ORIGINAL ARTICLE

Comparative Efficacy of Combination Fansidar-Sulphate Quinine and Fansidar-Chloroquine in Mixed Malaria Infections of P. Falciparum - P. Vivax in Children

by

A. LIANDO and T.H. RAMPENGAN

(From the Department of Child Health Medical School, Sam Ratulangi University, Gunung Wenang Hospital Manado - Indonesia)

Abstract

From January 1987 until March 1990, 61 children suffering from mixed malaria infections of P. falciparum and P. vivax entered the Department of Child Health Medical School Sam Ratulangi University/Gunung Wenang General Hospital, Manado. Only 41 patients were evaluated as 20 patients did not fulfill the inclusion criteria.

Twenty patients were treated with fansidar-quinine (Group I), and 21 patients with fansidar chloroquine (Group II). In group II, the asexual form of P. vivax disappeared in 2 days after having been treated with fansidar-chloroquine. Conversely, in group I the asexual form of P. vivax disappeared after 5 days of treatment. Statistical analysis showed a significant difference ($p < 0.001$). No significant difference could be detected between the duration of asexual parasitemia of P. falciparum in these two groups ($p = 0.3085$). No statistically significant difference could be detected concerning the duration of fever and the length of hospitalization between these two groups.

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Introduction

The incidence of mixed malaria infections is greater in populations living in areas where transmission take place throughout the year and where any form of malaria control is either absent or barely existent (Pannompalam, 1984). Although the incidence is greater the information about the treatment regimen on mixed malaria infections is still insufficient.

In Malaysia, a regimen using chloroquine-dapsone plus pyrimethamine has been found to be effective in the treatment of mixed malaria infection, including the chloroquine resistant strain of P. falciparum (Pannompalam, 1984).

In Indonesia as far as we know the study about the treatment regimen for mixed malaria infections had never been reported yet.

Therefore, we tested the effectiveness of fansidar-quinine compared with fansidar-chloroquine in children suffering from mixed malaria infections caused by P. falciparum and P. vivax.

Materials and methods

A prospective study was done in 61 children who suffered from uncomplicated mixed malaria infections of P. falciparum and P. vivax. The age ranged from 6 months to 13 years; they were randomly divided into two groups. The characteristics of the two groups including sex, age, duration of fever before admission and density of parasites in the blood examination were relatively similar. The study was carried out in the Department of Child Health, Medical School Sam Ratulangi University/Gunung Wenang General Hospital in Manado, from January 1987 until March 1990.

The diagnosis was based on the clinical symptoms and microscopic parasitological examination of thick blood films with Giemsa stains. The criteria of resistance was as established by WHO : Standard field test or 7 days test (cited from Adhyatma, 1984). This test was performed on patients following the criteria :

- Blood film examination showed both asexual forms of P. falciparum and P. vivax on the first examination.
- Asexual parasite density on the first day maximally positive (+ + + +) with not more than 30 parasites on one field.
- The children were not in such a bad clinical conditions instead they had a fair enough general condition.
- They should be free from sulphone, sulfadoxine/pyrimethamine 4 weeks before admission and also free from chloroquine, quinine and tetracyclin for 14 days before admission.

Blood film was examined every day for 7 consecutive days, starting from admission day until the 7th day, with guideline for interpretation as follows : Negative (-) means no parasite (trophozoid) on 100 fields; positive (+) means 1-10 trophozoids on 100 fields; positive (+ +) means 11-100 trophozoids on 100 fields; positive (+ + +) means 1-10 trophozoids on one field and positive (+ + + +) means 11-100 trophozoids on one field.

The patients were divided into two groups with 2 treatment schedules.

Group I : The patients who were treated with pyrimethamine-sulfodoxin (fansidar) with the dose of pyrimethamine 1 mg/kg body weight, single dose and sulphate quinine 30 mg/kg body weight/day, divided into 3 doses, for 7 days, starting on admission day.

Group II : The patients who were treated with pyrimethamine-sulfadoxine (Fansidar), with the dose of pyrimethamine 1 mg/kg body weight, single dose and chloroquine base 10 mg/kg body weight, for three consecutive days starting on admission day.

Results

From 61 mixed malaria infection patients, only 41 patients were evaluated, as 20 patients did not fulfill the before mentioned criteria. In all 20 patients were evaluated for the combination of fansidar-quinine (Group I) and 21 patients were evaluated for the combination of fansidar-chloroquine. The response pattern for group 1 is shown in Table 1.

