Volume : 5 | Issue : 6 | June 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Burden of Malaria Cases Admitted To Medical Wards Of Tertiary Care Centre At Cuttack

Medical Science

KEYWORDS : malaria, trends of malarial deaths, tertiary care centre, fatality

*** Kamble Nitin H.**	Assistant Professor, Department of Community Medicine, Government Medical College, Chandrapur, Maharashtra. * Corresponding author
Satapathy Durga M.	Prof & HOD, Department of Community Medicine, V.I.M.S.A.R., Burla, Odisha
Dash Manoj K.	Tutor, Department of Community Medicine, S.C.B. Medical College, Cuttack, Odisha

ABSTRACT

Malaria is one of the most important vector borne diseases causing significant morbidity and mortality. There is a need to look at the malaria mortality, morbidity & its contributing factors in tertiary care institutions in the state. On this background an attempt has been made to undertake three year retrospective record based analysis of malarial deaths in Medicine and Paediatrics dept of S.C.B. Medical College, Cuttack to assess the burden of malaria cases admitted to tertiary care centre at Cuttack. The data was collected from the bed tickets in the record room of SCB Medical College, Cuttack, over 3 calendar years i.e. 2010, 2011 and 2012, using predesigned and pretested formats. The absolute number of deaths due to malaria over each of the three years 2010, 2011 and 2012 were 644, 657 and 727 respectively. The trend thus is an increasing number of fatalities attributed to malaria.

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.[1] 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.[2] 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.[3] There are six primary vectors of malaria in India: An. culicifacies, An. stephensi, An. fluviatilis, An. mimimus, An. dirus and An. epiroticus.[4] On this background an attempt has been made to undertake three year retrospective record based analysis of malaria cases admitted to Medicine & Paediatrics dept of 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 & Paediatric department during the period between 1st January 2010 and 31st December 2012. Duration of study was 12 months (1st October 2013 to 30th 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 & Paediatric department during the same period will be screened & those cases found to be positive for malaria will 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 predesigned 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.

RESULTS

The analysis of cases admitted to SCBMCH over the three study years 2010-2012, shows an increasing trend. All the discharge tickets of the Medicine and Paediatrics department accessible from the central record room were screened for malaria.

Table 1: Year-wise trend of cases

Year	Provisional Malaria Diagnosis	Final Clinical Diagnosis
2010	2553	2125
2011	3357	2720
2012	3991	3437
Total	9901	8282

Table 1 shows that total of 9901 discharge tickets were found to have a provisional diagnosis of malaria with 2553, 3357 and 3991 tickets from the years 2010, 2011 and 2012 respectively. From among these bed tickets 8282 tickets had malaria in the final diagnosis. The 8282 cases with a final diagnosis were taken as the clinical malaria cases.

Table 2: Outcome of admitted cases

Outcome	Total
Death	2028 (24.5 %)
Discharged	4466 (53.9 %)
LAMA	1755 (21.2%)
Transferred	33 (0.4%)
Total	8282 (100 %)

Table 2 shows that nearly a quarter (24.5 %) of the total tickets screened with a clinical diagnosis of malaria met with a fatal outcome. Of the rest 6254 tickets, 4466 (53.9 %) cases were discharged, 1755 (21.2 %) were stamped as LAMA and the rest 33 tickets were recorded as transferred/ referred. The transfer/ referral were mainly to other clinical departments of this institute due to complications.

Table 3: Period of stay as inpatient

Period of inpatient stay	Fatal	Non-fatal	Total
Less than 1 day	592	248	840
1 day	639	537	1176
2 to 3 days	443	2194	2537
3 to 7 days	257	2504	2761
More than 7 days	97	771	868
Total	2028	6254	8282
P<0.0001, Chi Square = 2039, Df=4			

Table 3 shows that out of 2028 fatal cases 592 (29%) had hospital stay <1 day, 639 (31%) cases 1day, 443 (22%) cases 2-3 days, 257 (12.6%) cases 3-7 days and remaining 97 (4.8%) fatal cases had hospital stay more than 7 days. Among the cases with non-fatal outcome, 248 (4%) cases had hospital stay <1 day, 537 (8.58%) cases 1 day, 2194 (35%) cases 2-3 days, 2504 (40%) cases 3-7 days and remaining 771 (12%) cases had hospital stay more than 7 days.

