



## To Study Treatment Patterns of Admitted Malaria Cases At Tertiary Care Hospital

### KEYWORDS

malaria, tertiary care hospital, antimalarials, complications

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### ABSTRACT

*Malaria is one of the most important vector borne diseases causing significant morbidity and mortality. This is retrospective record based descriptive study at SCBMC, Cuttack, over 3 calendar years i.e. 2010, 2011 and 2012, using predesigned and pretested formats. Objective of this study is to study treatment patterns of admitted malaria cases at that tertiary care hospital. Out of total 8282 cases, in 7294 cases (96%) injection artesunate was used. In the rest (4%), the use of other antimalarials as either monotherapy or mix of more than one was documented. Among those cases in only 83 (1.3%) tickets the prescription for radical treatment i.e. Primaquine tablets was found. In the rest of tickets no data was found regarding the use of radical treatment. In 5720 (69%) cases one or more type of complications like hepatopathy, ARF, pneumonia, etc, was present.*

### INTRODUCTION

Malaria is one of the major public health problems of the country. It is a protozoal disease infection with parasites of the genus *Plasmodium* and transmitted to man by certain species of infected female anopheline mosquito.<sup>1</sup> *Plasmodium vivax* is the most widely distributed human malaria parasite with an at risk population of 2.5 billion persons. According to the World Malaria Report 2012, globally an estimated 3.3 billion people were at risk of malaria in 2011, with populations living in sub-Saharan Africa having the highest risk of acquiring malaria: approximately 80% of cases and 90% of deaths are estimated to occur in the WHO African Region, with children under five years of age and pregnant women most severely affected.<sup>2</sup>

According to official data of NVBDCP, about 95% population in the country resides in malaria endemic areas and 80% of malaria reported in the country is confined to areas consisting 20% of population residing in tribal, hilly, difficult and inaccessible areas. There are two types of parasites of human malaria, *Plasmodium vivax* (Pv), *P. Falciparum* (Pf), which are commonly reported from India.<sup>3</sup> There are six primary vectors of malaria in India: *An. culicifacies*, *An. stephensi*, *An. fluviatilis*, *An. mimimus*, *An. dirus* and *An. epiroticus*.<sup>4</sup> On this background an attempt has been made to undertake three year retrospective record based analysis of malaria cases admitted to S.C.B. Medical College, Cuttack.

### MATERIAL & METHODS

The present study was record based retrospective & descriptive study. The study was conducted at Medical record section of S. C. B. Medical College & Hospital, Cuttack. In this study an attempt has been made to review the bed head tickets of those patients admitted to Medicine and Paediatrics department during the period between 1<sup>st</sup> January 2010 and 31<sup>st</sup> December 2012. Duration of study was 12 months (1<sup>st</sup> October 2013 to 30<sup>th</sup> September 2014). The sampling process was a total enumeration sampling i.e. all bed tickets filed in the central record room and available on retrieval as well and pertaining to reference period of

the study. All death tickets in the reference period were screened.

All the bed head tickets of indoor patients admitted to Medicine and Paediatrics department during the same period will be screened & those cases found to be positive for malaria will be considered for the present study. Where no final diagnosis was clearly mentioned, the provisional and final diagnosis was assumed as same. The bed tickets with the diagnosis clinical malaria thoroughly be studied, reviewed & necessary data & information collected in pre-designed schedule. The schedule was designed to collect necessary & relevant information from the bed head tickets of malaria patients as per study objectives. The results were analysed using MS Excel v2007 and SPSS v11 software.

The limitation of study was sample drawn was based on availability of medical records for the Departments of Medicine and Paediatrics in the Central Records Room at SCB Medical College. Due to lack of systematic filing of Medical records all IPD records were not available.

### RESULTS

**Table 1: Use of anti-malarial**

Antimalarial	Fatal	Non fatal	Total
Artesunate Injection	1918	6006	7924
Both Artesunate and Quinine Inj	45	68	113
Artesunate injection with follow up Tab Lumerax	0	54	54
Quinine Injection	3	16	19
Quinine tab	0	1	1
Quinine suspension	0	1	1
Artesunate Injection and Quinine suspension	38	20	58

Artesunate Injection and Quinine Tablets	13	70	83
Tab Lumerax	0	15	15
Tab Chloroquine DS	0	1	1
Artemether Injection	0	1	1
No antimalarial	11	0	11
Data not available	0	1	1
Total	2028	6254	8282

Table 1 show that use of anti-malarial drug among the inpatient cases has been largely restricted to Injection Artesunate monotherapy. Its use is documented in nearly 96 % of the cases i.e 7294 out of 8282 total cases. In the rest, the use of other antimalarials as either monotherapy or a cocktail mix of more than one was documented. In one paediatric case although the bed ticket showed a diagnosis of *Plasmodium vivax* malaria yet no anti-malarial was prescribed since the patient had a co-morbidity of hemolytic anemia and was probably admitted for blood transfusion only and was already continuing anti-malarial orally prior to admission. The sole case was listed as Data Not available. In 11 cases with fatal outcome no antimalarials were recorded on the bed head ticket even though a diagnosis of malaria was put on the bed ticket. The inpatient stay of a majority of these patients was in minutes.

