Prevalence of Plasmodium falciparum Gametocytes in Asymptomatic Malaria Patients

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The Plasmodium falciparum (Pf) malaria parasite is transmitted between people by the female Anopheles mosquito, which feeds on an infected human's blood, taking up the sexual gametocyte stage. However, often gametocytes are present in those who are asymptomatic, acting as undetected reservoirs that allow for transmission of malaria gametocytes. Previous studies have indicated that biological factors, such as immune strength and age may increase cases of asymptomatic malaria. The detection of asymptomatic infections is essential to treat all malaria reservoirs and to eradicate the parasite, a major problem in many nations. Additionally, current drugs are unable to affect the gametocyte populations in patients, hence methods of gametocyte elimination must be developed in the future to eliminate this transmission stage. In order to begin to look at conditions under which gametocytes develop, slides of a Liberian patient's blood were examined for presence of parasitemia, specifically gametocytes. The patient exhibited symptoms, yet not gametocytes, and was used to analyze the conditions under which gametocytes do not develop. Samples of the patient's whole blood were incubated and cultured, and slides were made in 2-day increments. The patient showed beginning asexual parasitemia stages at around 2.2% within the culture. Future blood sample testing will use gametocyte-specific PCR methods to detect DNA and RNA in patient blood samples to verify slide microscopy findings, and to achieve the goal of determining the conditions which caused gametocytes not to develop to find a way to focus on instances where asymptomatic gametocyte presence exists and how to prevent gametocyte development.

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