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General Medicine

To Compare Between Peripheral Smear Method and Rapid Diagnostic Test of Diagnosis

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Abstract | **Original Research Article**

Background: The Study was conducted in Department of Medicine, Mahatma Gandhi Memorial Medical College & Maharaja Yashwantrao Hospital Indore with sample of 100 patients with clinical suspicion of malaria. We conclude that microscopy positive in 32 patients while RDT in 39 patients & that in 31% cases both microscopy & RDTs results was same. ***Conclusion:*** The sensitivity and specificity of RDTs was 96.88% and 88.24% respectively. The measure of agreement i. e. Kappa value was 0.736 which was good agreement between microscopy and RDTs of malaria diagnosis. (Kappa value of 0.21–0.60 is a moderate, a kappa value of 0.61–0.80 a good and kappa > 0.80 an almost perfect agreement beyond chance.)
Keywords: Sear, Malaria & Diagnostic Test.
Study Designed: Observational Study

INTRODUCTION

Rapid, accurate and accessible detection of malaria parasites is important in the prevention and treatment of malaria. Malaria morbidity, mortality and transmission can be reduced if prompt diagnosis and adequate treatment is available [1]. Rapid diagnostic tests (RDTs) offer the potential to provide accurate and timely diagnosis to everyone at risk, reaching those previously unable to access good quality microscopy services. In malaria –endemic regions, the use of RDTs is very helpful for the effective use of anti-malaria drugs as treatment is based on parasite diagnosis and not just fever alone. In these regions, a considerable proportion of these drugs have been wasted on patient with non-malarial disease due to lack of prompt and accurate laboratory diagnosis [2].

Parasitological confirmation of the diagnosis of malaria through microscopy is part of good clinical practice and should always be part of malaria case management [3]. However, the following exceptions apply:

- Children under the age of 5 years in high prevalence areas. There is no evidence yet that the benefits of parasitological confirmation outweigh the risk of not treating false negatives [2].
- Cases of fever in established malaria epidemics where resources are limited.
- Where good quality microscopy is not feasible.

MATERIALS & METHODS

Department of Medicine and Pathology, Mahatma Gandhi Memorial Medical College& Maharaja yashwantrao Hospital Indore with sample of 100 patients with clinical suspicion of malaria. Study duration one year from.

Exclusion criteria

- Had been treated for malaria
- Had symptoms suggestive of severe malaria
- Did not have symptoms suggestive of malaria

Inclusion criteria

- Patients attending to M.Y.H. with self-assessed symptoms.
- Had symptoms of uncomplicated malaria

Peripheral blood smear and rapid diagnostic test using Bioline Malaria P.f/P.vstix were performed on all the 100 patients.

From each patient 2 ml of venous blood sample were collected in Ethylene diamine tetra acetic

acid bulb and standard thick and thin films were prepared on clean glass slides. Thick films were prepared by placing a small drop of blood in the centre of the slides and evenly spreading it out with the corner of another slides to cover an area about 4 times its original area, air dried for 30 min, dehemoglobinised and stained with Giemsa stain.

Search was made in 100 oil immersion fields thin smears were prepared and stained with Leishman and Giemsa stains and search was made for malarial parasites.

A complete blood count was performed on all patients using Diatron automated hematology analyzer and following parameters were studied-hemoglobin, total WBC count, differential count, MCV, MCH, MCHC and platelet count.

By using automated hematology analyzer and peripheral blood smear examination, the hematological changes in malaria such as anemia, leucopenia, leucocytosis, monocytosis ,pigments in the WBC's, thrombocytopenia were studied.

RESULTS

Table-01: Species wise distribution of malaria positive cases for microscopy & rdt

Spescies	Microscopy(n=32)		RDTs(N=39)	
	No.	%	No.	%
Pl.falciparum	21	65.63%	21	53.85%
Pl.vivex	8	25%	10	25.64%
Both	3	9.38%	8	20.51%
Total	32	100%	39	100%

From above table we conclude that shows that microscopy positive in 32 patients while RDT in 39 patients (Table-01).

This table shows that in 31% cases both microscopy & RDTs results was same (Table-02).

Table-02: Comparison between diagnostic tests

Diagnostic test	Number of PT.
Microscopy & RDTS both (+)	31
RDTS(+)	8
MICROSCOPY(+),RDTS(-)	1
Both negative	60
Total	100

DISCUSSION

The agreement between microscopy and RDT was determined by calculating Kappa values using SPSS statistic software version 17. Kappa values express the agreement beyond chance and a kappa value of 0.21–0.60 is a moderate, a kappa value of 0.61–0.80 a good and kappa > 0.80 an almost perfect agreement beyond chance [4].

In our study Kappa value was 0.736 i.e. good it means most of the time both tests agreed to each other. The sensitivity and specificity of RDTs was 96.88% and 88.24% respectively [5].

A study by Shiff CJ *et al.* on Rapid diagnostic tests for diagnosing uncomplicated P. falciparum malaria in endemic countries shows overall for HRP-2, the meta-analytical average sensitivity and specificity were 95.0% and 95.2% respectively. Overall for pLDH, the meta-analytical average sensitivity and specificity were 93.2% and 98.5% respectively [6].

Another study conducted by Gholam-HosseinEdrissian *et al.* on Rapid Immunochromatography Test ICT Malaria Pf" in Diagnosis of Plasmodium falciparum and its Application in the in vivo Drug Susceptibility Test, showed that the test is 100% specific [7].

CONCLUSION

The sensitivity and specificity of RDTs was 96.88% and 88.24% respectively. The measure of agreement i. e. Kappa value was 0.736 which was good agreement between microscopy and RDTs of malaria diagnosis (kappa value of 0.21–0.60 is a moderate, a kappa value of 0.61–0.80 a good and kappa > 0.80 an almost perfect agreement beyond chance.)

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