of its host, which leads to symptoms including fever, anaemia, and in severe cases, a coma potentially leading to death. In Latvia malaria was spread in the 50ties of the 20th century. in year (2006) malaria has been detected in parrot - great green macaw (Ara

ambiguus) in Riga. Therefore, it is very important to determine quarantine and to carry out laboratory investigations in animals and birds that are imported from malaria affected areas for selling in Latvia.

Although malaria has long become domesticated in the territory of Eastern Slovakia, both the experts and the public in the past failed to

notice its presence. Various conditions and reasons are emphasized which could have contributed to the fact that malaria remained hidden for such a long time. The endemic area of malaria represented 14.1 % of the total territory of whole. The endemic and subendemic areas represented together 25.8% of the total territory of Slovakia and 26.6% of the total population of Slovakia. Of every 1000 inhabitants in the endemic districts, there were 4 cases of malaria in a year, i. e. one patient in every 250 inhabitants. The malaria in Slovakia is known rather as an exotic and imported infection from endemic countries. Today hardly anybody recalls malaria being once a serious health problem in Slovakia, practically up to its eradication in 1960.

Discovery of Malaria

It is believed that the history of malaria outbreaks goes back to the beginnings of civilization. It is the most widespread disease due to which many people have lost lives and is even thought to have been the cause of major military defeats, as well as the disappearance of some nations. The first descriptions of malaria are found in ancient Chinese medical records of 2700 BC, and 1200 years later in the Ebers Papyrus. The military leader Alexander the Great died from malaria [1]. The evidence that this disease was present within all layers of society is in the fact that Christopher Columbus, Albrecht Durer, Cesare Borgia, and George Washington all suffered from it

Although the ancient people frequently faced malaria and its symptoms, the fever that would occur in patients was attributed to various supernatural forces and angry divinities. It is, thus,

stated that the Assyrian-Babylonian deity Nergal was portrayed as a stylized two-winged insect, as was the Canaan Zebub ('Beelzebub, in translation: the master of the fly') [2]. In the 4th century BC, Hippocrates described this disease in a way that completely rejected its demonic origins and linked it with evaporation from swamps which, when inhaled, caused the disease. That interpretation was maintained until 1880 and Laveran's discovery of the cause of the disease. Laveran, a French military surgeon, first observed parasites in the blood of malaria patients, and for that discovery he received the Nobel Prize in 1907.

Cartwright and Bidis state that malaria is considered to be the most widespread African disease. The causative agent of malaria is a small protozoon belonging to the group of Plasmodium species, and it consists of several subspecies. [3].

WHAT IS MALARIA?

Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects a certain type of mosquito which feeds on humans. People who get malaria are typically very sick with high fevers, shaking chills, and flu-like illness. Four kinds of malaria parasites infect humans: Plasmodium falciparum, P. vivax, P. ovale, and P. malariae. In addition, P. knowlesi, a type of malaria that naturally infects macaques in Southeast Asia, also infects humans, causing malaria that is transmitted from animal to human ("zoonotic" malaria). P. falciparum is the type of malaria that is most likely to result in severe infections and if not promptly treated, may lead to death. Although malaria can be a deadly disease, illness and death from malaria can usually be prevented (4).

MALARIA AND ITS TYPES

Malaria is caused by protozoan parasites of the genus Plasmodium – single-celled organisms that cannot survive outside of their host(s).

Plasmodium falciparum is responsible for the majority of malaria deaths globally and is the most prevalent species in sub-Saharan Africa. The remaining species are not typically as life threatening as P. falciparum.

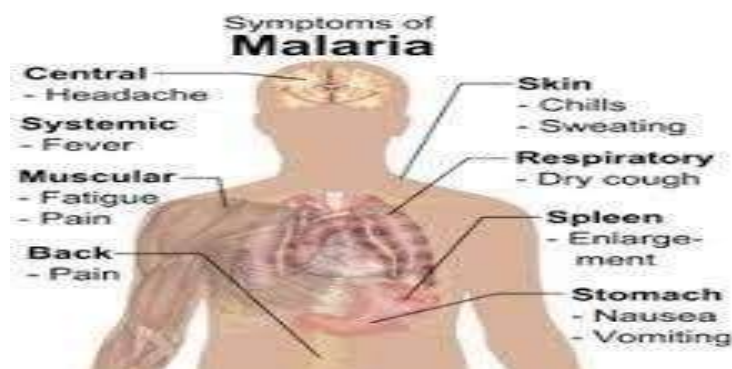
Plasmodium vivax, is the second most significant species and is prevalent in Southeast Asia and Latin America. P. vivax and **Plasmodium ovale** have the added complication of a dormant liver stage, which can be reactivated in the absence of a mosquito bite, leading to clinical symptoms.

