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Diagnosis and Medication in Malarial Infection

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Perspective

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DESCRIPTION

Humans and other animals can contract the infectious disease malaria which is spread by mosquitoes. Malaria symptoms such as fever, fatigue, nausea and headaches are common. It can cause coma, jaundice, convulsions or even death. Ten to fifteen days after being bitten by an infected mosquito, symptoms typically start to manifest. People may experience recurrences of the illness months after receiving inadequate treatment. When reinfected, those who have recently recovered from an infection often have milder symptoms.

Diagnosis

Malaria symptoms are non-specific, a diagnosis is frequently made based on symptoms and travel history then verified with a parasitological test. The World Health Organization (WHO) advises clinicians in places where malaria is prevalent to suspect malaria in anyone who reports having fevers or whose body temperature is currently above 37.5°C without any other clear reason. Children who exhibit anemia-related symptoms such as pale palms or haemoglobin levels below 8 grams per deciliter of blood should also be suspected of having malaria. The WHO advises only testing those with suspected exposure to malaria (usually travel to a malaria-endemic area).

Antigen-based fast diagnostic tests or microscopic examination of blood films are typically used to confirm the presence of malaria. The most accurate way to diagnose malaria is by microscopy which involves looking at blood

stained with Giemsa under a light microscope. Microscopists often look at both a "thick film" of blood which enables them to scan numerous blood cells quickly and a "thin film" of blood which enables them to see individual parasites clearly and identify the Plasmodium species infecting the host. When there are at least 100 parasites per microliter of blood or in the lower range of symptomatic infection, a microscopist can detect parasites under standard field laboratory conditions. Microscopy diagnosis requires a lot of resources including skilled workers, specialised machinery, power and a steady supply of microscope slides and stains.

RDTs (Rapid Diagnostic Test) or rapid antigen tests are used to quickly identify the presence of parasite proteins in blood sample where microscopy is not accessible. There are numerous RDTs that target the parasite proteins lactate dehydrogenase, aldolase and histidine rich protein 2 (HRP2, which only detects *P. falciparum*). In Africa, where *P. falciparum* is the predominant parasite, the HRP2 test is commonly utilised. However, an HRP2 test sometimes cannot tell if a person presently has malaria or previously had it since HRP2 remains in the blood for up to five weeks after an infection is treated.

Medication

Additionally, the absence of the HRP2 gene in some *P. falciparum* parasites in the Amazon region makes detection more difficult. RDTs can be quickly and easily deployed in locations lacking complete diagnostic laboratories. Although there are serological tests that identify *Plasmodium* antibodies in the blood, they are not commonly used to diagnose malaria because of their low sensitivity and specificity. Although very sensitive nucleic acid amplification assays have been developed, they are not currently employed in clinical settings due to their high cost and lack of specificity for illnesses that are actively spreading.

Intermittent preventative therapy with antimalarial medications can lower a baby's risk of contracting malaria needing hospitalisation and developing anaemia. For pregnant women who test negative for HIV, mefloquine prevents malaria better than sulfadoxine-pyrimethamine. In HIV-positive women, cotrimoxazole effectively lowers the risk of anaemia and malaria infection. For HIV-positive women residing in malaria-endemic areas, three or more doses of sulfadoxine-pyrimethamine are preferable to two doses of this intermittent preventative medication. Transmission may be lowered by prompt treatment of confirmed patients with ACTs (Artemisinin-based Combination Therapy) based on artemisinin.