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PROTOZOAN DISEASES – A MARGINALIZED THREAT OF MODERN CIVILIZATION

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ABSTRACT

Globalization and the intensification of tourism in tropical and subtropical areas as well as journeys within the framework of military missions often cause the spread and persistence of infectious and parasitic diseases in areas where they previously have not been reported. Protozoan diseases may also be introduced along with imported, often illegally, exotic animals. Parasitic diseases transmitted from subtropical and tropical regions include

protozoan gastrointestinal disorders, such as amoebiasis, balantidiasis and blood protozoan diseases such as malaria, babesiosis, trypanosomiasis, or protozoan diseases of the skin, e.g. leishmaniasis. The aim of the study is to draw attention to the problem of disregard for the risks caused by the development of tourism to tropical countries. One has to bear in mind that being infected with blood protozoan parasites is particularly important for public health because it permanently or temporarily excludes those infected as potential blood donors; this applies to trypanosoma, babesiosis and malaria infections. One should presume that the number of cases of parasitic blood diseases in Poland has increased significantly in comparison with previous years. It should also be emphasized that in connection with diagnostic difficulties in diseases caused by parasitic protozoa, it is possible that these diseases may fail to be diagnosed, thus resulting in an incorrect treatment or a lack thereof. This applies to Trypanosoma infections, babesiosis and malaria.

Keywords: protozoan disease; Trypanosoma; babesiosis

INTRODUCTION

In recent years, travel agencies are more likely and willing to offer tourists trips to distant parts of the world. It is associated with the improvement of the economic status of residents of both developed and developing countries. Employees of travel agencies do not inform their customers about the dangers of the epidemiological situation prevailing in target destinations and the frequent tropical infectious diseases. Nowadays, tourists primarily travel to remote tropical zone countries. Their journeys very often last many weeks, which is of particular importance in the context of the epidemic chain.

Very warm and humid climatic zones chosen by travelers, combined with a poor sanitary and hygienic state of the visited destinations, favor the possibility of acquiring many diseases, the occurrence of which is characteristic for specific exotic regions. Greater endemic expansion of tropical in the hot climate zone is located mainly on the territory outside the cities, which implies the existence of practically intact ecological niches that are occupied by a particular invasive factor or its vector. Thus, the emergence and development of cities may cause changes in the environment that break the chain of relationships in the ecosystem. For that reason, the inhabitants of rural areas are much more vulnerable to tropical diseases such as malaria, sleeping sickness, leishmaniasis and filariasis, which are mainly transmitted by

arthropods. Therefore, when leaving for such a country, it is worth paying attention to which areas of it we wish to visit.Apart from tourists, a group of people who often travel to tropical climate areas are soldiers and employees of Polish Military Contingents. They participate in all kinds of peacekeeping missions of the UN or NATO. Among the Poles who go for long stays in the tropics are also missionaries, delegated primarily to the so-called "Third world" countries as part of a ministry mission.

In Europeans arriving in the regions of Africa, Asia or South America, tropical diseases run in a rather unusual, often very acute way, which is a huge threat to their health and even life. Therefore, as part of preventive activities, military and civilian healthcare must be well prepared in order to properly select candidates to serve and work in hot areas, providing adequate training in the field of work and living hygiene under such conditions. It is especially important to properly carry out preventive actions in order to prepare for travel to remote regions of the world.[1] The aim of this paper is to draw attention to the problem of disregard for the intensification of foreign travel, which significantly affects the spread of protozoan infections and the transfer of these organisms to their non-endemic parts of the world. The importance of the issue lies in the fact that, from the point of view of public health, it is a global problem that excludes (wholly or partially) the infected person from social and public life, which is conducive to an increase in treatment costs and contributes to the necessity of loss compensation.

OVERVIEW OF THE PROBLEM

It is difficult to obtain accurate statistics demonstrating the incidence of tropical diseases in Poland. The primary parasitic infection of global importance is malaria. The number of cases brought from malarious areas exceeds 10,000 a year and the resulting mortality rate amounts to a few percent.[2], [3]

Sleeping sickness is the most common in Angola, the Democratic Republic of Congo, Uganda and Sudan. The number of infected individuals oscillates around 60,000. The last huge epidemic hit Uganda. [4] In 2009, a substantial count of Trypanosoma specimens was diagnosed in a patient of the J. Gromkowski Provincial Specialist Hospital in Wroclaw, while in 2012 two cases were detected in German travelers returning from Kenya.

The incidence of tropical diseases involves very different epidemiological, financial, and most importantly health effects. Therefore, one very important action is to raise awareness about the possibility of disease and the need for preventive action. [5]

It turns out that in Poland there is no supervision of many microorganisms, which is associated with subsequent diagnostic difficulties. There are only 30 marine medicine specialists in our country and, what is even worse, since 2001 it has been impossible to do a specialist course in this field. Transport medicine has emerged in its place. The military also has its own tropical medicine doctors. Two reference centers for tropical medicine still remain in Poland: in Poznan and Warsaw. Tropical disease clinics also operate in Bydgoszcz, Białystok, Bielsko Biala, Krakow, Katowice, Kielce, Lodz, Lublin, Olsztyn, Rzeszow, Wroclaw and Walbrzych.