Table 1 : *Relationship between the treatment regimen of fansidar-quinine with the duration of parasitemia.*

Day	Asexual P. falciparum	Asexual P. vivax
o (on admission)	20 (100%)	20 (100%)
1st	9 (45%)	13 (65%)
2nd	8 (40%)	9 (45%)
3rd	3 (15%)	5 (25%)
4th	2 (10%)	1 (5%)
5th	1 (5%)	1 (5%)
6th	0 (0%)	0 (0%)
7th	0 (0%)	0 (0%)

The patients of the group I, which were treated with fansidar-quinine, asexual parasitemia of P. vivax disappeared after 5 days (6th day) of treatment. Asexual parasitemia of P. falciparum in this group also disappeared after 5 days (6th day) of treatment (Table 1)

In the patients of the group II, which were treated with fansidar-chloroquine, asexual parasitemia of P. vivax disappeared after 2 days (3rd day) of treatment and only 5 patients and 2 patients showed asexual P. vivax parasites on the 1st and the 2nd day of treatment, respectively. Asexual parasitemia of P. falciparum still appeared until 5 days (5th day) of treatment (Table 2)

Table 2 : *Relationship between the treatment regimen of fansidar-chloroquine with the duration of parasitemia.*

Day	Asexual P. falciparum	Asexual P. vivax
0 (on admission)	21 (100 %)	21 (100 %)
1st	7 (33%)	5 (23.8%)
2nd	5 (23.8%)	2 (9.52%)
3rd	4 (19.04%)	0 (0%)
4th	1 (4.76%)	0 (0%)
5th	1 (4.76%)	0 (0%)
6th	0 (0%)	0 (0%)
7th	0 (0%)	0 (0%)

Resistance to the treatment in these two groups were not encountered. Statistical analysis showed a significant difference between the response of asexual P. vivax to these two treatment regimens ($p < 0.001$). No statistically significant difference could be detected between the duration of asexual P. falciparum parasitemia in these two groups. Asexual P. falciparum still appeared until five days of treatment in both groups ($p = 0.3085$). No statistically difference could be detected between the duration of fever in the hospital and length of hospitalization between group I and group II (Table 3 and 4).

Table 3 : *The relationship between the treatment regimen and the length of hospitalization.*

Treatment regimen	Hospitalization days
Fansidar + Quinine	8.15
Fansidar + Chloroquine	7.90

Table 4 : *Relationship between the treatment regimen and the duration of fever.*

Treatment regimen	Duration of fever (days)
Fansidar + Quinine	2.78
Fansidar + Chloroquine	2.30

Discussion

In this study asexual parasitemia of P. vivax disappeared in 2nd (3rd day) after being treated with fansidar-chloroquine. Conversely in group I, asexual parasitemia of P. vivax disappeared after 5 days (6th day) of treatment. Statistical analysis showed a significant difference ($p < 0.001$). No significant difference could be detected between the duration of asexual P. falciparum parasitemia in these two groups ($p = 0.3085$).

Pannompalam (1984) reported a succesful result with a regimen using chloroquine-dapsone plus pyrimethamine, having been found effective in the treatment of mixed malaria infection, including chloroquine resistant P. falciparum.

It has been reported that chloroquine and fansidar resistant P. falciparum was found in Indonesia (Dakung et al., 1978; Hoffman et al., 1985; Pribadi et al., 1985; Verdager et al., 1976). In Manado the incidence of fansidar resistant P. falciparum was about 13.5% (Rampengan and Rampengan, 1988) and that of chloroquine resistant about 28.6% (Rampengan and Rampengan, 1989). But in this study the combination of fansidar-chloroquine was found to be effective in the treatment of mixed malaria infections caused by P. falciparum and P. vivax.

Pannompalam (1984) found in West Malaysia, that chloroquine was absolutely effective against the erythrocytic stages of P. vivax, P. malaria and a small number of strains of P. falciparum; fansidar was added in a single dose in order to eliminate chloroquine resistant P. falciparum.

In this study, the combination of fansidar-quinine was not found more effective for P. vivax infection if compared with fansidar-chloroquine. Reports in the literature do not seem to favour quinine as a suitable drug for the treatment of P. vivax infections (Pannompalam, 1984).

Concerning the duration of fever in the hospital and the length of hospitalization between group I and group II, no statistically significant difference could be detected though it might be caused by the small quantities of the samples.

The authors consider this study as a rough study, with a wide deviation/error. To minimize the deviation or error, it would be better to make the extended test to 28 days combined with in vitro tests.

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