Imported Malaria in Albania from Equatorial Guinea during 2012-2015

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Abstract

Aim: Malaria is part of the National Mandatory Reporting System in Albania. In 2001, with the support of the Ministry of Health, a ministerial commission was established. During the period 2012-2015, an increase of imported malaria cases was observed in Albania, which reached its peak in 2013 (with 14 cases).
Methods: Thick and thin blood smears stained with Giemsa were used for the diagnosis of *Plasmodium* species. For each case of malaria, completion of a questionnaire was performed.
Results: In total, there were 31 cases or 36% (31/86) of all the imported cases. Out of 31 cases, after the microscopy diagnoses, 18 (58%) of them resulted positive for *Plasmodium falciparum* and 35.5% (11/31) were positive for *Plasmodium ovale*. Only 2 (6.5%) cases were with mixed infection (*P. falciparum* and *P. ovale*). Twenty cases were aged between 25 years and 45 years (range: 19-59 years). None of the cases had taken full and regular chemoprophylaxis. Only one fatal case was registered.
Conclusion: Albania is a country free of malaria, and only imported cases are registered. Hence, all cases of malaria observed during the period 201-2015 consisted of Albanian male citizens traveling to Equatorial Guinea.

Keywords: Equatorial Guinea, imported malaria, microscopy diagnosis.

Introduction

Imported malaria cases from endemic countries are increasing in recent years (1). The increases in travel, migration of people from malaria endemic countries to non endemic countries are some of the reasons linked with malaria. For physicians it is not easy to suspect for malaria because the clinical signs and symptoms are non-specific. A travel history is important in any febrile condition patient and laboratory diagnosis is crucial to confirm the disease. The microscopy of Giemsa stained of thin and thick blood smears is the gold standard of diagnosis of malaria. This technique requires a high level of expertise and should be performed in specialized laboratories at different levels of healthcare system. Malaria was a hyper endemic disease in Albania with a spleen and parasite rate respectively 59.2% and 16.5% in 1938 and about 80% of the territory presented risk of malaria infection. After implementation of national plan of malaria eradication in 1957 according to WHO recommendations, in 1959 spleen and parasite rate decreased and was 1.3% and 0.00% respectively (2,3). The three species of *Plasmodium*; *Plasmodium falciparum* (Welch, 1897), *Plasmodium vivax* (Grassi & Feletti, 1890) and *Plasmodium malariae* (Laveran, 1881) have been presented in Albania. *Plasmodium ovale* (Stephens, 1922) has been recorded for the first time only in 2012. The first imported malaria case in Albania has been registered in 1962 and after 1966 no autochthonous or any other type of infection (as classified in WHO Terminology of Malaria) cases are registered (4-6).

The purpose of this study was to present a report of imported malaria cases from Equatorial Guinea during 2012-2015.

Methods

All suspected cases are hospitalized in central hospital in Tirana and for each of them diagnosis was made by light microscopy of Giemsa stained thick and thin blood smear (on separate slides each) and confirmed in the Institute of Public Health (IPH). For preparation of thick and thin blood smears, the capillary and venous blood with anticoagulant (EDTA) is used.

Guidelines of WHO are followed for diagnosis and to characterise a case of malaria as imported (4,7). All laboratory-confirmed cases by microscopic examination are notified and entered in database of National Mandatory Reporting System.

A questionnaire completion was performed for each case of malaria, containing the generalities (name, nationality, sex, date of birth, address) of the patient, place where infection was acquired, date of onset of illness, duration of statement in malaria endemic country(s), date of arrival, the reason of traveling, previous infectious of malaria, blood transfusion, diagnosis, prophylaxis, treatment.

Results

During 2012-2015 in total were 31 cases or 36% (31/86) of all imported cases (data recorded by IPH) and reached the peak in 2013 with 14 cases. Out of 31 cases, after the microscopy diagnoses, 18 (58%) of them resulted positive for *Plasmoium falciparum* (Welch, 1897) and 35.5% (11/31) positive for *Plasmodium ovale* (Stephens, 1922) (Figure 1). Only 2 (6.5%) cases were mixed infection *P. falciparum* + *P. ovale.* (Table 1). Regarding the age-group, 20 of them were between 25 and 45 years (range 19-59 years old).