AFRICAN SLEEPING SICKNESS

African sleeping sickness is caused by flagellates parasitizing in the form of blood trypomastigotes, namely the Gambian Trypanosoma - Trypanosoma brucei gambinese, and the Rhodesian Trypanosoma - Trypanosoma brucei rhodesinese.[6] The former occurs mainly in Central and Western Africa, while the latter is found mainly in the Central and Eastern parts thereof. [7] Transmission occurs via the tsetse fly (Glossina species), most often during while drinking the blood. Importantly, an infected insect carries the flagellates throughout its entire life. [6]

Humans are the reservoirs of the Gambian Trypanosoma, while the reservoirs of the Rhodesian Trypanosoma are domestic cattle, pigs, goats and wild animals such as antelopes. [8]

It is important to differentiate between trypanosomiasis and malaria, as there is a number of overlapping symptoms and microscopic examination often shows both malaria protozoa, occurring intracellularly, and forms of Trypanosoma, occurring outside the erythrocytes; the protozoa which cause African sleeping sickness never occur intracellularly. [6]

In 2008, a huge epidemic of African sleeping sickness hit Uganda. The number of infected individuals is estimated at 60,000 a year, while the number of undocumented cases may be much higher. [9]

African trypanosomiasis prevention is especially difficult due to the fact that tsetse flies are active during the day, they can bite through clothing, and most repellents do not prove to have a deterring effect against them.[8]

BABESIOSIS

The issue of diagnosing babesiosis, the occurrence of which has in recent years been identified in humans, constitutes another significant diagnostic problem related to the detection of such protozoan blood diseases as malaria and trypanosomiasis. Babesiosis, also known as piroplasmosis, is an infectious disease, caused in humans by cosmopolitan protozoa species of the Babesia genus, i.e. B. bovis, B. divergens and B. microti. Protozoa parasitize the erythrocytes and become carried by parasitic arthropods – ticks.[7] However, there have been documented cases of infection via blood transfusion from donors who had not been diagnosed with this disease entity. There is also a possibility of contracting the infection from the mother if it penetrates the barrier between the placenta and the fetus.[10] A number of cases of this disease have been recorded in the United States. However, along with the migration of people and the presence of ticks and a reservoir of this disease among wild and household animals in Poland, there is a possibility of infections among Poles. The problem lies, however, in the repeatedly emphasized diagnostic difficulties in detecting the presence of this protozoan. Symptoms of babesiosis infections are associated with parasites that infect red blood cells. American literature often emphasizes the possibility of contracting this parasite via blood transfusion. [10], [11]The most common source of infection are ticks, especially the cosmopolitan and ubiquitous Ixodes ricinus. Symptoms of infection are characterized by fever, nonspecific flu-like symptoms, anemia and elevated levels of bilirubin associated with erythrocyte hemolysis. Enlarged liver and spleen have been detected in patients under clinical examination and by means of imaging [7], [10] Diagnosis of babesiosis is quite difficult due to a low immunocompetence of the parasite and a low frequency of blood smears performed in healthy patients after a tick bite; moreover, the infection often fails to be detected in the smear due to the subtlety of morphological traits of this protozoan and the low parasitemia index. PCR tests and serological tests also fail to diagnose the infection because they are rarely used for screening, which is why babesia divergens infections in people with normal immunity are likely to be more frequent than the diagnostic tests indicate. [10], [11]

In addition, a standardized definition of the course of this disease has not been provided by administrative bodies in charge of public health and diagnostics for the purpose of monitoring

infections, diagnosing and fostering prophylaxis. In January 2011, supervision of the diagnostics and monitoring of babesiosis was commenced in 19 states (18 countries and 1 city) and 1024 cases of the disease were reported by 15 out of 18 nations participating in the project. The disease was identified in persons aged 1 to 98, with 57 people aged around 60, and the incidence fell between June and August.

SUMMARY

To summarize, prophylaxis and knowledge of tropical diseases play a leading role in their prevention. Unfortunately in this case, high temperatures and humidity, different culture, cuisine and methods of food preparation all work to our disadvantage. Both poor hygienic conditions and a lack of education expose our organism to a gruelling test of strength, but is it necessary?

Before departure, one should visit a travel medicine center, make themselves familiar with the recommended literature and follow the doctor's recommendations.

By observing basic safety precautions which we often overlook while traveling, we can increase our chances or even fully protect ourselves against an infection.

Unfortunately, the majority of Poles going on vacation believe that the problem of protozoan diseases does not concern them.

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