Table 4: Trends in proportional mortality rate

	Final cases			
Outcome	2010	2011	2012	Total
Malaria deaths	644	657	727	2028
Total (All deaths)	6400	7078	8073	21551
Proportional mortality rate (%)	10.06	9.28	9.01	9.4

Table 4 shows that proportional mortality rate due to malaria was 9.4% for three years. It was 10.06% for the year 2010, 9.28% for the year 2011 and 9.01% for the year 2012. Table shows that cumulative total of about 21551 fatalities have been recorded at SCBMCH over the three calendar years. Total deaths in medical college were 6400, 7078 and 8073 in the year 2010, 2011 and 2012 respectively. The numbers of fatalities have registered an increasing trend over the three years. This correlates with the increased numbers of patients admitted to this institution. Out of all fatalities clinical malaria contributes to 2028 deaths in those three years. From all the inpatient admitted to SCBMCH, all the death tickets i.e. about 21551 were screened for malaria. A total of 2028 death tickets i.e. 644, 657 and 727 case tickets were found to have a clinical diagnosis of malaria in the years 2010, 2011 and 2012 respectively.

DISCUSSION

The analysis of cases admitted to SCBMCH over the three study years 2010-2012, shows an increasing trend. This is in keeping with the increasing population and availability of improved road communication and transport facilities. P. Muentener et al[5] showed that total incidence of malaria infections in Europe increased from 6840 in 1985 to 7244 in 1995 with a peak of 8438 in 1989 which relate to our study. In a study by Serign Ceesay et al[6] at a tertiary care hospital at Gambia found that a substantial decrease in the yearly number of admissions & deaths attributed to malaria. Compared with 2003, 74% reduction in the proportion of malaria cases admitted in 2007 at that hospital. At Mehsana district of north Gujrat B. Prajapati et al[7] found that there is gradual decrease in malaria cases from 1999 to 2004. Both these finding are contradict to findings of this study.

Nearly a quarter (24.5 %) of the total tickets screened with a clinical diagnosis of malaria met with a fatal outcome. Of the rest 6254 tickets, 4466 (53.9 %) cases were discharged, 1755 (21.2 %) were stamped as LAMA and the rest 33 tickets were recorded as transferred/ referred. The transfer/ referral were mainly to other clinical departments of this institute due to complications. At a tertiary care referral centre at south Canara of Karnataka Madhu Muddaiah et al[8] found that among the 190 patients, 186 (98%) improved and discharged, 2 patients (1%) went against medical advice (LAMA) and 2 patients (1%) died. Mahendra M. Joshi et al[9] at a tertiary care centre in central India showed that among the 120 patients, 112 (98%) improved and were discharged. 7 patients went against medical advice (LAMA) and 1(0.8%) patient died. In both studies fatalities are negligible (1%) as compared to this malaria study (24.5%).

The period of stay as inpatient was clearly related to the outcome. Nearly one-third (29.2 %) of the patients with fatal outcome had an inpatient stay of less than a day compared to only 4 % of patients with non-fatal outcome which is statistically significant (p<0.0001). Another 31.5 % of patients with fatal outcome had an inpatient stay of only one day compared to 8.6 % of patients with non-fatal outcome. Thus almost two-thirds of the fatal cases had a hospital stay of about 24 hours or less. The remainder 39.3 % cases had hospital stay varying between 2days to 3 days (21.8 %), 3 to 7 days (12.7 %) and more than 7 days (4.8 %). Among the cases with non-fatal outcome, the bulk of the patients i.e more than three quarters (>7days 12.3 %, 3—7 days 40%, 2—3 days 35 %) 87.3 % patients had a hospital stay of 48 hours (2 days) or more. Vyas Sheetal et al[10] at Ahmedabad showed that duration of survival after admission was very short as 21 (65.6%) cases died within 24 hours of admission indicating that patients were already having complications at the time of admission leading to poor prognosis. Only 4 (12.5%) cases died after 6 days of admission. Jagannath Sarkar et al[11] at Alipurduar, West Bengal showed that among the 33 patients who died (9.8%) the median duration of treatment following hospitalization was 14 h (<24 hr). Similarly, at Nigeria by A. N. Amadi et al[12] found that Eight hundred and twenty (16.1%) of them were in-patients spending an average of six days on hospital bed. Emilian Tjitra et al[13] at Papua, Indonesia found that malaria accounted for 19% (134/719) of deaths within 48 h and 12% (108/889) of deaths thereafter.

