

ARTICULO ORIGINAL CORTO – SHORT REPORT

**Clinical and epidemiological aspects related to the imported malaria
at the Hospital Victorino Santaella, Los Teques, 2000-2008***

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Abstract

Objectives: To describe the clinical and epidemiological aspects related to those diagnosed and admitted cases of malaria at the Hospital Victorino Santaella from Los Teques, Miranda, in the period January 2000-July 2008. **Patients and Methods:** A comprehensive review of all medical records with diagnosis of malaria that were hospitalized at our institution in the study period, with the objective to characterize the clinical and epidemiological aspects of this pathology acquired in endemic zones of the country, was done. **Results:** During the study period 20 cases of imported malaria were admitted. Mean age of patients was 26.45 years-old (± 17.63) (range 5-75 years-old), 40% of them were <18 years-old. Regarding gender, 50% were male. About their precedence, 50% returned from Sucre state, 15% from Bolívar state and 10% from Amazonas state. Clinically, 85% presents fever, 75% chills, 40% headache, 20% malaise, 10% myalgia, among other signs and symptoms. One patient was pregnant. Regarding the etiology, 100% of these cases were due to *P. vivax* (diagnosis was made by microscopy with Giemsa stain). All cases were successfully treated with chloroquine and primaquine as is established in the national guidelines for malaria treatment. **Conclusions:** Imported malaria represents an important public health problem not just in non-endemic countries where their tourists travel to endemic countries with the possibility to return having acquired this tropical infection, but also in countries such as Venezuela with endemic regions where populations from non-endemic zones, as Los Teques, could travel to those regions and returned infected, many times being lately diagnosed due to the lack of a proper clinical and epidemiological assessment in those cases.

Key Words: imported malaria, *Plasmodium vivax*, severe, complicated, travel, Venezuela.
(source: DeCS Bireme)

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Introduction

Malaria still remains as a major public health problem in endemic developing countries where its morbidity and mortality burden is very high.[1] Although most of this burden is due to *Plasmodium falciparum*, in South East Asia and Latin America *P. vivax* is responsible for more than 80% of the cases, sometimes producing severe and complicated clinical presentations, that can be even lethal in some cases, particularly in non-immune populations, such as residents of non-endemic zones visiting endemic areas where this parasite is prevalent.[2, 3]

At this point that concept should be independent of the country, the important issue is to identify the endemic zones, because travel of non-immune populations to endemic areas could be occurring in countries with particular endemic regions, such as Venezuela and other Latin American countries, where disease could be acquired and then diagnosed in non-endemic settings.[1, 2, 4, 5]

North central Venezuela is considered a free-malaria area. In the case of Los Teques, this city is the capital of the Miranda state, a large metropolitan area near to the country capital Caracas. According to the National Program of Malaria (personnel communication) for the epidemiological week number 28 (July 6-12, 2008) no cases of malaria have been reported in the capital district but in Miranda 7 cases have been diagnosed (6 in Cupira, Pedro Gual municipality and 1 in Santa Teresa del Tuy, Independencia municipality), these cases likely were acquired in endemic zones. These figures reflect a low number of reports of malaria in the Miranda state.

Herein, we describe the clinical and epidemiological aspects related to those diagnosed and admitted cases of malaria at the

Hospital Victorino Santaella from Los Teques, Miranda, in the period January 2000-July 2008. After careful review of different national databases and sources of biomedical information we have not find any previous report of imported cases of malaria in Los Teques.

Materials and Methods

The Hospital Victorino Santaella is main hospital of Los Teques, the capital city of Miranda state. A high index of suspicion for other metaxenic diseases, such as dengue, is among the clinical thinking of attending physicians in the institution, but not commonly for malaria.

This study was carried out by analyzing the medical records of the patients hospitalized at the Hospital Victorino Santaella at Los Teques, Miranda, Venezuela (Figure 1), during the study period (January 2000-July 2008). Data from identified cases of malaria acquired outside Los Teques at the endemic areas were collected (Figure 1). Information on each case was reviewed to identify the sources of origin of these cases. Diagnosis was confirmed by thin and thick peripheral blood smears, with external quality control. The different *Plasmodium* species were identified morphologically at the laboratory and confirmed at the Malariology Regional Office in Caracas and Maracay, Venezuela.

