FREQUENCY OF MALARIA AMONG CHILDREN PRESENTING WITH ACUTE FEBRILE ILLNESS

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ABSTRACT

Objective: To determine the frequency of malaria among children presenting with acute febrile illness.

Material and methods: This was a descriptive cross sectional study conducted at department of Pediatrics, Hayatabad Medical Complex, Peshawar from February 2017 to November 2017. Acute febrile illness was defined as sudden onset of fever (more than 101oF) for the last 48 hours as detected. Children up to the age of 15 years were included in the study. The purpose, risks and benefits of the study were explained to parents of all in-patients fulfilling the inclusion criteria. Informed consent was obtained from those who agreed to participate in the study. After history & examination, 3 ml blood from all included children was sent to hospital laboratory for peripheral smear and demonstration of malarial parasite. All the above information was recorded in a predesigned Proforma. All the data were analyzed in SPSS 20.0. P value ≤ 0.05 was considered significant

Results: A total of 292 patients were recruited in this study. , 167 (57.20%) patients were male while 125 (42.80%) patients were female. The age range was from less than 1 year to 15 years, and Mean Age was 9 years. , 79 (27.05%) patients were up to 05 Years Age Group while 76 (26.03 and 137 (46.91%) patients were recorded in 6 to 10 and 11 to 15 Years Age Groups, respectively. 15 out of 292 (5.31%) children with acute febrile illness patients were found to have malaria. With regard to frequencies and percentages for type of malarial parasite, 05 (1.71%) patients had vivax while 10 (3.42%) had falciparum malaria.

Conclusion: The frequency of malaria in children presenting with acute febrile illness was similar to that reported in regional studies on the topic.

INTRODUCTION

Malaria is endemic in over hundred countries, making it a significant public health problem. Around 2.6 billion people are vulnerable to get Plasmodium vivax (p. vivax) malaria, with 130-435 million projected to get infected with P. vivax infection annually.1

Half of the world's population is at risk from malaria. Each year almost 250 million cases occur, with 781,000 deaths reported in 2009 globally mostly in children less than 5 year of age. In World Health Organization's Southeastern Asian Region; 1.2 billion people, majority living in India; are exposed to the risk of malaria. 2

Vivax malaria, often called as 'benign tertian malaria' is believed to have a benign clinical course as compared to falciparum malaria. However, recent literature have recognized p. vivax infection as capable to cause all complications linked to falciparum malaria.3-6

Fever is a common reason for admission in pediatric population worldwide, with substantial morbidity and mortality.7 In developing countries, the situation is made worse by poorer rates of vaccinations, untreated co-morbidities and late presentation.8 Fever has a variety of causes including infections, and it may present with vague symptoms to healthcare facilities with limited laboratory services.9,10 Guidelines for managing non-specific fever are available but seldom based on understanding of the predominant causative organisms in the region.11,12

The present study is designed to find out the frequency of malaria in children presenting with acute febrile illness. The global burden of malaria is not only on the rise but also the burden is highly variable from one population to another. This compelled us to generate the local evidence of malaria among our febrile children to add further knowledge to the existing literature and to suggest future recommendations regarding its control keeping in view the results of the present study.

MATERIAL AND METHODS

This was a descriptive cross sectional study conducted at Department of Pediatrics, Hayatabad Medical Complex, Peshawar. 292 patients were studied during a period of 10 months using consecutive, non-probability sampling technique. The purpose, risks and benefits of the study were explained to parents of all patients considered for inclusion in the study, and they were assured that the study is purely being conducted for research and data publication. Informed consent was obtained from all those who agreed to participate in the study.

Using aseptic measures, 3 ml blood from all included children was sent to hospital laboratory for peripheral smear and demonstration of malarial parasite under the supervision of a microbiologist with at least 5 year experience.

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RESULTS

Out of total 292 patients, 167 were males while there were 125 female patients. Mean age of study population was 9.0 ± 4.3 years. 15 out of 292 (5.31%) children with acute febrile illness patients were found to have malaria. Frequency and percentages for the presence of malaria are presented in table No. 1. With regard to frequencies and percentages for type of malarial parasite, 05 (1.71%) patients had vivax while 10 (3.42%) had falciparum malaria. (Table No. 2).

TABLE No. 1 FREQUENCY AND PERCENTAGES FOR MALARIA (n=292)

MALARIA	FREQUENCY	PERCENTAGE
YES	15	05.31%
NO	277	94.86%

TABLE No. 2 FREQUENCY AND PERCENTAGES FOR TYPE OF MALARIAL PARASITE (n=292)

TYPE OF MALARIAL PARASITE	FREQUENCY	PERCENTAGE
VIVAX	05	1.71%
FALCIPARUM	10	3.42%

DISCUSSION

This study was aimed at determining the frequency of malaria in children presenting with acute febrile illness to a tertiary care hospital. It concluded that 5.3% of children with acute febrile illness were infected with malaria as determined by thick and thin smears. Our result is consistent with the study conducted by Memon IA where 5% out of 1200 children with fever were determined to be suffering from malaria.13 Similarly, studies carried out by Hozhabri S and Junejo AA have shown frequency of malaria in acute febrile children as 5.9% and 8.8 %, respectively.14,15 But our findings are contrary to the findings of some other researchers. In a study conducted by Shaikh S, only 2 % children were found to positive slide microscopy for malaria.16 The reason for the lower frequency can be the fact that the study population included only those children who presented to outpatient department. Similarly, Mehmood T and Shaikh AS have, respectively, shown up to 13.3% & 17% children with acute febrile illness to be suffering from malaria.17,18 These higher frequencies may reflect geographic variation in the prevalence of malaria and better microscopy expertise for detecting malaria at their centers.

Concerning the type of malarial parasites, Plasmodium falciparum was the predominant plasmodium species, detected in 10 out of 15 positive cases (67%). Rest of the cases were caused by Plasmodium vivax (33%). There is a high degree of disagreement among researchers regarding the species wise distribution of malarial parasite in children with acute febrile illness. In a study published in 2000, Hozhabri S determined plasmodium falciparum as the dominant species in children with malaria, accounting for 65% cases.14 Similarly, Shaikh AS, Akbar JU and Memon IA have documented Plasmodium falciparum in 65.2%, 65% and 85% children with malaria, respectively.13,18,19 In contrast, Mohammad J in his study published in 2014 found Plasmodium vivax as the predominant malarial species.20 Moreover, Junejo AA, Shaikh S and Kamal K have recognized plasmodium vivax in 89.4%, 70% and 66.8% children with malaria.15,16,21 The variation between species subtypes of this scale may be explained by differences in geographic distribution of malarial parasites. Moreover, vivax malaria, unlike falciparum, can relapse. The relapses of vivax malaria in a community where vivax malaria is prevalent may also increase the percentage of vivax positive cases in malaria patients in any research study carried out in that community.

Keeping in view the results of our study and the literature mentioned above, it is clear that the global burden of malaria is not only on the rise but it is highly variable from one population to another in Pakistan. This study did generate sufficient local evidence regarding frequency of malaria and its subspecies in children from nearby communities. Moreover, new diagnostic techniques can be employed along with thick and thin smears in further studies to improve the diagnosis of malaria and decrease the inter observer bias in reading thick and thin smears alone.

CONCLUSIONS

Malaria is prevalent in our population and it should always be considered in any child with acute febrile illness. Further research on the subject employing new diagnostic techniques in addition to smear examination will further improve the knowledge database about burden of malaria.

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