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Severe Malaria due to Plasmodium Falciparum

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Introduction

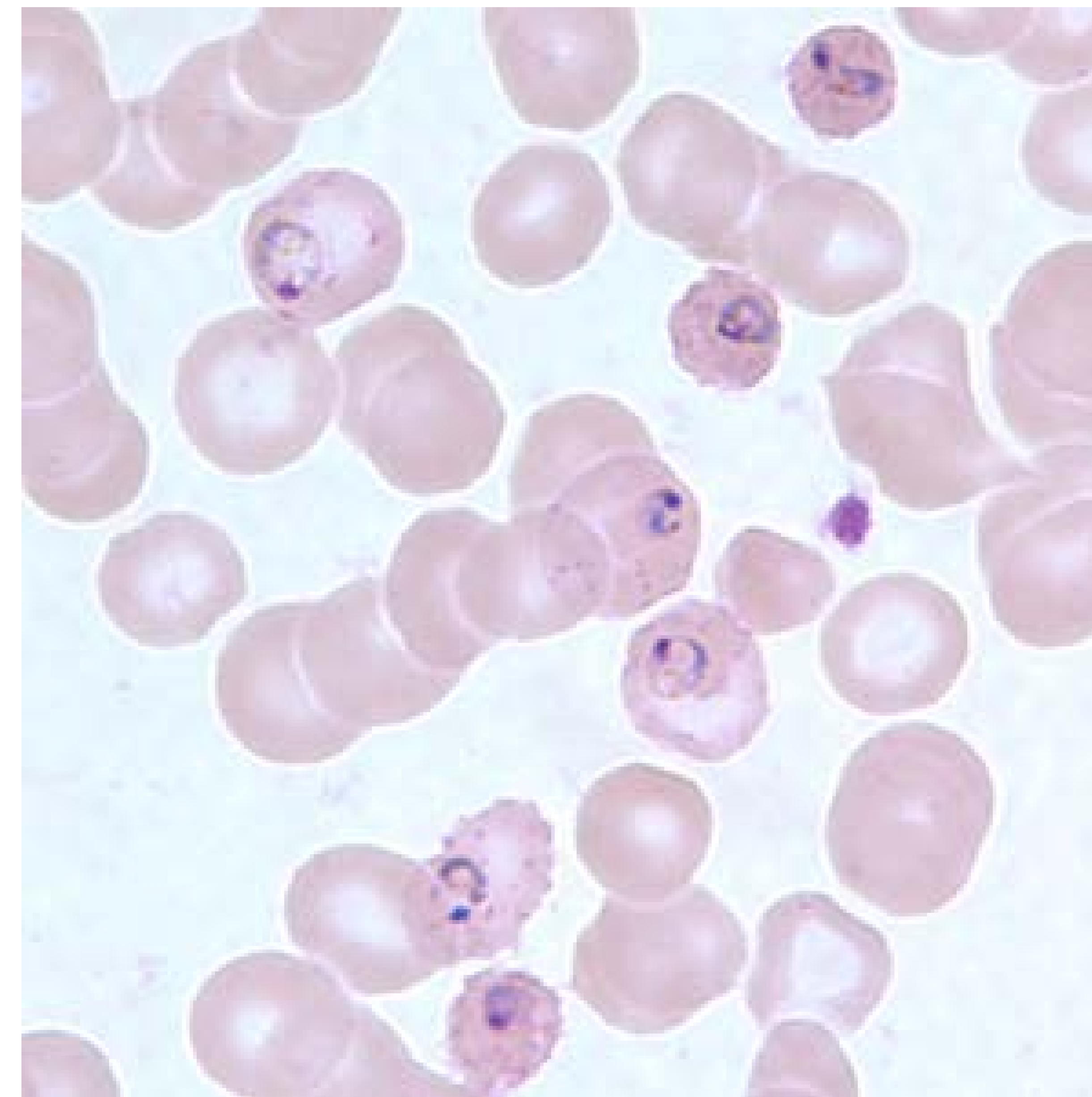
Malaria is a mosquito borne disease caused by the parasite, plasmodium, that infects the anopheles mosquito which feeds on humans. Plasmodium falciparum is a wide spread parasite across the worlds transmitted in 95 countries where 2.8 billion people are at risk for infection. Clinical manifestations include high fevers, shaking chills and flu like illnesses. Although malaria can be fatal, morbidity and mortality from malaria can usually be prevented. Roughly 1,700 cases of malaria are diagnosed in the united states each year. The vast majority of cases in the US are in travelers or immigrants returning from countries where malaria transmission occur such as sub-Saharan Africa and Southeast Asia ^(1,2,3)