The epidemiological and clinical features of these patients diagnosed as imported cases of malaria, as well their complications were described.

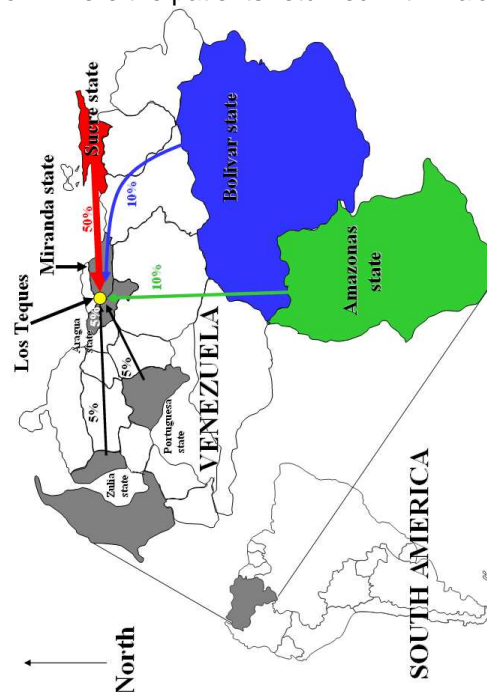
Results

During the study period 20 cases of imported malaria were admitted. Mean age of patients was 26.45 years-old (± 17.63) (range 5-75 years-old), 40% of them were <18 years-old, 15% were <12 years-old. Regarding gender, 50% were male and 50% female. About their precedence, 50% returned from Sucre state, 15% from Bolívar state and 10% from Amazonas state, 20% from other areas (Figure 1), 95% of the patients were residents of Los Teques and 5% from Cua. All of them travel the described states were acquired the infection (Figure 1).

Clinically, 85% presents fever, 75% chills, 40% headache, 20% malaise, 10% myalgia, among other signs and symptoms. One patient presented retro-ocular patient (5%). None of the patients were diagnosed as dengue fever.

One patient was pregnant (17 year-old female living in Cua who traveled to La Gran Sabana, Bolívar).

Figure 1. Map of Venezuela showing the areas from where the patients returned with malaria.



Regarding the etiology, 100% of these cases were due to *P. vivax* (diagnosis was made by microscopy with Giemsa stain).

All cases were successfully treated with chloroquine (25 mg/kg, 10 mg/kg on days 1 and 2, 5 mg/kg on day 3) and primaquine (3.5 mg/kg, 0.25 mg/kg/d \times 14 days) (except in the pregnant women who just received chloroquine) as is established in the national guidelines for malaria treatment.

Discussion

Malaria due to *Plasmodium vivax* is requiring and deserving more biomedical research, particularly because in few past years the literature has shown a growing incidence of atypical, complicated and severe cases of *P. vivax*, as we have been reporting in different clinical and epidemiological settings.

Further research on these aspects should be focused in regions where this parasite is highly prevalent, such as Venezuela.

However, from a general point of view, a country with areas of malaria transmission would be considered as an endemic nation, but this epidemiological denomination does not reflect accurately the geographical distribution of the disease risk. In many countries there is a heterogeneous geographic pattern of malaria

transmission. This occurs in countries such as Venezuela and many other South American nations. Los Teques is a metropolitan area in the north central region of Venezuela not endemic for malaria. Additionally no species of Anopheles are present in the city and nearby.[4] Ecological conditions in the zone are not prone for the development of Anopheles species that could be involved in potential local transmission such as those belonging to subgenus Kerstezia previously reported in highland malaria outbreaks in Venezuela.[6, 7]

As was seen in this study, imported cases of malaria are seen occasionally in the last years at these locations, most of them complicated by different clinical alterations.

