The changing in vitro susceptibility pattern to pyrimethamine/sulfadoxine in Plasmodium falciparum field isolates from Kilifi, Kenya

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Abstract:

Two clinical trials that used Falcidin (Cosmos Ltd., Nairobi, Kenya), the antifolate combination of pyrimethamine/sulfadoxine (PM/SD), as treatment for non-severe falciparum malaria in children at Kilifi, Kenya in 1987-1988 and 1993-1995 have presented an opportunity to assess in vitro the susceptibility trend of Plasmodium falciparum to PM and SD over time on the Kenya coast. The first set of isolates was collected prior to the introduction of PM/SD into the Kenya Medical Research Institute/Wellcome Trust Research unit while the second set was taken soon after PM/SD was introduced in the study area as the first-line treatment drug for uncomplicated falciparum malaria. In the first trial, 69 isolates collected before and after treatment of malaria with PM/SD were tested directly in the field for susceptibility to PM and SD using the standard in vitro micro-test technique, with minimal levels of folate. In the second trial, 97 isolates similarly collected were adapted to culture, and tested as described elsewhere. In both studies, PM and SD susceptibility tests were done separately. There was a highly significant decrease ($P < 0.01$) in the in vitro sensitivity of P. falciparum isolates to PM and SD between the two trials. In the first trial, the isolates were either sensitive to both PM and SD or resistant to PM and sensitive to SD. During the second trial, isolates were either resistant to PM and sensitive to SD or resistant to both drugs. These results are important in estimating the useful therapeutic life (UTL) of PM/SD in this area and in identifying alternative antifolate drugs.