REPORTE PRELIMINAR – SHORT REPORT

[*Global Theme Issue on Poverty and Human Development*]

Epidemiology of Plasmodium malariae *infections in Venezuela**

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Acta Científica Estudiantil 2007; 5(4):186-188.

Abstract

Plasmodium malariae occurs in various tropical regions throughout the world and causes low, yet significant, morbidity and mortality levels in humans. In present report we reviewed *P.malariae* infections epidemiology in Venezuela, 1995-2002. For this period a total 275,791 malaria cases were reported, corresponding 449 to *P.malariae* (0.16%[0.1-0.4%]). *P.malariae* cases annual reported mean was 45± 24.8/year (range 22-88). Although total malaria cases is increasing significantly (r^2=.5238, p=.018), *P.malariae* annual rates and incidence is varying non-significantly (p>.05). From total cases, only 3 were fatal (0.7%), 2 male adults and 1 female elder. *P.malariae* deaths represented 0.9% of malaria fatalities. *P.malariae* is commonly microscopically confounded with *P.vivax* and probably some cases really corresponded to *P.malariae*. Some studies have tried to determinate real *P.malariae* prevalence. In Asia, a total prevalence of *P.malariae* infection estimated by nested PCR reached 24.3% in individuals evaluated at northern, central and southern towns in Thailand along Myanmar border. In South America, i.e. Brazil, similar findings have been found using PCR, 10–12%, compared to 0-1.2% by thick blood smears. Oral CQ is choice treatment for uncomplicated *P.malariae* infections worldwide, although some reports suggest resistance in the Indonesian archipelago. Although rare, *P.malariae* complications could be life-threatening (i.e. quartan malarial nephropathy). Species misidentification potential impact on malaria treatment and control is now under discussion in Venezuela, due to unpublished reports indicating rates high as 15-20% of *P.malariae* in southern country.

Key Words: Neglected diseases, poverty, malaria, *Plasmodium malariae*, Venezuela.
(source: DeCS Bireme)

*This work has been presented partially at the XVIth International Congress for Tropical Medicine and Malaria, IVth European Congress on Tropical Medicine and International Health, VIIe Congrès International de la Société de Pathologie Exotique and Centenaire de l'Institut de Médecine Tropicale du Service de Santé des Armées, Marseille, France, September 11-15, 2005. Poster, P395.

Introduction

Plasmodium malariae occurs in various tropical regions throughout the world and causes low, yet significant, morbidity and mortality levels in humans. Unfortunately its epidemiological and clinical research, among other things, has been globally neglected. This species is prevalerte is the most deprivated area of the country, in the southern region of Venezuela (Bolivar and Amazonas).

In present report we reviewed *P.malariae* infections epidemiology in Venezuela during the period 1995-2002.

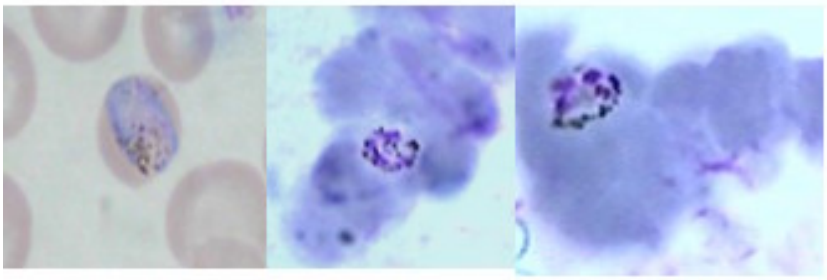
Methods

We have performed an epidemiological review of *Plasmodium malariae* cases in Venezuela during 1995-2002.

The identity of *P.malariae* was based on the following. Firstly, in contrast to red cells infected by *P.vivax* and *P.ovale*, where the parasitized red cells are larger than the uninfected normal ones, the infected red cells in this case in fact appeared smaller than the normal red cells. Secondly, the band form trophozoite (Figure 1) is the most characteristic of *P.malariae*, and is not seen in other species.

Thirdly, in the routine Giemsa staining, there is no "stippling" of the infected red cells, which is characteristic of other *Plasmodium* species, e.g. Schuffner's dots in infection with *P.vivax* or *P.ovale*, and Maurer's clefts in *P.falciparum*. Lastly but not least, the level of parasitemia is also much lower than with the other species.

Figure 1. *Plasmodium malariae* at microscopy.



Results

During 1995-2002, in Venezuela, a total 275,791 malaria cases were reported.

From those cases, 449 corresponded to *Plasmodium malariae* (0.16% [range, 0.1-0.4%]).

P.malariae cases annual reported mean was 45.0 ± 24.8 cases/year (range 22-88 cases/year).

Although total malaria cases is increasing significantly (r^2=0.5238, p=0.018), *Plasmodium malariae* annual rates and incidence is varying non-significantly (p>0.05).

From total cases, only 3 were fatal (0.7%), 2 male adults and 1 female elder.

Plasmodium malariae deaths represented 0.9% of malaria fatalities.

Discussion

Plasmodium malariae is commonly microscopically confounded with *P.vivax* and probably some cases really corresponded to *P.malariae*.

Some studies have tried to determinate real *P.malariae* prevalence. In Asia, a total prevalence of *P.malariae* infection estimated by nested PCR reached 24.3% in individuals evaluated at northern, central and southern towns in Thailand along Myanmar border. In South America, i.e. Brazil, similar findings have been found using PCR, 10–12%, compared to 0-1.2% by thick blood smears.

Although rare, *P.malariae* complications could be life-threatening (i.e. quartan malarial nephropathy).

Species misidentification potential impact on malaria treatment and control is now under discussion in Venezuela, due to unpublished reports indicating rates high as 15-20% of *P.malariae* in southern country.

The importance of *P.malariae* for the development of complications of *falciparum* malaria (e.g. severe anaemia) remains so far unknown. However, morbidity from *P.malariae* infections contributes to the excessive but preventable disease burden in many countries.

Co-infections of *P.malariae* with *P.falciparum* are common, and the diagnostic repertoire to differentiate between the species is limited.

Treatment decisions in many countries are overwhelmingly based on clinical criteria, and light microscopy plays a negligible role. An ideal anti-malarial will thus be cheap and well tolerated as well as highly effective not only against *P.falciparum* but also against *P.malariae* and *P.ovale*.

Oral CQ is choice treatment for uncomplicated *P.malariae* infections worldwide, although some reports suggest resistance in the Indonesian archipelago.

Other studies have supported the use of a 3-day course of artesunate in combination with other anti-malarials in future malaria control programmes.

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