

CASE REPORT

A Case Report of Serological Rapid Diagnostic Test-Negative *Plasmodium malariae* Malaria Imported from West Africa

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SUMMARY

Background: The imported cases of *Plasmodium malariae* (*P. malariae*) and *Plasmodium ovale* (*P. ovale*) malaria are increasing annually, especially in central China. Here, we report a case of serological rapid diagnostic test (RDT)-negative *P. malariae* malaria imported from West Africa.

Methods: The case patient was exclusively diagnosed with *P. malariae* through microscopy, Plasmodium genus-specific nested polymerase chain reaction (PCR), and sequencing of targeted *P. malariae* circumsporozoite (*pmcsp*) gene, except for serological RDT.

Results: The patient was discharged in stable condition after 5 days of hospitalization, with no overt malaria parasites or associated symptoms.

Conclusions: This case reveals that asymptomatic *P. malariae* infections can occur among exported laborers back from malaria-endemic areas, some of whom may escape serological screening test or RDT, posing a continuing potential threat to malaria control. Therefore, PCR-based molecular techniques are more effective and necessary than serological RDT for malaria surveillance nationwide.

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Supplementary Tables and Figures

Table S1. Primers for Plasmodium genus-specific nested PCR and *pmcsp* sequencing.

Primers	Primer sequences (5' →3')	Target	Amplicon size (bp)	References
Nested PCR				
rPLU1_F	TCA AAG ATT AAG CCA TGC AAG TGA	Genus	~1,670	7
rPLU5_R	CCT GTT GTT GCC TTA AAC TTC			
rPLU3_F	TTT TTA TAA GGA TAA CTA CGG AAA AGC TGT	Genus	240	7
rPLU4_R	TAC CCG TCA TAG CCA TGT TAG GCC AAT ACC			
rFAL1_F	TTA AAC TGG TTT GGG AAA ACC AAA TAT ATT	Pf	206	7
rFAL2_R	ACA CAA TGA ACT CAA TCA TGA CTA CCC GTC			
rVIV1_F	CGC TTC TAG CTT AAT CCA CAT AAC TGA TAC	Pv	121	7
rVIV1_R	ACT TCC AAG CCG AAG CAA AGA AAG TCC TTA			
rMAL1_F	ATA ACA TAG TTG TAC GTT AAG AAT AAC CGC	Pm	145	7
rMAL2_R	AAA ATT CCC ATG CAT AAA AAA TTA TAC AAA			
rOVA3_F	CGG GGA AAT TTC TTA GAT TGC	Po	456	7
rOVA4_R	GAG AAA CAG CAT GAA TTG CG			
Pm CSfor	CCC ACA AAA GCT GTT GAA AA	<i>pmcsp</i>	~864	8
Pm CSrev	TGG TGA CCA TTC CTC CGT A			

Pf - *Plasmodium falciparum*, Pv - *P. vivax*, Pm - *P. malariae*, Po - *P. ovale*, CSP - circumsporozoite.