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MALARIA IN POLAND IN 2013*

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ABSTRACT

OBJECTIVE. Evaluation of the epidemiological situation of imported malaria in Poland in 2013 compared to the data from previous years.

MATERIAL AND METHODS. The assessment was performed based on the results of the analysis of individual reports sent to the NIPH-NIH by sanitary-epidemiological stations and aggregated data published in the annual bulletins "Infectious diseases and poisonings in Poland". Cases were registered according to the case definition criteria applicable in the EU countries.

RESULTS. In 2013, a total of 36 imported malaria cases were registered in Poland, 15 more than in 2012. No deaths were recorded. As much as 80% of all cases were imported from African countries, of whom the majority came from Nigeria, 14% from Asia and 6% from South America. Concurrent infection with dengue virus was confirmed in one person coming back from Philippines. *Plasmodium* species was determined in 35 of 36 cases by blood film or PCR test. Invasion with *P. falciparum* and *P. vivax* was found in 23 (66%) and 9 (26%) cases, respectively. There was also one case of each of the following: *P. ovale*, *P. malariae* and mixed invasion. As in previous years, in most cases, the invasion was associated with tourist trips (47%) or work-related travels (36%). Immigrants or students visiting the country of origin accounted for 11% of patients, in two cases (6%) purpose of the journey was not determined. As many as 7 patients used chemoprophylaxis, including two persons who took drugs in compliance with the recommendations.

CONCLUSIONS. Despite a significant increase in the number of cases compared to previous years, the total number of imported malaria remains low. Persistent large number of delays in the diagnosis and a high percentage of severe malaria cases indicate the need to raise doctors awareness of the possibility of malaria incidence. Travelers should be also constantly reminded of the need to inform their GPs about the stay in the malaria endemic areas in the event of fever after returning.

Keywords: imported malaria, epidemiology, Poland, 2013

The aim of the study: assessment of the epidemiological situation of malaria in Poland in 2013 compared to previous years.

MATERIAL AND METHODS

Evaluation of the epidemiological situation of malaria in Poland was based on the analysis of individual case reports sent to the NIPH-NIH by sanitary-epidemiological stations and data included in annual bulletin "Infectious diseases and poisonings in Poland in 2013"

(Czarkowski MP et al., Warsaw, NIPH-NIH and CSI). In 2013, malaria cases which occurred in Poland and met the case definition criteria approved by the EC in its decision dated as of 8 August 2012 (2012/506/UE) were recorded. Malaria case definition has not changed compared to the definition introduced in 2008. A confirmed case is defined as any person with fever or history of fever AND with the demonstration of malaria parasites in the blood films using light microscopy or by detection of *Plasmodium* nucleic acid or detection of *Plasmodium* antigen.

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RESULTS

A total of 36 malaria cases (incidence 0.9 per 1 million population) were registered in Poland in 2013. It was the highest number of reported cases within the last 15 years. As compared to 2012, 15 more cases were registered (an increase of 71% and compared to the median of the years 2007- 2011 - increase of 64%). All patients recovered.

As in previous years, males accounted for the majority (78%) of all cases. Patients were aged 10 to 66 years, of whom those at the age of 31-40 years prevailed, and the median age was 39 years.

All cases were imported from malaria endemic countries. In one patient the symptoms could be due to a recurrence of the disease, which occurred in Africa a month earlier, and the patient who returned from Philippines was diagnosed with co-infection with dengue. Four patients originated from malaria endemic countries (11%), including one person studying in Poland and three people who currently live in Poland and visit families in their country of origin.

Infections were acquired most frequently during trips to Africa (80%), especially Nigeria and outside Africa - to India (Table I).

In 35 out of 36 (97%) cases, diagnosis was confirmed by microscopic examination of blood films and in one by PCR molecular test. Immunochromatographic tests were done in 12 patients, resulting in at least one

positive result in each case. In all cases, a quick test was not the only one used to confirm the diagnosis. The molecular tests were performed only in 2 patients. In 20 cases (55%), the diagnosis of malaria was established after more than 3 days following the onset of illness. Delays were caused, as in previous years, by both too late visiting the physicians and initial misdiagnosis.