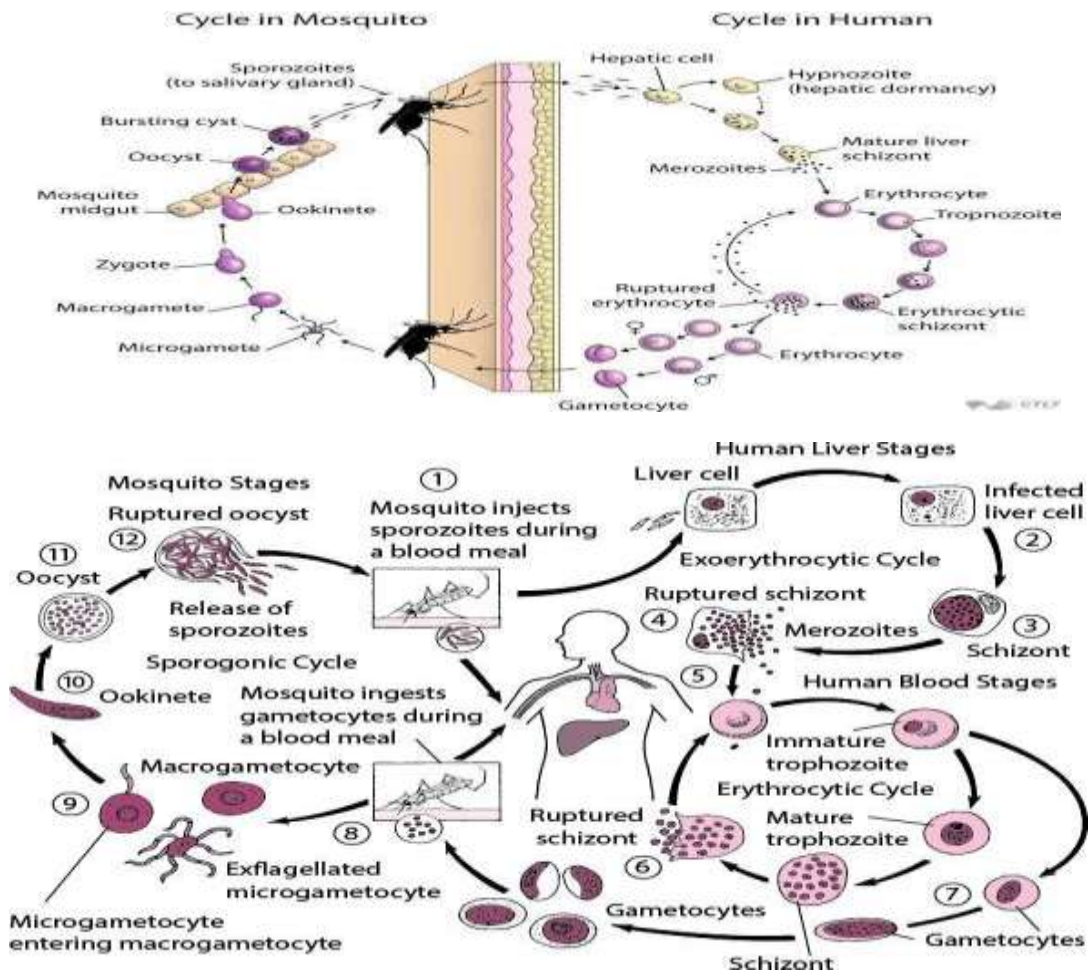
P. ovale and **Plasmodium malariae** represent only a small percentage of infections. A fifth species **Plasmodium knowlesi** – a species that infects primates – has led to human malaria, but the exact mode of transmission remains unclear (5).

SYMPTOMS OF MALARIA

Symptoms of malaria include fever and flu-like illness, including shaking chills, headache, muscle aches, and tiredness. Nausea, vomiting, and diarrhea may also occur. Malaria may cause anemia and jaundice (yellow coloring of the skin and eyes) because of the loss of red blood cells. If not promptly treated, the infection can become severe and may cause kidney failure, seizures, mental confusion, coma, and death.

For most people, symptoms begin 10 days to 4 weeks after infection, although a person may feel ill as early as 7 days or as late as 1 year later. Two kinds of malaria, P. vivax and P. ovale, can occur again (relapsing malaria). In P. vivax and P. ovale infections,





some parasites can remain dormant in the liver for several months up to about 4 years after a person is bitten by an infected mosquito. When these parasites come out of hibernation and begin invading red blood cells (“relapse”), the person will become sick.

Most people, at the beginning of the disease, have fever, sweats, chills, headaches, malaise, muscles aches, nausea, and vomiting. Malaria can very rapidly become a severe and life-threatening disease. The surest way for you and your health-care provider to know whether you have malaria is to have a diagnostic test where a drop of your blood is examined under the microscope for the presence of malaria parasites. If you are sick and there is any suspicion of malaria (for example, if you have recently travelled in a country where malaria transmission occurs), the test should be performed without delay (6).

CDC has a list of all the places in the world where malaria transmission occurs and the

malaria drugs that are recommended for prevention in each place.

HOW IS MALARIA TRANSMITTED?

Usually, people get malaria by being bitten by an infective female Anopheles mosquito. Only Anopheles mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken from an infected person. When a mosquito bites an infected person, a small amount of blood is taken in which contains microscopic malaria parasites. About 1 week later, when the mosquito takes its next blood meal, these parasites mix with the mosquito’s saliva and are injected into the person being bitten. Because the malaria parasite is found in red blood cells of an infected person, malaria can also be transmitted through blood transfusion, organ transplant, or the shared use of needles or syringes contaminated with blood. Malaria may also be transmitted from a mother to her unborn infant before or during delivery (“congenital” malaria) (7).

TREATMENT OF MALARIA

Malaria can be cured with prescription drugs. The type of drugs and length of treatment depend on the type of malaria, where the person was infected, their age, whether they are pregnant, and how sick they are at the start of treatment. The disease should be treated early in its course, before it becomes serious and life-threatening. Several good antimalarial drugs are available, and should be taken early on. The most important step is to go see a doctor if you are sick and are presently in, or have recently been in, an area with malaria, so that the disease is diagnosed and treated right away (8).

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