Case Report

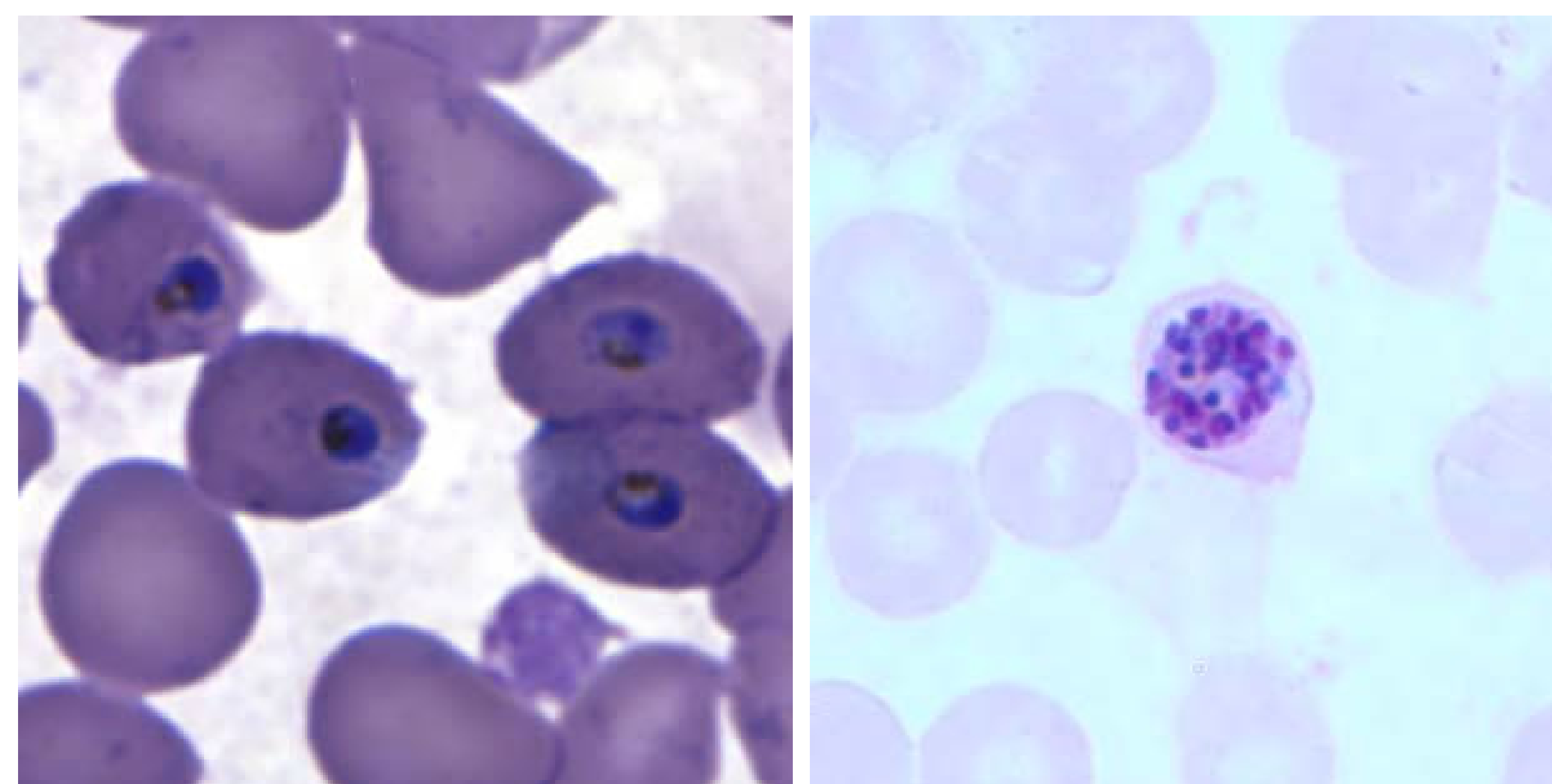
A 51 year old Caucasian male patient with a past medical history of environmental hemochromatosis, hypothyroidism and gun shot wounds was admitted to our hospital for fever/chills x 4 days with a progressive course since onset. In the first 2 days of symptoms, patient developed nausea, vomiting, non bloody diarrhea, anorexia, myalgias, arthralgias, sore throat, chest pain, headache, dark urine and 4/10 LUQ exacerbated by inspiration. He has been taking Tylenol with no relief of his symptoms. He was seen at an urgent care the morning of his admissions where CXR, rapid strep and flu were negative, and was advised to come to the ED. He reports recent travel from Cameroon for his work as a counter terrorism advisor for 25 days. He ate local foods, He took doxycycline for 6 days for malaria prophylaxis but believes he may have started the regimen a few days late. He was already up to date on yellow fever per previous records. In addition, he did not receive his annual flu vaccine.