Species of *Plasmodium* was determined in all patients except one; in 23 cases (66%) *P. falciparum* was identified, in 9 (26%) - *P. vivax*, one of each *P. malariae* and *P. ovale*, and in one patient mixed invasion with *P. falciparum* and *P. vivax*.

Severe clinical course was observed in 12 patients (33%), including two cases infected with *P. vivax*. In all severe cases, (with one exception - vivax malaria acquired in Venezuela) infection was acquired in African countries. The WHO criteria for severe malaria were met in 6 cases.

Infections were most frequently acquired during tourist trips (47%) or work-related travel (36%). In the latter group, there were two missionaries. The purpose of the journey was not determined in two cases.

Information on the use of chemoprophylaxis was obtained from 35 persons - only 7 persons were subject to antimalarial chemoprophylaxis, and of the remaining 28 - four persons were provided with appropriate medication, but did not use it.

The most common error among patients who took chemoprophylaxis was the discontinuation of drugs

Table I. Number of imported malaria cases in Poland in 2013 by country of exposure and species of *Plasmodium*

Continent and country of exposure		Number of cases	Species of <i>Plasmodium</i>					Number of deaths	
			<i>falciparum</i>	<i>vivax</i>	<i>ovale</i>	<i>malariae</i>	<i>mixed</i>		<i>spp</i>
Africa	TOTAL	29							
	Cameroon	3	2	-	1	-	-	-	-
	Central African Republic	1	-	1	-	-	-	-	-
	Equatorial Guinea	1	1	-	-	-	-	-	-
	Eritrea	1	-	1	-	-	-	-	-
	Ethiopia	2	2	-	-	-	-	-	-
	Kenya	1	-	1	-	-	-	-	-
	Kenya, Tanzania	1	1	-	-	-	-	-	-
	Kenya, Tanzania, Liberia	1	-	1	-	-	-	-	-
	Liberia	1	-	1	-	-	-	-	-
	Madagascar	1	1	-	-	-	-	-	-
	Nigeria	7	6	-	-	1	-	-	-
	The Gambia	3	2	-	-	-	-	1	-
	Uganda	5	5	-	-	-	-	-	-
Zambia, Ghana	1	1	-	-	-	-	-	-	
America South	TOTAL	2							
	Brazil	1	-	1	-	-	-	-	-
	Venezuela	1	-	1	-	-	-	-	-
Asia	TOTAL	5							
	India	2	1	1	-	-	-	-	-
	India, Nepal	1	-	-	-	-	1	-	-
	Indonesia	1	1	-	-	-	-	-	-
	Philippines	1	-	1	-	-	-	-	-
TOTAL		36	23	9	1	1	1	1	0

immediately after leaving the area of exposure. Only two patients ensured that they used medicines in full compliance with the recommendations.

DISCUSSION AND CONCLUSIONS

Despite a significant increase in the number of cases compared to previous years, the total number of cases imported to Poland remains at a low level. Still, what is important, there is a low share of people from malaria-endemic countries (immigrants, students) in the total number of cases imported to Poland. The overwhelming majority of tourists or business travelers in patients is in contrast to the situation in the Western Europe, where an increasing share of people from endemic countries (over 80%) infected during visits in the country of origin is observed. The origin of patients may affect the clinical course of malaria - in patients from endemic countries, immunity generated during previous infections, even if does not protect against subsequent episodes, it significantly reduces the severity of disease and protects against complications. In Poland, people who have never had contact with malaria prevail in malaria cases

registered. It may partly explain an alarmingly high percentage of severe cases.

Regardless of the structure of the population, the time from the onset of disease to the initiation of proper treatment is another factor influencing the clinical course and outcome of the disease. In Poland, the number of delayed diagnoses remains high (more than half of cases diagnosed after 3 days). Such situation remains unchanged despite reminders of possibility of infection before each season.

It is particularly important to remind primary care physicians about the possibility of malaria importation, because most delays in the treatment result from the misdiagnoses made in primary care.

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