Parasites may accumulate in spleens of asymptomatic individuals infected with malaria

Study suggests immature red blood cells in spleen are targeted for invasion by P. Vivax

Malaria, a disease caused by parasites Plasmodium falciparum and Plasmodium vivax, (P. vivax) is associated with over 400,000 deaths each year. Previously, the spleen was assumed to mostly play a role in parasite destruction, as it eliminates malaria parasites after antimalarial treatment. A study published in *PLOS Medicine* by Nicholas Anstey at Menzies School of Health Research, Australia, and colleagues, suggests that in chronic P. vivax infections, malaria parasites survive and replicate via an undetectable lifecycle within the spleen.

A large biomass of intact asexual-stage malaria parasites accumulates in the spleen of asymptomatic human subjects infected with Plasmodium vivax (P. vivax). However, the mechanisms underlying this intense reaction are unknown. To better understand the accumulation of malaria parasites in the spleen, researchers examined the spleen tissue in twenty-two individuals naturally exposed to Plasmodium vivax and P. falciparum undergoing splenectomy in Papua, Indonesia between 2015-2017. The authors then analysed the density of infection, parasites and immature red blood cells, as well as their distribution throughout the spleen.

The researchers found that the human spleen is a reservoir for immature red blood cells that are targeted by P. vivax for invasion, and that the examined spleens contained a substantial hidden biomass of malaria parasites, with densities hundreds to thousands of times higher than in circulating peripheral blood, suggesting an undetectable endosplenic lifecycle in asymptomatic P. vivax infections. The study had several limitations, such as the small sample size and asymptomatic status of all individuals included in the study. Future research should include acute, symptomatic malaria cases.

According to the authors, “Our findings provide a major contribution to the understanding of malaria biology and pathology and provide insight into P. vivax specific adaptations that have evolved to maximise survival and replication in the spleen*”.*

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