



Retrospective Analysis on the choice of method for diagnosis of Malaria - Tripura Study

KEYWORDS

Slide methods, rapid diagnostic kit methods, interview method, cost effectiveness.

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ABSTRACT

Introduction – The Study has been conducted on the magnitude of malarial infection in the north eastern region of Tripura State, its core reason behind the spread, method of choice for diagnosis. The economic aspect of the common man towards detection has been the central focus of this major killer disease.

Method - The study was made on the need of microscopy and skill of the provider group. The interview method was applied to assess the patients reaction. It showed that 88% of patients visiting private setup expressed economic pressure on costly tests, where as 9% opined to undergo any diagnostic test. A significant percentage differed on the need for costly test for various reasons.

Analysis – There exists reveal significant gap between health care providers choice and care seekers capability in undergoing diagnostic test. Economic burden & suspicion of the care seeker group were distinctly observed.

Conclusion – The slide method for malaria diagnosis has no substitute in a country like India. The Govt. of India rightly defined the Malaria Microscopy as the gold standard. Awareness on selection of the method and sources of mosquito breeding could save millions. Modernisation is important but, cost effective and benefit of the needy are more important.

Introduction – Malaria is a man-made disaster and the most important preventable and killer disease in India. It is more so as, the country is already saturated with population, pollution and economic poverty⁸. Throwing habit of various stagnating materials around and in the drains have been contributing to the source of mosquito breeding. The educated and uneducated population are no exception. Filling, levelling and draining of the vicinity is the natural answer but is not practiced as, temporary solution to a permanent problem has been the attitude of millions. So, the problem lingers on with the adoption of short sighted approach for the longest health problem of the country. It has been continuing as the major public health threat in India with 27% of population living in high transmission area (> 1 case per thousand population) and 58% in low transmission area (0-1 case per 1000 population). Proportion of P. Falciparum malaria has increased⁷. Globally, 400 million of cases of Malaria occurs out of which 100 Million deaths take place⁶.

So, the easy, simple, rapid, sensitive, specific cost- effective smear method of diagnosis has no substitute. Unfortunately, the attention has virtually shifted to modern diagnostic method, an anti community development. It continues as a matter of great concern that the teaching Institutions imbibed the interest on Zeal of Microscopic diagnosis in the past but presently look differently at the concern as the application has receded.

Retrospective analysis - It was carried out on method adopted for diagnosis in the past from 1998 to 2004 in Tripura State. Smears were stained by Leishman's method only. The Malarial Parasite was clearly visible, mostly the ring forms. There was no deposit on the slide as the fresh stain was prepared every week and filtered. As this method are been practiced for many years in the hospital and also private settings, the already adjusted staff found no problem what so ever. The observation was reported and recorded on daily, monthly and yearly basis. The state's figure are projected as below.

Projection on 7 years of Retrospective scenario on Tripura state service result on Malaria slide examination.

Year	Blood slide collection	Blood examination	Positive cases	P.F. cases	Percentage
1998	244080	231187	12595	10507	83%
1999	212056	212056	14408	11889	82%
2000	204322	204322	12245	9480	77%

2001	291652	291652	18502	14629	79%
2002	245406	245406	13319	10863	81%
2003	252339	252339	13807	10800	78%
2004	251146	251146	17455	15182	87%

Source : Govt. of Tripura release – 7 years of “Saphalya” Bulletin 2005⁴.

Scenario mentioned above, reveal serious magnitude of Malaria fever cases in Tripura. The network from the city to the periphery, narrate the diagnosis of Malaria that left behind commendable success story of cost-effectiveness by Microscopy of Smears, being scientifically sensitive as well as specific method.

Interpretation – The study was to find whether the method of diagnosis was ideal in our set-up and why the method adopted was superior. Subsequent analysis was to find the magnitude of the problem of poverty and health and whether the diagnosis demanded any shift from the conventional method. Interview was carried out to gather maximum information from the target population, the low and middle income group, resided in the city of Agartala. The method was applied to the patients of the family who had complaints of related type of fever and investigated for diagnosis. 160 nos. of such patients having the history of fever were studied. The answers were recorded & analysed 88% visiting private setup were of the opinion that any other type of related diagnostic test were difficult to bear economically. 9% of the patients opined that they would undergo any type of tests for health reason. 20% did not express faith on health staff. 23% were of the view that there could be nexus between providers center, hospitals and laboratories. 26% of patients said that they were directed by the staff to visit specific laboratories for quality of report, as said. 18% expressed doubts on the number of diagnostic tests prescribed. 24% of the patients requested the doctor to write medicine without any test, if possible.

