The Etiology of Febrile Illnesses Patients Visited at Punagam PHC, SURAT. India

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Febrile illness is problem of significance especially in malaria endemic areas of tropical and sub-tropical regions. Also now a day's malaria and other vector borne diseases remain major health problem in the world. Malaria is one of the worse affections that make of victims around the world. *Plasmodium vivax* malaria is found all over the world and is potentially affects larger number of people than *plasmodium falciparum*. A cross sectional study was conducted during January 2015 to October 15 at Punagam PHC determine the etiological agents of febrile illnesses among of measure risk of malaria. Blood sample was collected form enrolled patient and examination in laboratory for investigate malaria infection patient. Then find out positive malaria cases, this data was analyzed by using incidence risk of malaria and student test t. 433 positive cases of malaria out of 5898 is suffering from febrile illness is passive case detection proportion is 7.341. Out of this 0.85% (369/433) of *P.vivax*, 0.13 %(60/433) of *P.falciparum* and also this study including nomads patient among of this 0.009 (4/433) of *P.vivax* and 0.04(20/433) of *P.falciparum*. The measure the incidence risk of malaria is 7.73 % (433/5597). Incidence risk (proportion) *P.vivax* is 6.59 %, 1.07 % is *P.falciparum*. Also the data analyzed by student t test, *P.vivax* SD=22.0 and *P.falciparum* SD=13.2 at 5 degree of freedom and t value is 4.98 is greater than 2.015 is table value at 5%level of significance. Our finding indicated febrile illness is burden is still challenging particularly disease and *P.vivax* is most common incidence risk than *P.falciparum* at Punagam.

Key word - *Malaria infection, P.vivax, P.falciparum, febrile illness, incidence risk, malaria risk, student t test.*

I. INTRODUCTION

Febrile illnesses remain poorly characterized in many parts of the world and its challenges for the diagnosis, treatment and public health responses to endemic and epidemic disease (Black R.E., et al 2003). Malaria, acute bacterial infections such as pneumonia, typhoid, typhus and relapsing fever are the major causes of morbidity and mortality in resource poor countries. Since AFIs and febrile illness have similar sign and symptoms, diagnosis and management of malaria and other causes of fever remains challenging (Lubell Y . 2011). Malaria is probably the most famous one responsible for the biggest burned disease on the world. Approximately 1.1-2.7 million people die every year due to malaria globally (WHO 2010). *Plasmodium vivax* and *Plasmodium falciparum* are unevenly distributed across India. Severe malaria due to *P.vivax* infection is increasingly observed now a day's then *P.falciparum*. *P.vivax* is fever severe complications, this *spp*. more common in temperate zone, and is more wide spread than *P.falciparum* and rarely fatal. Burden of *P.vivax* malaria in the world has been calculated at 71-80 million cases reported South East Asia Region and western pacific countries contributed 42 million cases (Alilio et, al., 2004). Malaria dengue and other vector borne disease were estimated to account for 1.6% of India's total disease burdens (WHO 1998). *P.vivax spp.* across around 44 million km^2, approximately a third of earth land. India alone contributes nearly half (46%) of the global population at risk and two thirds of those are at stable risk (Gething et. al., 2012). Last few year many researchers focus on clinical and epidemiological behavior of *P.vivax* (Bassat et. al., 2011; Antinori et. al., 2012). Historically evidence of infectious *P.vivax* has been the major infecting species; however, over the past several years, *P.vivax* cases have decreased the ratio of *P.falciparum* versus *P.vivax* malaria was 0.41 in 1985, gradually increasing to 0.60 by 1995 (Singh et.al., 2004 a, b) and shifting to 1.01 by 2010 in India. Most effective and important strategy of malaria control is "early diagnosis and prompt treatment" and the microscopy of well stained thick and thin smear by skilled technician has remained the gold standard for distinguished malaria parasites diagnosis (Das et al. 2004). The present study was carried out to find out incidence of malaria by doing periphery blood smear and examination.

