The Use of Polymerase Chain Reaction (PCR) assay for diagnosis of Malaria in a malaria endemic region of Sri Lanka.

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This study was carried out to determine the role of Polymerase Chain Reaction (PCR) to diagnose malaria infections in the Anuradhapura district of Sri Lanka. The study population comprised 390 persons. This included 250 symptomatic individuals (having signs and symptoms suggestive of malaria) attending medical institutions and 140 asymptomatic individuals attending mobile malaria clinics. All were screened for the presence of malaria parasites using microscopy and PCR. The PCR method used was malaria genus and species-specific. Malaria infections were detected in 25% of this total population (99 out of 390) screened by PCR; 21.5 % with *Plasmodium vivax*, 2% with *P. falciparum* and 1.5% with mixed infections of *P. falciparum* and *P. vivax*. Considering the PCR diagnosis as the gold standard (having 100% sensitivity and specificity), microscopy showed a sensitivity of only 85% with a specificity of 100%. Thus microscopy failed to detect 15% of infections (15 out of 99) that were positive by the PCR method. Out of these 15 individuals who were negative on microscopy (but positive on PCR), 13 symptomatic individuals were detected from medical institutions and the other two were asymptomatic individuals who were from the mobile malaria clinics. This study illustrates the presence of a population of individuals with symptomatic and asymptomatic malaria who could remain undetected through microscopy. Should only microscopy be used as the sole diagnostic method, it would lead to malaria misdiagnosis and therefore the lack of anti-malaria treatment for the patients with malaria. These results therefore suggest the suitability of using PCR diagnosis at least in a subpopulation to overcome the possibility of misdiagnosis. Such inclusion of PCR diagnosis for malaria detection would lead to better patient management and ultimately better malaria control.