One fatal case of imported malaria was recorded in 2013, in a 40 years old man. After three days of his return to Albania, the patient was admitted to the hospital in coma condition (cerebral malaria syndrome). Blood examination for the diagnosis of malaria, was performed the same day of his hospitalization showing the presence of *Plasmodium falciparum* + *Plasmodium ovale* after diagnosis under microscope. Three days after the hospitalization, the patient died. No case of blood transfusion and/or organ transplant has been registered.

During the period 2012-2015, groups of Albanian workers have been organized for travelling in Equatorial Guinea for working purpose in construction companies. 61.3% (19/31) are from Vlora

Figure 1. *Plasmodium ovale* (Stephens, 1922) in thin blood smear

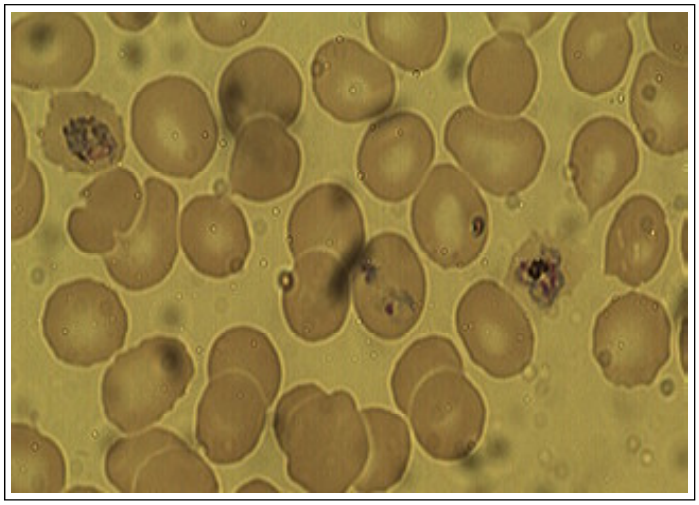

Table 1. Number of malaria cases by *Plasmodium* species, 2012-2015

Year	*P. falciparum* N (%)	*P. ovale* N (%)	*P. falciparum* + *P.ovale* N (%)	Total Number
2012	5 (62.5)	2 (25)	1 (12.5)	8
2013	8 (57.1)	5 (35.7)	1 (7.1)	14
2014	5 (71.4)	2 (28.6)	0 (0)	7
2015	0 (0)	2 (100)	0 (0)	2
Total	**18 (58)**	**11 (35.5)**	**2 (6.5)**	**31**

district and 38.7% are from other districts. Before their travelling, chemoprophylaxis with doxycycline is recommended by the Institute of Public Health, but based on questionnaires performed to all the citizens who travelled to EG; none of them took a full and regular chemoprophylaxis. Most of the cases, are infected in EG at least ones with malaria. For these cases, diagnosis performed in EG did not provide any information on the species of *Plasmodium*.

Discussion

Since the eradication of malaria in 1967, no autochthonous cases are registered (5,6). For decades the trend of imported malaria cases has not changed significantly. But during the period 2012-2015 we have noticed an increase of cases due to organized movement of Albanian citizens to malaria endemic country – Equatorial Guinea and not taking seriously the prophylaxis recommended by IPH.

Equatorial Guinea situated in sub-Saharan Africa is an endemic country for malaria where transmission is stable throughout the year. More than 80% of the cases are caused by *Plasmodim falciparum* (8-10). The disease occurs usually between 45° north and 40° south latitudes (11), and is exclusively distributed by the female mosquitoes of the genus *Anopheles*. The Plasmodium species of malaria, which cause the disease in humans, are *Plasmodim vivax, P. falciparum, P. malariae, P. ovale* and *P. knowlesi.*

The last one is occurring in Malaysia, and Indonesia. Usually, other symptoms of febrile patients returning from malaria endemic countries are loss of appetite, headache, fatigue and body pain and a flu-like condition. Less frequent are gastrointestinal complications as nausea, vomiting. People living in non-endemic malaria countries are non-immunes and may present a severe status of the disease with high risk of death. For the first time in 2013 is recorded one death case. The patient traveled to EG and duration of his statement there was about 9 months. Detection of malaria parasites by light microscopy is a gold standard for malaria diagnosis because it is cost-effective, quantitative, species and stage identification. But this technique has some limitations; microscopic maintenance, time-consuming and high level of expertise. All suspected patient are examined by light microscopy. Thick and thin blood smears stained with Giemsa are used for diagnosis of *Plasmodium* species. Only *P. falciparum* and *P. ovale* are found in blood smears and both species are known from that region (EG). *P. ovale* is recorded for the first time in 2012.

Conflicts of interest: None declared.

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