

Imported *Plasmodium falciparum* isolates in Europe and molecular surveillance for drug resistance: sentinel data from TropNetEurop

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For the European Network on Surveillance of Imported Infectious Diseases (TropNetEurop)

Objectives:

Numerous studies indicate correlation between mutations at selected genes and phenotypic resistance to antimalarials in *Plasmodium falciparum* isolates. To study the prevalence of resistance-associated point mutations at relevant codons, *P. falciparum* isolates collected by TropNetEurop, the European network for surveillance of imported infectious diseases, were analyzed.

Methods:

PCR and ELISA methods were used to test for antifolate-resistance mutations. Results were used to map mutation prevalence and, thus, levels of potential drug resistance in endemic areas.

Results:

Blood samples from 850 patients with imported *falciparum* malaria, collected from 2000 to 2004, were analyzed. DHFR-mutations showed a global variation. Among isolates imported from Africa, 52.3% showed the asparagine (N) to isoleucine (I) mutation at codon 51, 58.8% the cysteine (C) to arginine (R) mutation at codon 59, and 53.1% the serine (S) to asparagine (N) mutation at codon 108. Isolates imported from Asia showed 21.7% prevalence of N to I mutation at codon 51, while the C to R mutation at codon 59 was found in 68.8%, and the S to N mutation at codon 108 in 60.6% of the isolates. In samples from Latin America and the Caribbean the c51 N to I mutation was present in 25%, the c59 C to R mutation in 12.5%, and the c108 S to N mutation in 50% of the isolates.

Conclusion:

Constant screening of imported isolates enables TropNetEurop to monitor emerging resistance in endemic areas.