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Malaria in Macomb, Michigan

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Malaria in Macomb?

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Malaria - Diagnosis

If there is a high level of suspicion for malarial infection, treatment should be initiated prior to definitive diagnosis. Those with acquired partial immunity due to repeated exposures may have asymptomatic parasitemia. No diagnostic test is capable of distinguishing between parasitemia causing clinical malaria, and a febrile illness due to another cause. The patient who also has asymptomatic parasitemia. Blood smear examination via light microscopy is the standard tool for diagnosis of malaria. Rapid diagnostic tests should be useful if microscopy is not available.

- **Light Microscopy**
  - Allows for identification of the Plasmodium species as well as quantification of parasitemia.
  - If malarial smear is negative, smears should be repeated every 12 to 24 hours for a total of 3 sets before ruling out malaria.
  - Once a diagnosis of malaria has been established, serial smears should be examined to monitor parasitological response to treatment. This should be continued to smear is negative or for a total of 7 days.
  - Parasite density correlates to severity of infection.

- **Rapid Diagnostic Tests**
  - Do not require electricity and give results within 20 minutes. Can be performed by anyone with little training.
  - Able to determine Plasmodium species.
  - Provide a qualitative result but no quantitative information.
  - Do not have sufficient negative predictive value to justify withholding treatment

- **PCR**
  - Gold standard in efficacy studies for medications, vaccines, and evaluation of other tests.
  - Rarely used in clinical settings.

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Malaria - Prevention

Malaria is spread through the bite of a female Anopheles mosquito. Prevention of a mosquito bite is a key control measure. Use mosquito repellent, wear long sleeves and pants, use insecticide treated bed nets, and use air conditioning or electric fans to keep mosquitoes away.

- **Return to the ED**
  - Patient returned 7 days later, stating that he had been feeling better since discharge but fevers, chills, malaise, body aches, nausea, vomiting, diarrhea, returned 2 days ago. Associated 10th body weight loss since initial symptom onset. Patient has not followed up with ID. Completed course of hydroxychloroquine from prior visit. Denies chest pain, cough, SOB, diaphoresis, or other new symptoms.

- **Hospital Course**
  - Day 1: Patient admitted to HF Detroit to the ID service. Dengue RT-PCR, Chikungunya RT-PCR, Zika, urine and serum PCR. HBV, HCV, CMV, Quantiferon Gold, stool cultures for typhoid and paratyphoid ser. Sigmoid positive for Plasmodium falciparum (0.1% parasitemia). Atovaquone and Chloroquine began.
  - Day 2: HIV negative, CMV negative, typhoid and paratyphoid negative. Sigmoid again positive for Plasmodium falciparum (0.1% parasitemia). Liver function tests returned to normal limits.
  - Day 3: Sigmoid again positive for Plasmodium falciparum (0.1% parasitemia). Course of Atovaquone and Chloroquine completed.

Malaria - Epidemiology

Malaysia occurs throughout most tropical regions and consists of multiple species. P. falciparum (sub-Saharan Africa, New Guinea, Haiti, Dominican Republic). P. vivax (Americas and western Pacific). P. knowlesi (Malaysia, Thailand, Myanmar, Philippines, Thailand). P. ovale and P. malariae also occur in Africa. More than 216 million people develop symptomatic infections annually, approximately 90% of infections are caused by P. falciparum. Annual worldwide Malaria-death peaked at 1.82 million in 2004, and have declined to 445,000 as of 2016. More than 90% of deaths occur in children in sub-Saharan Africa. In a sample of 7,000 returned travelers presenting with fever, between 1997 and 2006, 21% were found to have malaria, with more than 50% of these being P. falciparum. More than 70% of cases of imported malaria are in Americans born in endemic countries and who return later to visit friends and relatives. These travelers may not appreciate the risk or severity of infection once their immunity has waned.

**References**