Chioroquine Resistant Malaria in Children

Pages with reference to book, From 98 To 100

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Abstract

Malaria remains a major cause of childhood morbidity and mortality. The changing susceptibility of Malaria parasites to drugs means that it is no longer possible to make global generalization about its chemotherapy. This study was conducted in District Hospital, Mirpurkhas, Sindh.Over sixteen months period four hundred and six patients had slide documented malarial parasites. Sixty-five percent had plasmodium falciparum, 33% plasmodium vivax and 2% had both. Approximately, 81% responded to chioroquine while 19% were non-responders. Chioroquine non-responders were treated with halofan-trine or sulfadoxine - pyrimethamine combination. P. falciparum being the dominant species and its emergence of resistance to Chioroquine, in life threatening and serious forms of malaria should be treated with parenteral quinine. Antimalarials other than Chioroquine should be reserved for non-responders. Therefore, rational use of drugs is essential (JPMA 48:98,1998).

Introduction

Malaria is one of the world's oldest life threatening disease and the most devastating infection with 300-500 million clinical cases each year[1]. Malaria remains a major cause of childhood mothidity and mortality, particularly from Plasmodium Falcipamm. Seventy-five percent of cases of P. Falciparurn are concentrated in nine countries[2]. The most worrying aspect of malaria infection is change in dominant species from P. vivax to P. falciparum[3-5]. The emergence and spread of resistance has not only been reported to Chioroquine but also to other antimalarials. Chloroquine resistant P. Faiciparurn was first observed in 1959 inLatin America and in 1962 in Thailand[6]. Resistance of malarial parasite to conventional antimalarial drugs has spread to more than 100 countries and about 2 billion people are at risk of infection[7].

In the past, various methods for controlling and eliminating malaria have been applied without success. Malaria in children does not present with "classic clinical pattern". The varying, non-classic pattern of malaria, drug resistant infection and presentation with severe forms in children has led to development of standard criteria for the recognition and management of severe malarial disease[8]. The present study was done to ascertain the dominant species of malaria and to document Chioroquine resistant inalana in paediatnc population.

Patients and Methods

This study was conducted in Civil Hospital, District Mirpurkhas, Sindh, Department of Paediatrics from September, 1991 to December, 1992. All patients (age 0-15 years) presenting with fever and clinically suspected malaria were included in the study. Patients with cerebral malariawere treated with intravenous quinine per standard recommendation[9] and were excluded. On entty complete examination was perfonned and a thick and thin blood smear prepared and stained[9] by a formally trained malariatechnician.

Children with positive peripheral smears for malarial parasites (MP+) were treated with oral

Chloroquine regimen (25 mg/kg/total dose) divided as 10 mg/kg 1st dose followed by 5 mg/kg after 6-8 hours, then rest of the two doses of 5 mg/kg each on second and third days. The compliance of drug was monitored by one of the investigator at subsequent visits. Patients were followed daily either as out-patient or in-patient by the same investigator with special reference to fever, splenomegaly, anaemia, drug reaction, any other complications and signs of improvement.
Clinical improvement viz: fever defervesence with or without splenic regression were labelled as successfully treated whereas, patient with persistence of fever beyond 48 hours had repeat M.P. smears done and if found positive, were categorized as Chioroquine resistant (R III)[9]. Patients with Chioroquine resistance were treated with alternative drug like HalofantrinelO or Sulfadoxine - pyriniethaminc combination in standard[9] doses. The parents of children included in the study were informed about the objective of the study and consent was taken.