II. MATERIAL AND METHODS

In this study were 5898 febrile illness patients, clinically suspected for malaria, who visited outpatient department (OPD) of the Health Center, with history of fever or no, and their fever at last 1 to 8 days or above. The present study was conducted to measure the incidence proportion, and student t test.

III. CLINICAL AND LABORATORY DIAGNOSIS

Trained health staffs took anthropometric measurements, recorded the common symptoms associated with febrile illnesses. Fifty five hundred ninety seven enrolled patients periphery blood sample was collected by using universal precaution while preparing the thick and thin blood smears for malarial parasites. Smear was stained by Giemsa stained for microscopic examination observer under oil immersion objective. Thick smear were used to confirmed malaria and to count parasite/μl. Smear were considered negative , if no parasite were observe in 200 consecutive fields of thick smear in oil immersion objective. Also thick smear used to easily distinguished malaria parasite

IV. METHOD OF DATA ANALYSIS

Descriptive study done by comparison of two method incidence risk and student t test.

Table: no. 1- Distribution of positive malaria cases from January 15- October 15

Collection of Blood Sample	Positive cases of Malaria	*P.vivax*	*P.falciparum*
5597	433	369	60
	7.73%	0.85%	0.13%

Table no.2 –Incidence risk of malaria from January-15 to October 15

Collection of Blood Sample	*P.vivax*	*P.falciparum*
5597	369	60
	6.59%	1.07%

Table no.3 –Incidence risk of malaria of nomads' people from January-15 to October 15

Collection of Blood Sample	*P.vivax*	*P.falciparum*
5597	4	20
	0.071%	0.35%

Hypothesis

Null hypothesis- Both species have not different infection.

Alternative hypothesis- Both species have different infection.
The hypotheses for this test follow

$H_0 = \mu_1=\mu_2$ v/s $H_1 = \mu_1\neq\mu_2$

Table no.4 –summary the table of student t test January-15 to October 15

	P.vivax	*P.falciparum*
Mean	92.3	20.0
Sample standard deviation	22.0	13.2
Sample size	4	3
Degree of freedom	5	5
Median	86.0	25.0

Action – Student t test value is 4.98 is greater than the critical table value, t=2.015 observe 5 degree of freedom at 5%level of significance .So the null hypothesis is rejected.

Implication-Above figure shows the critical areas and the observed t value. Note that the compare figure which is enough to cause to reject the null hypothesis and accept the alternative hypothesis. Their conclusion is that there is significant difference their infection.

V. DISCUSSION OF FINDINGS

In this study were 5898 febrile illness patients, clinically suspected for malaria, who visited outpatient department (OPD) of the Health Center, with history of fever or no, and their fever at last 1 to 8 days or above, for collection of passive case for diagnosis of malaria. 433 positive cases of malaria out of 5896 is suffering from febrile illness is passive case detection proportion. Among febrile illness patient 5597 person in the population at the start of the observation period, out of 369 person suffering form *P.vivax* their incidence risk is 6.59 %, 1.07 % incidence risk of *P.falciparum*. Incidence risk of *P.vivax* in nomads' people is 0.071% and 0.35% incidence risk of *P.falciparum.* Nomads' people are major reservoir and transmission of malaria. Incidence proportion is compared with student t test t test value is 4.98 is greater than the critical table value, t=2.015 observe 5 degree of freedom at 5%level of significance, and p value is less than 0.05,(p=0.0042), indicated accepted alternative hypothesis.

VI. CONCLUSION

Febrile illness is problem of significance for diagnosis of many diseases. The present study indicated high incidence risk of *P.vivax* then *P.falciparum* in community of Punagam. Because so many construction site done, many nomads' people and one canal pass through punagam its effective for transmission of malaria. Sporogony of P.vivax in vector anopheles mosquito is shorter approximately 10 days then *P.falciparum* (12days).

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