Microscopic slides of thick and thin Giemsa stained blood smear demonstrated the presence of ring formed trophozoites of Plasmodium species with 1% parasitemia. On admission, rapid malaria antigen was consistent with plasmodium falciparum. Infectious disease was consulted and the patient was started on oral Atovaquone/proguanil for 7 days. Daily peripheral smears were ordered and the last screen on 12/09 was negative. During the course of the patients hospitalization, his thrombocytopenia, liver function and renal function continued to improve. There was no evidence of active bleed. His Computerized tomography scan was significant for for splenomegaly, consistent with malaria. Prior to discharge, the patient was medically stable. The patients Dengue IgM serology was negative but IgG was positive per previous records. Infectious disease will subsequently follow up for outpatient care.

Figures



5



Trophozoites seen above are old ring stage parasites and are rarely seen on peripheral blood smears of Plasmodium falciparum.

The smear above contains a single schizont which usually ruptures and releases the infective form of plasmodium, merozoites.

Discussion

- i. In areas where malaria is endemic, groups at high risk for severe malaria include pregnant female, neonates and the immunocompromised. Adults with repeated exposure tend to develop partial immunity. Travelers to area where malaria is endemic generally don't have previous exposure to malaria and risk developing severe malarial sepsis.⁽¹⁾
- ii. Malaria should be on a differential in patients with any febrile illness after exposure in an area that is endemic to the Plasmodium species, The initial symptoms and clinical presentation, similar to that of our patient are usually nonspecific such as body aches, chills, fever, fatigue and other flu like symptoms. ^(1,3)
- iii. Laboratory techniques consist of
 - i. Capillary blood should be obtained by fingerstick, or venous should be obtained by venipuncture.
 - ii. Blood smears, at least two thick and two thin, should be prepared as soon as possible after collection. Delay in preparation of the smears can result in changes in parasite morphology and staining characteristics.
 - iii. Schuffner dots can be demonstrated in giemsa stain, which is preferred to wright or wright giemsa stain ⁽³⁾
 - iv. The approach to selecting an antimalarial drug is determined whether the parasite was acquired in a region with chloroquine sensitivity or resistance determined by local government treatment guidelines/and or drug availability in a region. In general, treatment of uncomplicated malaria outside an endemic area such as the united states consists of a combination of two agents. In this case, Atovaquone-proguanil was prescribed. ⁽⁴⁾

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