Results

During the study period of 16 months, a total of 1760 patients (11%) were clinically suspected as malaria out of a total attendance of 16010 during the period in paediatric department at District Hospital Mirpurkhas. Sindh. A total of 430 patients fulfilled the diagnostic criteria of malaria but 24 cases were excluded because of cerebral malaria, remaining 406 patients were treated with oral Chioroquine as per described regimen.
Of 406 children, 192 (47.2%) were in the age group of 1-5 years, 103 (25.4%) in 1-12 months, 101 (24.8%) in 5-15 years and 10(2.5%) under 1 month. Frequency of Plasmodium falciparum infection in 2()3 (64.8%) was significantly (P<0.00 1) more thanPlasmodiumvivax in 136(33.5%). Three hundred and twenty-eight (80.85) children responded to oral chloroquine as compared to 78 (19.2%) non-responders (P<0.00 1) who were treated with either Halofantrinc or Sulfadoxine Pyriinethaniine combination.

Discussion

Malaria, the most important of all the parasitic infeetions and an important cause of morbidity in malarious areas, being more severe in the poorest countries and among populations livingunderdifficultand impoverishedconditions. enhancing the vicious circle of disease-poverty-disease.
Pakistan is a tropical agricultural country with urbanized population of 35%[11]. Hence 65% of the population is living in rural areas with wide-spread irrigation system. Annual floods in the rivers coupled with monsoon season and inadequate waste disposal all overthe country, offers a suitable scenario for malaria transmission. Mirpurkhas District of Sindh province, has the typical setup described above and is famous for the fruit farms especially mangoes. The problem is further compounded by a warm climate, massive population movements, inadequate health services, improper use of antimalarial drugs. limited resources and operational difficulties in implementing malaria control activities.
In our study, neonate and infants accounted for 27.8% of all cases of malaria. Children and pregnant women are more susceptible to the consequences of the infection[12]. Malaria is an uncommon illness during the neonatal period and early infancy because of the transplacentally acquired immunity from the mother (endemic malarious region), preponderance of fetal haemoglobin and deficiency of paraaminobenzoic acid in the breast mill.[13] Older children have usually developed some degree of immunity but the disease is still one of the most common cause of school absenteeism, over one third of primary school children having been reported to have had malaria during a single school term.

Overhalf of these children had two or more attacks typically missing a week or more of school with each attack[14].

Two species of malaria parasites prevalent in Pakistan are P. vivax and P. Falciparum. P. Vivax was formally the predominant species[15] but now the incidence of P. Falciparum has considerably increased. This changing scenario (of species predominance of P. Falciparum) has been reported over last decade by various workers[4,15,16,17].

In our study, P. Falciparum were 64.78% of total cases which is consistent with reports from WHO showing continuous rise in the incidence of P. Falciparum in Sindh, which gradually documents the disease burden of P. Falciparum from 50% in 1988 to 74% in 1989 amid 77% in 1990[18]. One possible explanation is that a high infection rate with P. Falciparum may suppress P. \\Tivax. Another may be that extensive use of chloroquine to treat clinically suspected cases of malaria suppressed the P. Vivax in the community, while Chloroquine resistant P. Falcipamm persisted[19].

This study proves that the Chioroquine non-response was 19.2 1% which shows that Chloroquine was effective in majority of cases. Pakistan has been considered to be free from drug-resistant falciparurn until 1981. when the first published20 report of chioroquine resistance was followed by a number of studies confirming this problem from various parts of the country[5,6,19,21,24]

It is P. Falciparwn and not P. Vivax which dominantly afflicts our population. Awareness of this change in species is important for all the clinicians to define their management strategies. It is important for epidemiological point of view, that Chioroquine which has been the drug of choice for treatment of malaria for many years, remains the drug of choice as validated by current data. Emergence of resistance is sufficient to warrant that life threatening and serious situalion should be treated with quinine parentcrally rather than Chioroquine, providing benefit of doubt to the patients as recommended by WHO for areas where Chloroquine resistance is documented. Use of other drugs as first line therapy, will further compound the problem of resistance and therefore, should be reserved only for non-responders.

Malaria parasite continues to play “the dodging game” with all drugs therefore rational use of drugs is necessary to avoid drug failure/complications and death. To overcome the malaria challenge, there is a need to make concerted efforts by all involved in health care delivery.

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