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Research Article

Characteristic and trends of malaria in Surat district of Gujarat: a hospital based study

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ABSTRACT

Background: Malaria is a major health problem and infects many individuals despite of various efforts to control it. The present study was aimed to observe characteristics of malaria, seasonal variation and prevalence of malaria in our region.
Methods: This retrospective study was conducted in our institute from period of January 2012 to December 2012. All the fever cases undergone investigations for malarial parasites were included in present study for defined time period. All the laboratory data of the patients having fever were retrieved from the Pathology Laboratory of our institute.
Results: out of total 32674 reports studied 4907(15.01%) were positive for malaria with overall Slide positivity rate and slide falciparum rate were 15.01% and 38.29% respectively. Incidence of malaria occurs throughout year with increased incidence of P. falciparum in monsoon.
Conclusion: In the present study incidence of malaria was higher in monsoon in comparison to other seasons. But throughout the year no declining trends in incidence of malaria was observed. P. vivax malaria was more commonly observed in our study but incidence of P. falciparum increased in monsoon.

Keywords: Malaria, Seasonal trends, Characteristic

INTRODUCTION

Malaria is one of the oldest infectious diseases and contributes to be a major health problem globally. According to WHO approximately 219 million cases of malaria occurs annually with 6,60,000 death in 2010 with 80% of estimated death occurs in just 14 countries. India contributes 75%-77% of total malaria cases in Southeast Asia region. 95% of the population of moderate to high risk of malaria in SEAR is living in India and highest numbers of death were reported from India.[1] In India malaria is highly endemic in most regions.[2] The causative agents in humans are Plasmodium Falciparum, Plasmodium Vivax, Plasmodium Ovale and Plasmodium Malariae. From these four protozoa P. falciparum and P. vivax contributes most of cases of malaria in India. Malaria is commonly influenced by external forces like climate, season, temperature and socioeconomic status.[3] Recent study shows that incidence of P. falciparum is increased in India.[4]

In India the problem is present not only in rural population but also in urban population. With this prospect the present study was carried out in our institute which crater major urban as well as rural population for tertiary care. The objectives of this study were to find out incidence of malaria, incidence of type of malaria and seasonal variation of malarial cases.

METHODS

This retrospective study was conducted in our institute from period of January 2012 to December 2012 after obtaining permission from institutional ethics committee. This study was carried out in the tertiary care level hospital in Surat City. All the fever cases undergone investigations for malarial parasites were included in present study from defined time period. All the laboratory data of the patients having fever were retrieved from the Pathology Laboratory of our institute. All the data were entered in excel spread sheet 2007 according to months and statistical analysis was carried out.

RESULTS

Total 32674 patients having fever were included in the present study and all findings are mentioned in table 1. In present study overall slide positivity rate was 15.01% and slide falciparum rate was 38.32%. P. falciparum comprised of 38.32% of cases while P. Vivax comprised of 69.68% cases of malaria. Mixed infection of P. Vivax and P. Falciparum was seen in 1% of cases. The incidence of malaria was higher in rainy season (June to October) as compared to other seasons as shown in table no. 1. Incidence of P. Vivax was seen throughout year but in rainy season incidence of P. falciparum is higher than seen in rest of seasons.

Table 1: Incidence of malaria with its indices.

Sr. No.	Month	Total smear	Total Pos. (SPR)	P. Vivax %	P. Falciparum %	Mixed Infection
1	January	1689	97(5.74%)	53(54.63%)	43(44.32%)	1(1.05%)
2	February	1713	108(6.34%)	88(81.49%)	20(18.51%)	0
3	March	1979	166(8.38%)	153(92.17%)	12(7.28%)	1(0.60%)
4	April	1757	248(14.11%)	244(98.39%)	2(1.61%)	0
5	May	2077	333(16.03%)	323(97%)	7(2.10%)	3(0.90%)
6	June	2292	398(17.36%)	365(91.70%)	33(8.30%)	0
7	July	3615	585(16.18%)	483(82.57%)	98(16.75%)	4(0.68%)
8	August	4450	844(18.96%)	515(61.01%)	318(36.67%)	11(1.30%)
9	September	3709	685(18.46%)	298(43.50%)	371(54.16%)	16(2.33%)
10	October	4162	908(21.81%)	303(33.37%)	594(65.41%)	11(1.21%)
11	November	3129	389(12.43%)	114(29.30%)	274(70.43%)	1(0.25%)
12	December	2102	148(7.04%)	40(27.02%)	107(72.98%)	1(0.67%)
Total		32674	4909(15.02%)	2979(60.68%)	1881(38.32%)	49(1%)

Our present study showed that slide positivity rate in rainy season was 18.53% and in non rainy season was 10.25% which suggest that higher SPR was observed in rainy season. Similarly SFR was also higher in rainy season (7.76%) in compared to non rainy season(3.21%), these observations suggest increased incidence of malaria and P. falciparum in rainy season. Monthly trends of various malarial parameters are shown in figure 1.

As Shown in figure 1 all malarial parameters are follows the seasonal trends with rise in SPR from5.74% (January) to 21.81% (October). Pf rate and SFR were highest in month of October (14.28%) and December (72.98%) respectively. P. Vivax was more commonly seen in non rainy season with peak in April month with 98.39% of cases.

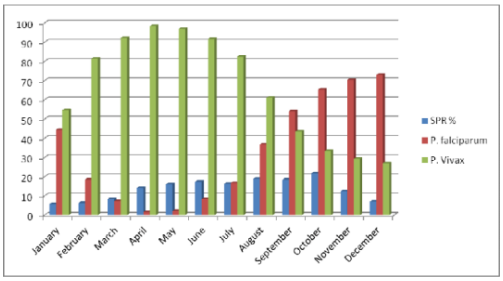

Figure 1: Monthly trends of various parameters of malaria.

DISCUSSION

Positive cases of malaria are reported throughout the year in India as a right combination of average temperature, rainfall and precipitation conditions persists across the country over all the seasons in some part or the other.[5] Our present study follows the national trend of malaria as it occurs in all months of the study period. The maximum numbers of positive cases were observed in rainy season (68.84%) with slide positivity rate of 18.53% mainly due to good rainfall, relative humidity of 60% and temperature between 20 and 30^0C and accumulation of rain water favor the spread of malaria.[6] Malaria cases started to increase from June and remains higher till October than gradually it decline from November to May. Similar results were observed by Gauravi Mishra, Pandey Sachin and B.G. Prajapati in their study.[6,7,8] In our country many other studies shows higher incidence of P. Vivax malaria than P. falciparum.[9,10] During the monsoon season P. falciparum constituted 45.93% of cases while P. vivax constituted 54.06% of cases and in summer season P. vivax cases were 68.58% and P. falciparum cases were 31.41%. So, slight increased incidence was observed in P. falciparum malaria similar results were observed by Sangeeta Gupta in their study.[11] Ranjana Kumary in their study showed positive correlation between incidence of malaria and rainfall.[12]

CONCLUSION

In the present study incidence of malaria was higher in monsoon in comparison to other seasons. But throughout the year no declining trends in incidence of malaria was observed. P. vivax malaria was more commonly observed in our study with peak in summer while incidence of P. falciparum increased in monsoon. The present study reveals that rainfall and ambient temperature plays a key role in the malaria especially in P. falciparum. These finding are alarming for us as despite of various programmes for prevention and control of malaria the incidence of malaria still remains major burden to our country.

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