



AN ELEVEN-YEAR EPIDEMIOLOGICAL STUDY REPORT OF MALARIA IN ADANA, TURKEY

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Introduction

Malaria is an intracellular protozoan infectious disease. Although it has an efficacious therapy, it is still one of the leading causes of death. More than 85% of malaria cases and 90% of deaths caused by malaria are seen in sub-Sahara African countries and the children under 5 years age are mostly effected(1) *P. falciparum* has the highest fatality rate among all subspecies of *Plasmodium*. *P. vivax* has a mild clinical course and the mortality rate is low. In our country all the domestic malaria cases are caused by *P. vivax* and we can see *P. falciparum* in imported cases (2). The disease begins with the inoculation of sporozoids by the *Anopheles* mosquito. The primary vectors are *A. sacharovi* and *A. superpictus* in Turkey (3).

In Turkey, the number of malaria cases decreased from 11381 to 9 (all of them are recurrence) from the year 2000 to 2010 due to an effective malaria control program. By the 99% percent reduction in the number of malaria patients, Turkey has been categorized as in "elimination phase" by World Health Organization. Cukurova is an endemic region for malaria in which Adana province is located. In this study we aimed to evaluate the epidemiologic data of the malaria patients in Adana province.

Materials and Methods

In this study, active and passive surveillance results collected by the Malaria and Tropical Diseases Education and Research Center of the Adana Public Health Directorship between the years 2002-2012 were evaluated retrospectively. For the diagnosis of malaria, thick and thin blood smears taken from finger pricks of patients were used. These smears were stained according to the Giemsa method and then examined by experienced biologists under oil immersion (x 1000) in the laboratory of Malaria and Tropical Diseases Education and Research Center. The patients were evaluated according to the age, gender, localisation of the patient, months, subspecies of parasite and whether the patient is imported or not. Chi square test was applied for the comparison of the number of the patient according to the age groups. P value under 0.05 is accepted as statistically significant.

References

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Results

Between the years 2002 and 2012, 534 504 blood sample were examined with active surveillance and 52.054 samples were examined with passive surveillance and 252 (0.04%) patients were diagnosed with malaria in Adana province. Thirty-two (%12.6) of the patients were diagnosed with active surveillance and 220 (87.4%) of the patients were diagnosed with passive surveillance. *P. vivax* was determined in 229 (% 90.9) patients and *P. falciparum* was determined in 23 (% 8.1) patients. The total number of blood samples and the determined *Plasmodium* subspecies according to the years are listed in Table.

YEAR	Number of blood samples	<i>P. vivax</i>	<i>P. falciparum</i>	TOTAL
2002	127668	133	0	133
2003	120114	44	0	44
2004	93476	25	0	25
2005	64422	8	0	8
2006	69832	4	1	5
2007	44010	3	4	7
2008	21941	5	0	5
2009	29744	1	1	2
2010	10738	1	5	6
2011	2688	2	8	10
2012	1925	3	4	7
TOTAL	586558	229	23	252

One hundred and forty-eight (58.7%) patients were male and 104 (41.3%) patients were female.

When the patients were evaluated according to the age groups, no patient was between 0-11 months, 7 (2.8%) patients were between 1-4 years of age, 15 (5.9%) patients were between 5-9 years of age, 27 (10.8%) patients were between 10-14 years of age and 203 (80.5%) patients were older than 15 years of age. The number of the patients older than 15 years of age was higher than the number of patients in other groups and this was statistically significant ($p < 0.05$).

Two hundred and fourteen (85%) patients were living in Adana province, 9 (3.5%) patients were from neighboring and 29 (11.5%) patients were imported from foreign countries.

All the imported cases were detected after the year 2006. Twenty tree of the imported cases were caused by *P. falciparum* and 6 of the imported cases were caused by *P. vivax*.

Conclusions

The most effective way of the controlling malaria in one region is prompt diagnosing and treatment of the patients who carry parasite. The most effective method for early diagnose and treatment is conducting active and passive surveillance (2). The success in malaria control in our country is a result of effective surveillance studies. Thus, due to national malaria eradication program which was accepted in 1957, the number of malaria cases decreased to 1263. But with the decrease in the surveillance studies and the traveling of seasonal workers from Cukurova region to the whole country, an outbreak of malaria occurred in the year 1977 and more than 115000 cases were reported(2). So the surveillance studies without any interruption especially in endemic regions like Cukurova and South East Anatolia, will allow sustainability of success in malaria control.