Malaria infection can be symptomatic or asymptomatic; but factors which influence the development of symptoms in semi-immune individuals are unknown. Previous cross-sectional studies have implicated at least two types of lymphocytes in determining the severity of malaria namely, the natural killer (NK) cells and gamma-delta ($\gamma\delta$) T cells.

A longitudinal study comprising a cohort of 72 adult volunteers
15-55 years of age living in a malaria holoendemic area of western Kenya was performed to determine the relationship between lymphocyte phenotypes in human peripheral blood and the appearance of symptoms during malaria infection. Numerical changes in peripheral blood NK cells and T lympocytes were determined by proportions before, during and after symptomatic malaria infection to establish their significance in the disease process. Infections with other febrile diseases were used as controls. T- and NK cell phenotypes, ($\alpha\beta$, $\gamma\delta$, $CD4^+$, $CD8^+$) and ($CD16^+$, $CD56^+$, $CD16^+CD56^+$) respectively were determined using flow cytometric cell sorting after staining with fluorochrome-conjugated monoclonal antibodies.

NK cell levels were not significantly different in patients with symptomatic or asymptomatic malaria. Similarly, no significant differences appeared in the proportions of $\alpha\beta^+$, $CD4^+$ and $\gamma\delta^+$T cells between asymptomatic and symptomatic infections in the cohort. However, proportions of CD8+T cells were significantly reduced during acute episodes of symptomatic malaria infection than during asymptomatic episodes ($P<0.01$). These proportions were also significantly raised after recovery from symptomatic malaria infection ($P<0.01$). The levels of $CD4^+$T cells were significantly higher during symptomatic malaria infection than after recovery, ($P<0.05$) whereas the proportions of both $CD56^+$ and $CD16^+CD56^+$ NK cell subsets were significantly lowered by symptomatic malaria ($P<0.05$).

It was apparent in this study that $CD8^+$T cells were playing a role in the development of clinical malaria in semi-immune individual residents of malaria holoendemic area of western Kenya.