



Antibody responses of Greeks and immigrants residing in areas of local malaria transmission in Greece

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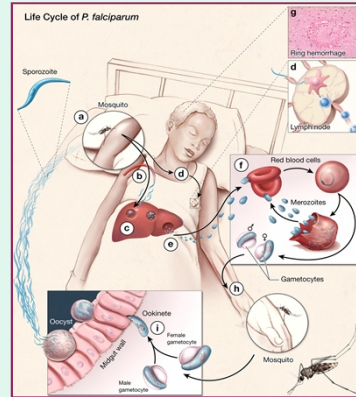
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INTRODUCTION

Malaria is caused by intraerythrocytic protozoan parasites of the genus *Plasmodium* transmitted by the bite of infective female *Anopheles* mosquitoes.

Greece, a country declared malaria-free since 1974, has experienced an increase in imported and locally acquired *P. vivax* malaria cases in the past 5 years, partly due to the influx of foreign immigrants from endemic areas of Asia and Eastern Mediterranean.

In the present study, the antibody response of Greeks and immigrants with documented malaria was initially assessed, followed by an antibody screening of Greek and immigrant residents of local transmission areas, in order to determine the possible existence of seropositive and potentially asymptomatic *Plasmodium* carriers.



MATERIALS AND METHODS

Malaria - Ab ELISA (IBL International GMBH, Hamburg, Germany). Detection of IgG and IgM antibodies against *Plasmodium* spp. (recombinant circumsporozoite protein - CSP and merozoite surface protein 1 - MSP1 of *P. vivax* and *P. falciparum*).

Demographic data

Population groups	Sex		Age (yrs)	
	Male	Female (%)	range	median
Pilot Study (n=88)				
Healthy Greek children (n=50) - Attica	27 (54%)	23 (46%)	1 - 10	6
Greeks (n=19)* - Laconia no travel to malaria endemic countries	9 (47%)	10 (53%)	<1 - 80	46
Immigrants (n=19)* - Laconia Pakistan (16), Afghanistan (1), Romania (2)	19 (100%)	0 (0%)	19 - 55	25

*microscopically and molecularly diagnosed *P. vivax* malaria, 5-7 months before - successful, timely treatment with appropriate drugs

Screening Study (n=1019)

Greeks (n=248) - Laconia	106 (43%) - 142 (57%)	<1 - 94	53
Greeks (n=50) - Attica	40 (80%) - 10 (20%)	19 - 61	40
Immigrants (n=721) ** Laconia (582), Attica (124), Karditsa (15)	721 (100%) - 0 (0%)	15 - 65	27

** Pakistan (627), Afghanistan (24), India (24), Bangladesh (3), Morocco (2), Romania (5)

RESULTS

Detection of anti-malarial antibodies

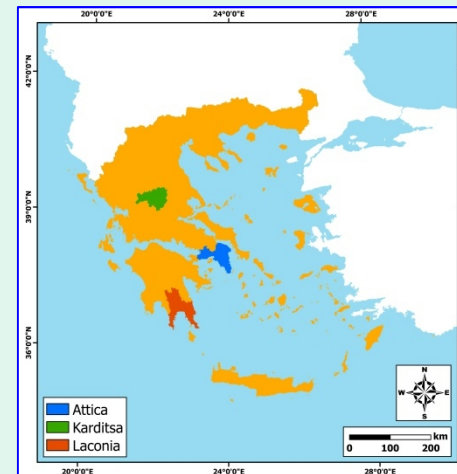
Population groups	Country of origin	Positive	Total (%)
Pilot Study (n=88)			
Healthy Greek children (n=50)	Greece	0	0 (0%)
Immigrants (n=19)	Pakistan + Afghanistan	2 + 1	3 (15.79%)
Greeks (n=19)	Greece	2	2 (10.53%)
Screening Study (n=1019)			
Greeks (n=298)	Greece	0	0 (0%)
Immigrants (n=721)	Pakistan + Afghanistan + India	73 + 5 + 7	85 (11.79%)

CONCLUSIONS

The rapid decline of antibody titres both in Greek and immigrant patients, 5-7 months after an acute malaria attack can be attributed to the rapid clearance of antigen due to prompt diagnosis and treatment.

Serological screening of asymptomatic local and migrant population in Laconia revealed low percentage of seropositive immigrants and no seropositive Greeks, indicating that Greek residents in areas of autochthonous malaria transmission have not been repeatedly exposed to the parasite and are currently unlikely to serve as reservoir for the infection of local mosquitoes.

Timely diagnosis and appropriate treatment of malaria patients, combined with active case detection in locals as well in immigrants, are necessary in order to prevent further transmission and re-establishment of malaria in Greece.



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