Clinical Survey on Malaria a Study in Anantapuramu District Of Andhra Pradesh

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Abstract: *Malaria is a public health problem in several parts of the country. 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. India contributes about 70% of malaria in South East region of W.H.O. Although annually India reports about 2 million cases and 1000 deaths attributable to malaria, there is increasing trend in the proportion of Plasmodium Falciparum as the agent. This study aimed to note the presentations and complications of Plasmodium Falciparum in Government General Hospital, ,Anantapuramu district of Andhra Pradesh.*

Methodology: *The descriptive study was conducted at IPD (inpatient department) of Government General Hospital Anantapuramu. In this study simple random technique was used for selection of sample. All adult patients with positive malaria peripheral film admitted through the department was studied during 2014.Data was entered and analyzed.*

Results: *A total of 97 patients were included in this study. Fever was the most common presentation. A significant number of patients had non- specific complaints but tachycardia, altered mental status and adult respiratory distress syndrome was important findings. Common reasons for admission were thrombocytopenia and dehydration. Some patients were admitted for more than 48 hours. Complications included Pneumonia and bleeding requiring platelet transfusion.*

I.   Introduction

Malaria and six other diseases viz: Diarrhoea,HIV/AIDS,Tuberculosis,Measles,Hepatitis.B and Pneumonia account for 85% of global infectious disease burden (Murray & Lopez 1996,1997).Malaria afflicts 36% of the world population i.e 2020 million in 107 countries and territories situated in the tropical and sub topical regions. In the South east Asian region of W.H.O,out of about 1.4 billion people living in 11 countries,1.2 billion (85.7%)are exposed to the risk of Malaria and most of whom live in India. Plasmodium Vivax malaria is a public health problem that puts billions of the world's population at risk of infection as highlighted in the world Malaria report2010.Despite Malaria control strategies, an estimated 100.300 million cases are reported each year (1,2).

The global Malaria eradication programme of W.H.O launched in the 1950's was a huge success in India as the incidence declined from estimated 75 million cases and 8 lakhs deaths in 1947 to just 49151 cases (annual parasite incidence per 1000(API), 0.13; Slide positivity rate (SPR).0.38 percent and Plasmodium falciparum (PF); 34.9 percent) no deaths in 1961 and Malaria was thought to be on the average of eradication. It was then ,that a series of setbacks were witnessed leading to Malarial resurgence in multiple foci in the country and reported cases increased to 13,22,398 by 1971(API:2.4,SPR:3.27% and PF:11.2%)and then to 64.67,215 in 1976(API:11.25:SPR;11.6 and PF;11.2%)(http;//www.searo.who.in//).The failure was attributed to the complacency, administrative, operational and technical problems like resistance in vectors to commonly used insecticide DDT and in parasites to chloroquine and overall low priority malarial enjoyed in the post control period. Thereafter with the implementation of modified plan of operation (mpo) in 1997, Malaria cases declined and ranged between 2-3 million per annum in the subsequent years. However in 1996, due to outbreaks and epidemics 3035588 cases and 2803 deaths reported. In 2006,the reported number of cases was 16,69,333(API;1.57:SPR;1.635 and PF;45.3%).But country has witnessed different phases of malaria situations in the country and from high prevalence of malaria to near eradication to resurgence in post DDT era to the use of arteminisinin combination therapies(ACTS).

The current incidence of Malaria reported by National vector borne disease control programme,i.e the case load though the steady around 2 million cases annually in the late 90's,as shown a declining trend since 2002.When interpreting API, it is important to evaluate the level of surveillance activity indicated by the annual blood examination rate. At low levels of surveillance, the slide positive rate (spr) may be a better indicator. The SPF has also shown gradual decline from 3.90 in 1995 to 0.98 in 2001.The report PF cases from 1.14 million in 1995 to 0.53 million cases in 2012.However, the PF percentage has gradually increased from 39 percent in 1995 to 50.05 percent in 2012.