**Table 2: Use of radical treatment**

Radical treatment	Fatal	Non-fatal	Total
Radical treatment given	0	83	83
Data Not available	2028	6171	8199
Total	2028	6254	8282

Table 2 show that among the 8282 tickets taken up for analysis in 6254 cases had a non-fatal outcome. From among those cases in only 83 (1.3%) tickets the prescription for radical treatment i.e. Primaquine tablets was found. In the rest of tickets no data was found regarding the use of radical treatment.

**Table 3: Complications among admitted malaria cases**

Complication	Fatal outcome	Non-fatal outcome	Total
Yes	1984	3736	5720
No	44	2518	2562
Total	2028	6254	8282
P< 0.001, chi square = 1038, df=1			

Table 3 show that among the patients treated for malaria that ended with a fatal outcome, nearly 98% (1984 out of 2028) had one or more complications. In contrast among the patients who had a non fatal outcome i.e. those who were discharged or left against medical advice (LAMA), the complication rate was 60 % i.e. 3736 out of 6254. This difference was statistically significant where  $p < 0.001$ . Overall among the 8282 patients treated for malaria almost 69

% i.e. 7 out of every 10 patients treated had one or more complications like hepatopathy, ARF, pneumonia, etc.

## DISCUSSION

The present study highlights treatment patterns of admitted malaria cases at S.C.B. Medical College at Cuttack. In present study nearly 96% of malaria cases treated with artesunate injection followed by combination of artesunate and quinine injection (1.36%). Chloroquine tablet was used in only single patient. This finding is contradict to other studies of Juno J. Joel et al where Primaquine was the most prescribed anti-malarial drug (20.4%), followed by Chloroquine (7.2%), Artesunate (3.8%), and Arteether (1.3%), irrespective of the type of therapy.<sup>5</sup> Madhu Muddaiah et al showed that Chloroquine and primaquine was the most preferred antimalarial combination while artesunate was used only in 14 (7.3%) patients.<sup>6</sup> M. A. Beg et al showed that treatment regimens consisted of single drug therapy (61.5%), appropriate combination therapy (15.8%), and inappropriate combination therapy (22.7%). Antimalarial agents given alone included chloroquine (38.7%), quinine (19%) and doxycycline (1.5%). Artemether was given to only 1.2% of the patients in combination with other antimalarials.<sup>7</sup>

Mahendra M. Joshi et al at a tertiary care hospital in central India showed that chloroquine and primaquine was the most preferred antimalarial combination due to high incidence of vivax species.<sup>8</sup> At Nagpur in central India Wasnik PN et al found that Maximum number, 62 (77%) patients received the combination of artesunate and clindamycin.<sup>9</sup>

In present study among all 8282 malaria tickets in 83 (1.3%) tickets the prescription for radical treatment i.e Primaquine tablets was found. This finding is little similar to another study of M. A. Beg et al where Primaquine was appropriately administered as prophylaxis to prevent relapse in only 6.2% of cases.<sup>7</sup> While Madhu Muddaiah et al found that primaquine was used in about 80% of cases<sup>6</sup> and at a tertiary care centre in central India Mahendra M. Joshi et al showed that Chloroquine and primaquine was the most preferred antimalarial combination (100%).<sup>8</sup>

In present study overall among the 8282 patients treated for malaria almost 69% patients treated had one or more complications like hepatopathy, ARF, pneumonia, etc. In other similar study of M. A. Beg et al at a tertiary care hospital in Karachi, Pakistan showed that nearly 56% of patients developed disease complications one or more.<sup>7</sup> At Papua, Indonesia by Emiliana Tjitra et al showed that complications were present in 22% of hospitalised patients.<sup>10</sup>

## CONCLUSION

In conclusion, though malaria is usually a nonfatal infection, the cases who had succumbed to this infection usually had one or more complication. Injection Artesunate as a monotherapy was a major form of treatment (96%) for the clinically diagnosed malaria cases. However radical treatment had been documented in only 1% of the cases. A tertiary level health institute should act like a guiding principle for treatment of malaria and its complications. Steps should be taken regarding sensitization of all the faculty and treating staff especially on NVBDCP drug policy guidelines which can prevent irrational drug use. Enhanced educational efforts regarding drug resistant malaria should be promoted.

Conflict of interest: Nil

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