Imported cases of malaria due to *P. vivax* could be associated with significant complications, unfortunately given this is a retrospective study no hematological laboratory reports could be found to describe findings such as anemia, thrombocytopenia and leucopenia, among others described in other regions of the country associated to this infection. In another populations of adult patients living in an endemic zone of northeastern Venezuela, where *P. vivax* is endemic, thrombocytopenia was seen in 65% of patients and leukopenia in 4.5%, although for thrombocytopenia was slightly higher in pregnant women (75%).[8, 9] These atypical manifestations are increasingly presenting and should be highlighted.[2, 4, 8-12]

These findings illustrate the importance of educating non-immune populations about malaria risk; and from a public health perspective, the need to develop malaria prevention strategies at a national level to avoid imported cases of malaria, particularly in the context of national tourism and migration.[13] The relationship between malaria transmission and population mobility represents a major challenge for malaria control programs in Latin America and elsewhere.[14] The identification of access routes of imported cases of malaria represents a feat that would allow us to identify and evaluate population migration and its impact on the dynamics of malaria transmission in Venezuela and other Latin American countries.

References

1. Rodríguez-Morales AJ, Arria M, Sanchez E, et al. Outcomes of imported malaria during pregnancy within Venezuelan states: implications for travel advice. *J Travel Med* 2007;14(1):67-71.
2. Rifakis PM, et al. Atypical *Plasmodium vivax* malaria in a traveler: bilateral hydronephrosis, severe thrombocytopenia, and hypotension. *J Travel Med* 2008;15(2):119-21.
3. Rodríguez-Morales AJ, Benítez JA, Arria M. Malaria mortality in Venezuela: focus on deaths due to *Plasmodium vivax* in children. *Journal of tropical pediatrics* 2008 Apr;54(2):94-101.
4. Rodríguez-Morales AJ, et al. Acute respiratory distress syndrome in *Plasmodium vivax* malaria in traveler returning from Venezuela. *J Travel Med* 2006 Sep-Oct;13(5):325-6;
5. Rodríguez-Morales AJ, Delgado L, Martínez N, Franco-Paredes C. Impact of imported malaria on the burden of disease in northeastern Venezuela. *J Travel Med* 2006;13(1):15-20.
6. Benítez J, Rodríguez A, Sojo M, Lobo H, C. Descripción de un brote epidémico de Malaria de altura en área originalmente sin malaria del estado ... *Bol malariol salud ambient* 2004.
7. Rubio-Palis Y. Variation of the vectorial capacity of some anophelines in western Venezuela. *The American journal of tropical medicine and hygiene* 1994 Apr;50(4):420-4.
8. Rodríguez-Morales AJ, Sanchez E, Arria M, et al. White blood cell counts in *Plasmodium vivax* malaria. *The Journal of infectious diseases* 2005 Nov 1;192(9):1675-6.
9. Rodríguez-Morales AJ, et al. Occurrence of thrombocytopenia in *Plasmodium vivax* malaria. *Clin Infect Dis* 2005 Jul 1;41(1):130-1.
10. Rodríguez-Morales AJ, et al. Anemia and thrombocytopenia in children with *Plasmodium vivax* malaria. *Journal of tropical pediatrics* 2006 Feb;52(1):49-51.
11. Rodríguez-Morales AJ, et al. Is anemia in *Plasmodium vivax* malaria more frequent and severe than in *Plasmodium falciparum*? *Am J of medicine* 2006;119(11):e9-10.
12. Torres J, Noya O, Mondolfi A, Peceno C, Botto C. Hyperreactive malarial splenomegaly in Venezuela. *The American journal of tropical medicine and hygiene* 1988 Jul;39(1):11-4.
13. Franco-Paredes C, Santos-Preciado JI. Problem pathogens: prevention of malaria in travellers. *The Lancet infectious diseases* 2006 Mar;6(3):139-49.
14. Gabaldon A, Berti AL. The first large area in the tropical zone to report malaria eradication: North-Central Venezuela. *The American journal of tropical medicine and hygiene* 1954 Sep;3(5):793-807.

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