Proportional mortality rate due to malaria was 9.4% for three years. It was 10.06% for the year 2010, 9.28% for the year 2011 and 9.01% for the year 2012. O. O. Ayoola et al[14] at University College Hospital in Ibadan showed that malaria contribute to 6.2% (73 of 1185 deaths) of the total deaths in that hospital. At Papua, Indonesia Emilian Tjitra et al[13] found that total of 242 inpatients with malaria died, accounting for 15% (242/1,608) of all-cause inpatient mortality over the same period. Similarly, Adebola Emmanuel Orimadegun et al[15] at a tertiary hospital in Nigeria found that malaria accounted for 12.4% of all deaths.

Limitations of study

The limitation of study was sample drawn was based on

Volume : 5 | Issue : 6 | June 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

availability of medical records for both department in the Central Records Room at SCB Medical College. Due to lack of systematic filing of Medical records all IPD records were not available

CONCLUSION & RECOMMENDATIONS

Trends of malarial deaths show that malaria continues to be one of the largest contributors of institutional mortality. In absolute numbers the trend of cases shows an increase in fatal cases over the study year's i.e 2010-2012. A proper system of record keeping is necessary especially at a tertiary level health institute. Strengthening of the MRD department can go a long way not only in understanding the trend of Malaria but also a host of other health problems affecting the population of the state.

Funding: None

Conflict of interest: None declared

REFERENCES

1. Park K. Park's Text Book of Preventive and Social Medicine. 22nd edition 2013, Bhanot Publications, Jabalpur (India).
2. Treatment of Malaria, NVBDCP; 2 (2).
3. Program implementation plan 2009-10, NRHM Odisha [availableat http:/ www.mohfw.nic.in/NRHM/PIP_09_10/Odisha/NVBDCP_Text.pdf]
4. WHO (2012), World Health Statistics, 2012
5. Muentener P, Schlagenhauf P, Steffen R. Imported malaria (1985-1995): trends and perspectives. Bulletin of the World Health Orgnization 1999; 77 (7).
6. Cessay SJ, Erskine J et al. Changes in malaria indices between 1999 and 2007 in the Gambia: a retrospective analysis. The lancet 2008; 372.
7. Prajapati B, Patel A, Patel M. Study Of Hospital Based Malaria Cases In Mehsana District Of North Gujrat. Internet Scientific Publication. 5:1.
8. Muddaiah M, Prakash PS. A study of clinical profile of malaria in a tertiary referral centre in South Canara. J Vect Borne Dis 2006 March; 43: 29-33.
9. Joshi MM, Gowardhan P. Retrospective analysis of malaria and its complications in a tertiary care centre in Central India. Asian Journal of Biomedical and Pharmaceutical Sciences 2013; 3(20): 41-43.
10. Vyas S, Solanki A, Joshi U, Nayak H. Death audit of deaths due to malaria at LG Hospital, Ahmedabad (Gujrat) during the year 2011. National Journal of Community Medicine 2012 April- June;3 (2): 352-356.
11. Sarkar J, Shah NK, Murhekar MV. Incidence, management, and reporting of severe and fatal *Plasmodium falciparum* malaria in secondary and tertiary health facilities ofAlipurduar, India in 2009. J Vector Borne Dis 2012 September; 49: 157-163.
12. Amadi AN, Ray G, Okogun A. Epidemiology, therapeutic agents and cost of management of paediatric malaria in a Nigerian tertiary hospital. J Vect Borne Dis 2005 September; 42: 87-94.
13. Tjitra E, Anstey NM, Sugiarto P, Warikar N, Kenangalem E, et al. Multidrug-Resistant *Plasmodium vivax* Associated with Severe and Fatal Malaria: A Prospective Study in Papua, Indonesia. PloS Med 2008; 5(6): e128.
14. Ayoola OO, Orimadegun AE, Akinsola AK, Osinsui K. A five-year review of childhood mortality at the University College Hospital, Ibadan. West African Journal of Medicine. 2005 April- June; 24: 2
15. Orimadegun AE et al. Increasing Burden of Childhood Severe Malaria in a Nigerian Tertiary Hospital: Implication for Control. J Trop Pead 2007; 53 (3): 185-189.