Original Research Paper Medical Science "PREVALENCE OF MALARIA IN BAORI BLOCK OF JODHPUR DISTRICT". Assistant Professor in Department of PSM. Ananta Institute of

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ABSTRACT Background: Malaria is a life-threatening disease and is caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. In 2015, 91 countries and areas had ongoing malaria transmission. Between 2010 and 2015, malaria incidence among populations at risk (the rate of new cases) fell by 21% globally. In that same period, malaria mortality rates among populations at risk fell by 29% globally among all age groups and by 35% among children under 5. [1]Sub-Saharan Africa carries a disproportionately high share of the global malaria burden. In 2015, the region was home to 90% of malaria cases and 92% of malaria deaths. [1]

Aims & Objectives: The present study was undertaken:-

1. To know prevalence of malaria.

2. To know month-wise trend of malaria.

Materials and methods: This is an Institutional based study and has been conducted in CHC, PHCs, and Sub-centers of Baori Block of Jodhpur District of Rajasthan from 1stJanuary 2015 to 31st December 2015. **Results:** During our study period of 12 months, a total of 16969 active and 3542 passive (Total: 20511) blood Smears were collected and examined. Out of this six cases of malaria were confirmed. In all the six positive cases the parasite of plasmodium vivax were detected. No other species of plasmodium was reported during the study period. Out of this one case was reported in April, 2 in July, 1 each in August September and October 2015. Forty percent (2) of the positive cases were females and sixty percent (4) were males.

KEYWORDS : Malaria, Plasmodium Species, Blood Smear.

Introduction: Malaria is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected female *Anopheles* mosquitoes, called "malaria vectors." There are 4 parasite species that cause malaria in humans, and 2 of these species – *P. falciparum* and *P. vivax* – pose the greatest threat. *P. falciparum* is the most prevalent malaria parasite on the African continent. It is responsible for most malaria-related deaths globally. *P. vivax* is the dominant malaria parasite in most countries outside of sub-Saharan Africa.

In India 60 to 65 % of the infections are due to P. vivax and 35 to 40% due to P. falciparum. [3] Only few cases of P. malariae have been reported from Orissa and Karnataka. The life cycle of the malaria parasite comprises of an endogenous asexual phase (schizogony) with multiplication in the human host and an exogenous sexual phase (sporogony) with multiplication in certain anopheles mosquitoes. The minimum time from infection by mosquito bite until the first appearance of the parasite in RBC is termed as the prepatent period. The incubation period which is characteristic of each species is the time interval from infection to appearance of clinical symptoms which is when parasitaemia reaches a sufficient density and is usually two days longer then the prevalent period. Incubation period ranges from 8 to 21 days depending on species, host immunity and climatic conditions. The asexual life cycle of parasite is completed in human host, and for all species of malaria parasite is essentially the same, except that life cycle of P. falciparum and P. malariae do not have the persistent tissue phase (Hypnozoite stage). Schizogony is repeated until the increasing immunity or chemotherapy inhibits parasitaemia. Schizogony periodicity is characteristic for each species. Usually at least two cycles of schizogony in the blood must elapse before sexual forms appear in

human malaria parasites other than in the P. falciparum in which gametocytes appear in peripheral circulation after the tenth day of patency. Recrudescence is renewed manifestation of infection due to the survival of erythrocytic forms as seen in P. falciparum (Pf.) and P. malariae. Relapse is renewed manifestation of infection arising from the survival of hypnozoites either at relatively short intervals or after long periods. In human malaria relapses are confined to P. vivax (Pv.) and P. ovale. Sexual Cycle (Exogenous sexual phase) of the parasite is completed in female anopheles. The cycle is completed between 7 to 15 days depending upon the species. Antigenic diversity is present among different malaria parasite species and within a species either between or within a geographical area. Among P. falciparum blood stage antigens, there is a great diversity both between geographic areas and within the same area. In the course of a single infection antigenic variations have been demonstrated in P. falciparum. Virulence is expressed by the severity of acute disease in the nonimmune. Virulence differs greatly between species. There are reports of differences in virulence within species. Pf. can cause severe and complicated malaria and mortality. Response to anti-malarials varies greatly between and within the species both spontaneously and under drug pressure. There are about 400 species of an opheline mosquitoes throughout the world, but only 60 species are vectors of malaria. In India 9 species out of 45 anopheline species have been incriminated as malaria vectors. The capacity of the vector to transmit malaria results from the interaction between the environment, both natural and man-made and genetically determined characteristics

Aims & Objectives: The present study was undertaken:-1. To know prevalence of malaria. 2. To know month-wise trend of malaria. **Study design and setting:** This is an Institutional based study and has been conducted in CHC, PHCs, and Sub-centers of Baori Block of Jodhpur District of Rajasthan from 1st January 2015 to 31st December 2015.

Materials and Methods:- Study Population: All the population of Baori Block of Jodhpur District of Rajasthan. The mid-year population of Baori Block of Jodhpur district in 2015 was 202453. There is one community, five Primary Health Centers and forty five sub-centers in Baori Block. Thin and thick blood smears were collected form the suspected febrile patients and contacts of confirmed positive patients by means of active as well as passive surveillance. The slides were examined in the laboratory. Data were collected from these institutes and were analyzed using excel and SPSS software.