The rapid progression of a febrile illness in to a systematic infection requires advances care with the need of aggressive resuscitation and in hospital care. Frequent observation of Malaria patients presenting to out patients department led us to conduct this study to note the presentations and complications and subsequent to identify the determinants of hospital care of Malaria patients presenting to a tertiary care hospital in Anantapuramu, Andhra Pradesh.

II. Methodology

The descriptive study was conducted in IPD (In patient department) of Government General Hospital,Anantapuramu ,Andhra Pradesh.Our department has annual patient turnover of 35,000 with 5-10 % of admission rate. All adult patients with a positive plasmodium falciparum and plasmodium vivax peripheral film were enrolled. Patients who were managed as out -patients were not included in the study. The size of the sample is 97 and the simple random technique was used for selection of sample in the study.

A Data collection tool was designed with variables including the patient's demographic details as well as clinical presentation. Presenting complaints co-morbities, hemodynamic parameters at arrical, and physical examination findings were noted. Laboratory test including hemoglobin, hamatocrit platelet count total leukocyte count and serum creatinine were checked for malarial parasite and impact was also recorded. Further inpatient complaints, length of the stay and outcome of the patients were noted as well as specific reasons for admissions, clinical Varity of diseases were noted.

Data was extracted from patient's files by the research team and double checked for accuracy before analyses. Data was entered and analyzed using a SPSS version16.Frequencies and percentages of categorical data were calculated. Keeping the length of stay and a cutoff of 2-5 days after admission. Level of significance was taken at 95 percent CI with alpha of 0.05.

III. Results

A total 97 patients were included in the study. Fever was the most common presentation involving 93 (97%) patients. Time duration of fever varied with a median span of 5days before presentation. A significant number of patients more specific complaint along with fever including headache, poor oral intake, generalized weakness but 50 percent of clients complaining of abdominal pain. These symptoms included nausea, vomiting, and abdominal pain. About 12 percent of clients had shortness of breath and cough. Out of 97 patients seven patients had neurological symptoms including confusion, disorientation and drowsiness were present. Decreased urinary output was the main complaint in two patients.

Mean temperature on arrival was 38 ± 1 degree centigrade. Although mean systolic blood pressure (sbp) was normal (114 ± 21mmhg), initial evaluation in the inpatient department demonstrated that most of the patients were tachycardia (mean pulse rate 110 ± 22 beats per minute).Also, 28(27%) patients had SBP of less than 100 mmhg at the time of arrival, requiring aggressive fluid replacement. This hemodynamic compromise leading to shock is better reflected through the shock index (SI).The mean value of SI was 1 (SD=0.26); Median SI was 0.9 9iqr0.5).Minimal value calculated was 0.5 and the maximum was 1.6.Hepatomegaly was noted in two patients.fig 1 describes the common abnormal physical findings with dehydration, abdominal tenderness and jaundice the most frequently observed signs.

Table1. Demographic presenting symptoms co-morbities of study participant

Characteristics	Frequency (percentage)
Age Median (IQR) Years	41(32)
Gender	
Male	78(81)
Female	19(19)
Presenting Symptoms	
Fever with rigors	93(97)
Gastrointestinal dysfunction	54(67)
Non-specific symptoms	26(32)
Respiratory symptoms	10(12)
Neurological symptoms	7(9)
Renal dysfunction	2(2)
Cardiac dysfunction	1(1)
Co-Morbities	
Diabetes Mellitus	17(45)
Hypertension	16(42)
Ischemic heart disease	10(26)
Renal disorder	7(18)
Infectious disease	6(16)
Others*	15(39)

Table2.Comparison of the factors affecting participants' length of stay in hospital