The above analysis reveals the strain faced by the majority in relation to costly diagnostic tests. It is therefore needed to maintain scientific as well as economic balance. According to Anthony Moody¹, the urgency and importance of obtaining results quickly from the examination of blood sample from patients with suspected malaria render some of the more sensitive methods impractical for routine laboratory use. According to Moody the recommended method and the current gold standard used for the routine diagnosis of malaria is the microphic examination of stained thin and thick blood films and

50 parasites / micro litre of blood (0.001%) parasitemia) and 98% species level diagnosis is possible.

According to H.G. Thakor⁵, the smear microscopy is simple, cheap and very useful as both the diagnosis as well as species identification are possible. Anthony Moddy compared various available methods¹ on rapid diagnostic tests. The microscopy can diagnose all species at low cost in comparison to other methods³. Variety of serological tests have been developed but are not usually used to diagnose clinical infections. They are particularly useful for epidemiological surveys and detection of infected blood donors⁶. While the disease is so high, factors like infrastructure, cost, easy availability for easy affordability need consideration in developing country apart from magnitude of population, all important considerations in choosing a method.

Number of parasite / micro litre of blood from sensitivity point of view have made ICT, Dipstick, LDH based assays popular but cannot replace the slide method for diagnosis as are not affordable. More over specificity limitation cannot be ignored for these above tests for clinical infection². Evaluation of test needs to be made for diagnosis of present infection with species. So slide microscopy passes the test of time and holds the key in regard to diagnosis of infection⁷, after comparative evaluation.

Another reason is also pertinent that slide microscopy has eye – strain limitation if the load is more than 20 in one sitting. But the kit method does not bear the eye strain of the health care provider. It is again equally true that most diagnostic centers do not have so huge number of malaria slides except very few central referral centres meant for the purpose. The technicians posted in such centres carry out smear microscopy for malaria only and no other test.

Country to country variation, urban to rural variation also exist in the selection of method for diagnosis. In India, the yard stick can only be cost effectiveness and so a genuine revisit to time tested method that yielded commendable success in the past.

Conclusion – The smear method being the gold standard has the following inherent force which make the method ideal :-

1. Easy,
2. Simple,
3. Rapid,
4. Sensitive,
5. Specific
6. Conventional backup support
7. Easily available
8. Easily affordable
9. Easy acceptability by the common man,
10. Involves inner skill, self motivating
11. Easily demonstrable, invites the joy of search finding, to create interest among learners.
12. Less false result.
13. Satisfaction among professionals engaged in the process for the majority population.
14. The method has the faith strength for adoption by clinician, for prescription request.
15. A method that automatically creates interest among production personnel to capture market because of mass requirement both for business houses of production, its marketing availability, and health care teacher and service provider groups.
16. Above all, cost effectivity and cost benefit aspects for the Indian community.

Along with the introduction of newer diagnostic systems, the slide methods seem to have lost the demand that served the diagnosis of malaria for decades. The method carried adventurous life saving support, prognostic enquiry and ceaseless laboratory satisfaction. The high cost systems do save the patient with no special advantage for the customer. Tendency for newer methods therefore have serious adverse effect on the

community.

It has also been noticed that many patients do not visit for the second time or return on hearing the cost in the first consultation. These lot become non responder to care service and prefer to suffer as they cannot afford to. Thus, the risk of spread further increases to the community and continuing concern for more cases in near future.

References

1. Anthony Moody 2002 rapid diagnostic tests for Malaria Parasites. Clinical Microbiology Reviews. Vol 15, No.1, P-66-78.
2. Henry's Clinical Diagnosis and Management by Laboratory Methods, 2007, 21st edition, P- 1134.
3. Wallach's – Interpretation of Diagnostic tests. 9th edition, P-1030.
4. "Saphalya" Govt. of Tripura Bulletin 2005, P-30.
5. Hitendrasinh G Thakor, JIMA, October 2000, vol 98, No. 10, P-623-627.
6. Morepen Laboratories Limited, Malaria-disease and diagnosis, P-2.
7. Paniker's text book of Medical Parasitology, 7th edi, 2013, P-64.
8. Nilotpal Banerjee, AIDS in Indian Society. Calcutta; Nabachalantika, 1995; P-87