Imported tropical diseases in international travelers and migrants between 2000-2012: overview of 179 cases in a single travel clinic

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Abstract:
The aim of this survey is to assess and discuss the spectrum of tropical diseases among travelers and migrants from topics to Slovakia within last 12 years. The commonest imported tropical diseases within last 12 years were malaria, amoebiasis, dengue and cutaneous larva migrans, following with giardiasis. Commonest place of travel was India and Kenya.

Introduction
Imported tropical diseases and/or parasitic diseases central to Europe are emerging. The reason is not only increasing travel to tropical and subtropical regions but also increasing number of migrants and refugees (Askling 2005, Baker 2006, CDC 2014, Clerinx 2011, Conolly 2005). Coming to Slovakia from Middle East in 2010. The aim of the study is to describe our 13 years experience in a Mahmal Travel Clinic, referral centre for imported tropical infections.

Patients and Methods
The group of patients consists of holiday or business travelers who returned from tropical regions and in 2000-2012 visited the clinic of tropical diseases in Bratislava where a diagnosis was made according to anamnesis, clinical and laboratory tests, including rapid diagnostic tests for malaria and dengue, parasitologic exam of the stool and urine, cultivation tests were done for bacteriology and parasitology in the Laboratory Medirex and HPL Bratislava and Laboratory of tropical microbiology in Slo-
Imported tropical diseases and/or parasitic diseases central to Europe are emerging. The reason is not only increasing travel to tropical and subtropical regions but also increasing number of migrants and refugees.

Results and Discussion

A. Diagnosed imported infections in returning travelers and migrants between 2000 – 2012

179 cases of imported infectious diseases (ID) in returning travellers have been diagnosed between January 1st, 2000 to December 31st, 2012. Most diseases were diagnosed in 2011 (23 cases of ID), in 2012 it was diagnosed 21 cases of imported ID, in 2001 19 cases, in 2002, 2007 and 2010 16 cases, in 2003 14 cases, and in 2009 it was diagnosed 13 cases, during the year 2000, 12 cases, in 2004 10 cases, in 2008 we recorded 8 cases, in 2005 it was 6 cases, and in 2006 we recorded less diagnosed cases of imported ID, only 5.

The second most commonly diagnosed disease was amoebiasis, which occurred in 19 cases (10.62%), we recorded 18 cases of dengue hemorrhagic fever, and 18 cases of cutanea larvae migrants. Giardiasis, we confirmed in 17 cases, Blastocystis hominis infection was recorded in 12 cases, salmonellosis was diagnosed in 7 cases. HBsAg positivity was confirmed in 5 cases as well as Trachoma and Shigellosis. 4 cases of paratyphoid fever were diagnosed and also schistosomiasis. Scabies and hepatitis A was diagnosed in 3 cases. Longitudinal distribution of diagnosed imported ID in 2000-2012 is shown in Figure 3.

B. Spectrum of diagnosed imported ID

There were 27 different imported tropical ID diagnosed within 13 years (Figure 2). The most commonly diagnosed infectious disease was malaria (39 cases) representing 21.79%. The second most commonly diagnosed disease was amoebiasis, which occurred in 19 cases (10.62%), we recorded 18 cases of dengue hemorrhagic fever, and 18 cases of cutanea larvae migrants. Giardiasis, we confirmed in 17 cases, Blastocystis hominis infection was recorded in 12 cases, salmonellosis was diagnosed in 7 cases. HBsAg positivity was confirmed in 5 cases as well as Trachoma and Shigellosis. 4 cases of paratyphoid fever were diagnosed and also schistosomiasis. Scabies and hepatitis A was diagnosed in 3 cases. Longitudinal distribution of diagnosed imported ID in 2000-2012 is shown in Figure 3.

C. Geographical distribution of imported infectious diseases in 2000 – 2012

Slovak Travelers who presented themselves at the Clinic for visited within last 13 years 62 countries. The largest number of infectious diseases were diagnosed after returning from India recorded in 22 cases followed by Kenya with 17 cases. Other cases are in Figure 4 and included Nigeria in 15 patients, Ethiopia and Thailand in 8 cases, Indonesia in 7 cases, Democratic Republic of Congo in 6 cases, 4 cases of the disease after returning from the Philippines,
Cambodia, Libya, 3 cases in travelers who visited Angola, China, Egypt, Iraq, Cuba, Mexico, Peru, Turkey, Venezuela, Uganda, Vietnam. 2 cases were diagnosed in travelers who have returned from Brazil, Chad, Iran, Malaysia, Maldives, from Mauritius,
Nepal, Pakistan, Sudan and Taiwan. After returning from other destinations such as Belgium, Borneo, Columbia, Montenegro, Equador, Gabon, Ghana, Israel, Jamaica, Japan, Cameroon, Latvia, Morocco, Mozambique, Nicaragua, Portugal, Equatorial Guinea, Senegal, distribute, Rwanda, Central African Republic, Spain, Tanzania, Togo, Tunisia, Kazakhstan, Zambia, Zanzibar and Zimbabwe 1 case was detected.

**Malaria**

The most commonly imported disease from tropics was malaria reported in 39 cases, all cases of malaria in travelers who have returned from sub-Saharan Africa. Despite prophylaxis recommended to travelers, the figure represents 21.79% cases of all imported infections in returning travelers what opens again the question of adherence to antimalarial prophylaxis (6,7).
Commonest country of imported malaria cases were Nigeria (14 cases, 35.89%) followed by Democratic Republic of Congo with 6 cases (15.38%), 4 cases from Kenya, 3 cases from Angola.

**Dengue Hemorrhagic Fever (DHF)**

DHF was most frequently diagnosed in 2012, when we recorded 8 cases presented to our clinic (44.44%) among all cases recorded that year. In 2011 3 cases were
detected (16.66%), in 2001 and 2009 2 cases were confirmed (11.11%) and 1 case (5.56%) in 2002, 2007, 2010 (Fig. 7). No single CNS involvement was observed. Geographical distribution of DHF imported to Slovakia is shown in Figure 8.

In this communication we wanted to point out the variety of diseases we have diagnosed in returning travelers to Slovakia within last thirteen years at the Clinic of tropical diseases in Bratislava and remind the importance of preventive measures as well as the need for swift management of diagnosis and treatment of tropical diseases.

We found that the most common imported infection was malaria. (Askling et al 2005, Cook et al 2003, Dawis et al 2011). All returning travelers diagnosed with malaria visited countries in sub-Saharan Africa, no malaria case was diagnosed in travelers returning from Asia or Central and South America.

Increasing trend of Dengue Hemorrhagic Fever (Denguevirusnet 2013) was observed among travelers, reflecting a global trend. Given infection occurred only among travelers who have visited countries in Asia, no DHF infection was reported in travelers returning from Africa or South America. (Coradia et al 2007, Eddylyton 2008, ECDC 2013, Fradin et al 2004)

**Conclusion**

Vector-borne diseases are an important burden for Europe, partly through infected travelers returning from countries where some of these diseases are endemic, especially malaria, dengue and chikungunya. The incidence rate of malaria remains stable, while the rate of reported cases of dengue and chikungunya are growing. In some EU countries there is a risk that these diseases become endemic, previously considered only as imported.

**References:**


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