Result:-During our study period of 12 months, a total of 16969 active and 3542 passive (Total: 20511) blood Smears were collected and examined. Out of this six cases of malaria were confirmed. In all the six positive cases the parasite of plasmodium vivax were detected. No other species of plasmodium was report during the study period. (Table No.1) Out of this one case was reported in April 2015, two cases in July 2015, one each in August, September and October 2015.

Table No. 2 shows that sixty percent (4) of the positive cases were reported from males and forty percent (2) were reported in the females. There was no malaria positive case in the children less than 4 years of the age. In the 4 to 15 years age group one male and one female child was found to be malaria positive.

Table No.1

Month wise collection of blood smears and results of Baori Block of Jodhpur District during 2015.

S.No.	Month	Blood	P. Vivax	Р.	Total	Death due to
		Smears	+ve	Falciparum	Positi	malaria.
		Collected		+ve	ve	
1	Jan.	1258	0	0	0	0
2	Feb.	1449	0	0	0	0
3	March	1233	0	0	0	0
4	April	1371	1	0	1	0
5	May	1556	0	0	0	0
6	June	1743	0	0	0	0
7	July	2294	2	0	2	0
8	August	2059	1	0	1	0
9	Sept.	1859	1	0	1	0
10	Oct.	1476	1	0	1	0
11	Nov.	1449	0	0	0	0
12	Dec.	2764	0	0	0	0
Total		20511	6	0	6	0

Table No.2

Age and Sexwise distribution of Malaria positive cases.

S. No.	Month	0 to 4	>4 to 15	15 to 15+	Total				
		yrs.	yrs.	years					
		М	F	М	F	М	F	М	F
1	Jan.	0	0	0	0	0	0	0	0
2	Feb.	0	0	0	0	0	0	0	0
3	March	0	0	0	0	0	0	0	0
4	April	0	0	0	1	0	0	0	1
5	May	0	0	0	0	0	0	0	0

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6	June	0	0	0	0	0	0	0	0
7	July	0	0	0	0	1	1	1	1
8	August	0	0	0	0	1	0	1	0
9	Sept.	0	0	1	0	0	0	1	0
10	Oct.	0	0	0	0	1	0	1	0
11	Nov.	0	0	0	0	0	0	0	0
12	Dec.	0	0	0	0	0	0	0	0
	Total	0	0	1	1	3	1	4	2



DISCUSSION:

Malaria is a complex disease and various factors influenced by human activities and natural calamity like excessive rainfall, flood, drought and other disasters have great bearing on mosquito genic conditions leading to increased potential for malaria transmission. Like any other disease, natural transmission of malaria depends on the presence of, and relationship between the three basic epidemiological factors: the agent, the host and the environment. While the malaria parasite is the true agent of infection, the female anopheles mosquito is the agent of transmission.The environment is considered from three aspects; physical, biological and socioeconomic.[3]

In India Malaria is a public health problem in several parts of the country. [1] 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. Passive surveillance of malaria is carried out by PHCs, Malaria Clinics, CHCs and other secondary and tertiary level health institutions that patients visit for treatment. Apart from that, nowadays ASHA- a village volunteer is also involved in the programme to provide diagnostic and treatment services at the village level. [1] In our study maximum number of the cases was reported during the rainy season of the year due to availability of breeding sites.

Prevalence of malarial parasitic infection in our study was found to be very low (0.0029%). Only *Plasmodium vivax* species were found in our study (100%). Maximum prevalence between July to November with a peak in July. Malaria occurred in all age groups with maximum prevalence in adults. There is a wide variation of reports of prevalence of malarial infection in India and other countries. This can be due to differences in geographical and climatic condition which affect mosquito breeding, socio-economic conditions of patients, knowledge about healthcare and public healthpractices.

Prevalence of malarial infection in our study was very less, Karlekar et al. [16] from Gadchiroli (Maharashtra) reported prevalence of 2.10% and 4.28% respectively. This difference could be due to seasonal variation and other reasons.

Male to female ratio in our study was 2:1, which is similar to Karlekar SR et al. [16] from Gadchiroli (Maharashtra) who have reported it to be reported 2:1. The difference in M: F ratio could be due to various

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reasons like movement of males in wider areas, more chances of mosquito bites and some unknown inherent susceptibility.

CONCLUSION:

Malaria, a disease of antiquity, has proved to be a formidable deterrent to the cultural and socioeconomic progress of man in the tropical, sub-tropical and monsoon prone zones of the world. History is replete with instances of devastation caused by this disease. Wide distribution and its intensity of transmission in India were important factors for slow economic, scientific and industrial progress in the country during last two centuries. However, towards the end of the last century, when the biological characteristics of vector-borne diseases began to be unraveled through pioneering research initiated by Sir Ronald Ross, the mechanism of transmission of human malaria began to be revealed. With the combined efforts of WHO, Govt. of India, NVDCP and other agencies, development of new anti-mosquito agents, new anti-malarials, protection of mosquito bite by means of personal protection with insecticide treated bed nets and other self-protective measures along with the source reduction by means of suitable environmental modification have stabilized morbidity and mortality due to malaria. But more efforts are needed in this sector.

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