Malaria

Malaria is one of the most common infectious tropical diseases. In addition to its high incidence, it also causes high mortality in endemic regions (the tropical and subtropical zones). Currently, 40% of the world's population lives in endemic areas, and millions of travellers visit countries with high prevalence of this disease each year.

According to the World Health Organization, 263 million of malaria cases were documented in 2023, as well as 597,000 deaths in 83 countries. The most vulnerable to malaria are children under the age of 5 years, and according to World Health Organization estimations, over 70% of death cases due to malaria occur in this age group. Malaria occurs in almost all countries of sub-Saharan Africa, in some countries of Central and South America, in parts of the Middle East, Central, South and Southeast Asia, and on certain Pacific islands. The risk of malaria is generally lower in large cities and in areas at higher altitudes in most countries.

Each year, around 30,000 travellers who visit malaria-endemic areas also contract the disease. The highest risk is faced by travellers who visit countries in West and Central Africa and some Pacific islands without antimalarial protection. In these regions, as many as 2% of travellers without protection may become ill over the course of a month.

Cause

Malaria is an infectious disease caused by parasites called *Plasmodium*. These parasites are transmitted to humans through the bites of infected female *Anopheles* mosquitoes. This type of mosquito is characterized by biting in the evening and at night, being most active from dusk to dawn. They are often unnoticed because they are small and almost silent.

They are attracted to dark and bright colours, sweat, and strong scents (perfumes, lotions, soaps). The risk of infection can vary depending on the season, with the highest risk at the end of, or shortly after, the rainy season. Malarial in humans can be caused by five species of *Plasmodium*:

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

The most prevalent cause of malaria worldwide is *Plasmodium falciparum*. It also causes the most dangerous form of malaria, which can be fatal if untreated, and can lead to severe complications affecting the brain and kidneys. It is especially prevalent on the African continent. In Asia and South America, malaria is very often caused by *Plasmodium vivax*, which usually produces milder symptoms than *Plasmodium falciparum*. Rare causes of malaria include *Plasmodium ovale* and *Plasmodium malariae*, which are mostly found in Africa, while *Plasmodium knowlesi* is very rare and occurs only in certain parts of Southeast Asia.

Incubation period

The disease can develop as early as 7 days after the bite of an infected mosquito, but in some forms of malaria, symptoms may appear several months after infection.

Transmission

Female mosquitoes that transmit the disease become infected with the parasite when they bit an infected person. Malaria is not transmitted directly from person to person.

Susceptibility to infection

Susceptibility to infection is universal. Genetic predisposition can partially influence susceptibility. Even having previously had the disease does not provide complete immunity against reinfection or illness.

Symptoms

Malaria is a disease that can manifest itself with a wide range of clinical signs. It cannot be confirmed or ruled out based on the symptoms alone; laboratory confirmation is required. The most characteristic symptom is high fever, usually accompanied by chills and sweating. Other possible symptoms include muscle and joint pain, headache, digestive problems, cough, jaundice, and altered consciousness. Some forms of malaria can recur. Malaria can be particularly dangerous for young children, pregnant women, individuals with weakened immune systems, people without a spleen, and patients with chronic illnesses.

Treatment

Malaria can be successfully treated if the treatment starts early enough. Treatment is carried out with appropriate antimalarial medications. Without proper treatment, the disease can progress very quickly, so it is extremely important that anyone who develops a sudden high fever while travelling in tropical regions, or after returning home, seeks medical attention immediately, or at the latest within 24 hours. Any sudden fever above 38 °C during travel or after returning from malaria-endemic areas requires prompt medical evaluation. A proper diagnosis of malaria can only be made by a doctor based on a blood test. Treatment should begin as soon as possible after the diagnosis is confirmed.

Protection and prevention

Protection against malaria is primarily based on personal measures to prevent mosquito bites and the preventive use of antimalarial medications. For travellers, it is crucial to follow these measures:

- Be aware of the risk of malaria infection
- Protect against mosquito bites
- Take antimalarial medications preventively (chemoprophylaxis)
- Recognize symptoms early and take immediate action.

Protection against mosquito bites can be achieved by wearing appropriate clothing that covers most of the skin and is light in colour. Repellents should be applied to both the skin and clothing to repel mosquitoes. It is recommended to use repellents containing 30%–35% DEET (diethyltoluamide) or 20% picaridin. Repellents should be applied according to the manufacturer's instructions. Entry of mosquitoes into living spaces should be prevented by installing protective nets on windows and around beds. For additional protection it is recommended to treat the nets with insecticides.

Protection by using antimalarial medications is recommended when travelling to areas with a high risk of malarial. There are several types of antimalarial medications that differ in composition and dosing regimen. When used appropriately, their effectiveness is similarly high.

The choice of the most suitable antimalarial medications is highly individual, as it depends on the malarial endemicity and the species of malaria parasites in the area being visited as well as their sensitivity or resistance to specific antimalarial medications. It also depends on the characteristics of each traveller. Factors influencing the choice include the duration of travel, planned activities, the traveller's age, current or planned pregnancy, use of certain medications, and the presence of specific health conditions. Dosage adjustments are also necessary for children.

Before travel, it is essential to consult a doctor specializing in travel medicine to select the most appropriate antimalarial medication.