Factors	Up to 48 hours Mean (SD)	More than 48 hours	p-value
Age	30.5(16.2)	46.3(21.8)	0.21
Days of fever	3.2(2)	8.1(2.2)	0.10
Systolic BP**	100(15.3)	117.5(22.0)	0.10
Diastolic BP	65.1(12.3)	68.9(12.4)	0.69
Heart Rate	111.3(22.8)	106.2(19.7)	0.30
Temperature	38.2(1.0)	38.2(1.1)	0.99
Oxygen Saturation	96.8(1.3)	97.2(2.4)	0.22
Hemoglobin	11.6(1.2)	13.3(3.9)	0.22
Hematocrit	37.1(5.1)	37.0(6.0)	0.89
Leucocytes	6.5(3.0)	106(14.6)	0.16
Platelets	68.6(52.1)	59.5(39.0)	0.35
Serum Creatinine	1.1(0.4)	1.7(2.7)	0.26

More than 56 patients (58%) were treated with chloroquine and 37(38%) with artemether, another 17 (18%) received antibiotics at the time of presentation, which were discontinued after establishment of diagnosis. In one patient antimalarial treatment was not documented. While only one patient required packed red blood cells transfusion, five patients received multiple platelet transfusion due to persistently low platelets and bleeding complications. The majority of the patients (67%) required initial intravenous fluid resuscitation, which was continued as in-patient in 43(44%) patients due to dehydration and/or persistent vomiting.

Reasons for admission were mentioned for 84 patients out of whom 45(53%) had low platelets with or without 42(50%) bleeding complications,13(15%) presented with signs and symptoms of septic shock requiring continuous monitoring;4(5%) had electrolyte imbalance including hyponatremia,acute renal failure;2(2%) had altered mental status at the time of presentation;2(2%) had concomitant cardiac problems; and 2(2%) had ARDS.The remaining 20(23%) were admitted for other reasons including dehydration and vomiting/nausea with poor oral intake. We also divided the patients according to their length of stay in two groups (table 2).However, the analyses failed to demonstrate any statistically significant association of the clinical or laboratory features such as age, blood pressure, Hb or Platelet levels with the duration of hospital stay.

The majority (80; 82%) of the patients were admitted in the general ward; 12(12%) were treated in the high dependency or special care units and 2(2%) in the intensive care unit. The mean length of stay was 2±1 day. The majority, 67(; 70%) were managed within 48 hours of admission but 29(30%) had to be admitted for more than 48hours.
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Figure1. Physical examination findings of study participants.

General Physical Examination
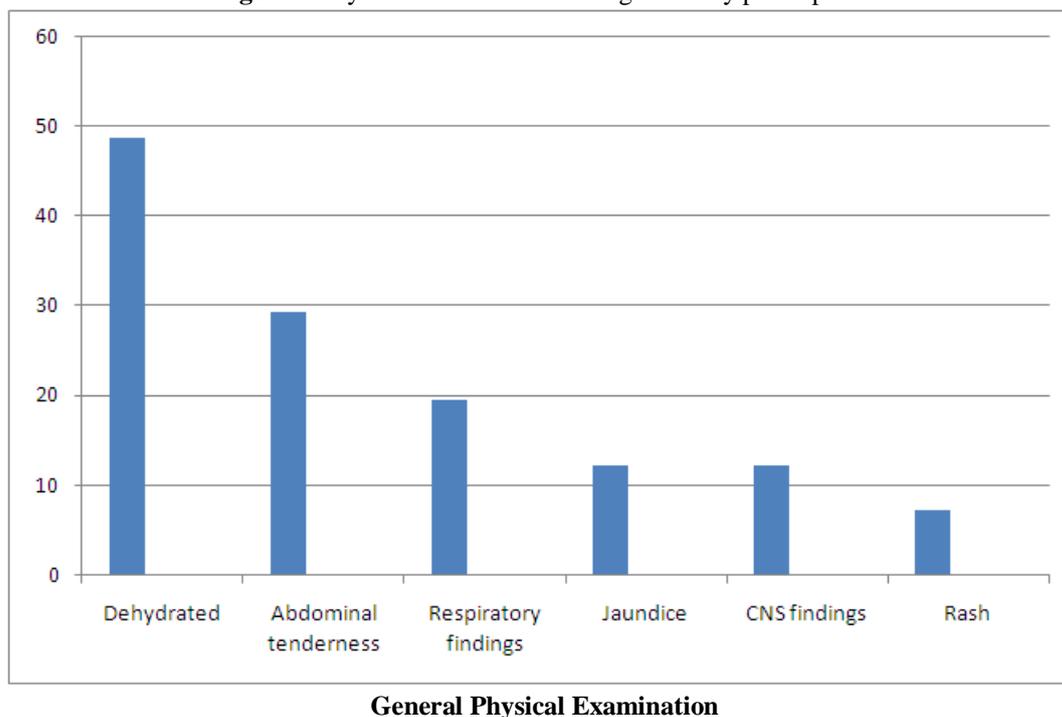
IV.   Discussion

In this paper we present a cross sectional study describing the characteristics of Malaria patients who were managed in a tertiary hospital. Despite a small number of subjects over a one-year period, we observed that all these patients had signs and/or symptoms and laboratory parameters warranting in-patient management.

Respect to presenting complaints, high grade fever with generalized body aches and gastrointestinal complaints were the commonest presentation. The classic description of tertian fever with, swinging temperature was found only in a minority of patients, while many patients presented with non-specific symptoms, abdominal pain, altered mental status, vomiting and dehydration which not only required laboratory workup but also intravenous fluid resuscitation. Muddaiah and Prakash have reported that, among those Malaria patients who were managed in-hospital, 47% had Vivax Malaria. Also nausea/vomiting, abdominal pain and headaches were observed commonly in those who were managed as in-patients. Less frequently reported but important signs and symptoms that were pertinent to the central nervous system included drowsiness and seizures and respiratory complications including ARDS and respiratory distress.

Organ dysfunction was noted in a considerable proportion of patients who presented with signs of systemic sepsis manifested by low blood pressure, depressed consciousness, and respiratory and renal dysfunction. Andrade and Kaur also reported severe Plasmodium Vivax Malaria manifesting as acute renal failure insufficiency and respiratory failure (17-18).In our data set 9% of patients had CNS related symptoms including drowsiness and seizures. It is important to note that some researchers have identified cerebral Malaria caused by Plasmodium Vivax, However, no specific diagnostic tests so far can confirm this diagnosis in suspected patients (1, 8, 9).

Anemia is a common clinical feature that is caused by increased fragility and destruction of infected non-infected RBC'S (4, 5,6) which was not found in our study subjects; The Mean Hb level was 13± mg/dl.However,we found a significant number of patients at risk of bleeding complications due to low platelet counts. Severe thrombocytopenia has been reported by other researchers (18,23,24).Altered thrombostasis,thrombocytopenia and micro vascular thrombosis contribute to bleeding complications and micro vascular obstructions(13).Thrombocytopenia at the time of admission was one of the major reasons for admission in 30% of cases as well as prolonged length of stay. Regardless of the platelet levels ,only 5% of the patients developed major bleeding complications requiring multiple blood and platelet transfusions and most of the patients exhibited a rising platelet trend after initiation of anti malarial therapy. This finding is supported by other investigators in Pakistan. In 2010, Rasheed et al, reported such thrombocytopenia (25), and also found that despite low platelets, bleeding complications were rare and platelets responded well to anti-Malarial therapy.

Most of the patients were discharged within 2-5 days of admission and the discharge was guided by improvement in symptoms coupled with hemodynamic stability in the majority of patients after confirmation of negative parasitemia and improving platelet count. The main limitation of our study was its retrospective descriptive design. This study was neither designed nor powered to predict the risk factors associated with severe disease or poor prognosis. We included only those patients who were treated as in-patients in a single tertiary care centers to identify determinants of disease severity warranting in-patient care.

V.   Conclusion

This study highlights the fact that debilitating impact o fplasmodoum falciparum, is remains high. Water lagging areas and open drainages are the leading causes of plasmodium falciparum endemic in our area.

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