Seizures in the Tropics

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Introduction

Large parts of Asia, all of Africa, and most of Central and South America are located in the area between the tropics of Cancer and Capricorn, where more than one-third of the world’s population lives. The two most populous countries, China and India, are largely and wholly in this region, respectively. Seizures are a major problem in tropical countries and are much more prevalent than in temperate countries (1).

The prevalence of seizures, in terms of the prevalence of epilepsy, also is much higher in tropical countries than in temperate countries (2,3). The age-adjusted prevalence for active epilepsy in tropical countries, in general, is between 10 and 15 per 1000 population, which is about twice the prevalence in temperate countries. This excess probably reflects the geographic and biologic disadvantages faced by these vast human populations in the tropics (4).

The tropics have a relatively uniform climate with high temperature and humidity and mountains or plains that were formerly heavily forested. The rain forests and the heavy rainfall have attracted agriculture and massive deforestation, leading to soil erosion and the development of more swamps and free-flowing rivers, which favor the multiplication and spread of vectors of disease. The lack of winters further predisposes the region to vector-borne diseases such as malaria, dengue, trypanosomiasis, and schistosomiasis (1). With agriculture and industry has come the use (often misuse) of pesticides and other toxic chemicals, many of which are known agents of seizures and epilepsy.

Poverty and illiteracy promote disease through undernutrition, poor sanitation, multiplication of insects and rodents, and inaccessibility of medical care. The despair brought about by these conditions leads to social diseases: drug
and substance abuse, violence, prostitution, and human immunodeficiency virus (HIV) infection. All of these factors, together with poor maternal and child health care, contribute to increased frequency of seizures and epilepsy in the tropics (1).

In most tropical diseases, epilepsy is either an acute or a remote symptomatic seizure disorder. The presence of other symptoms of brain involvement or the sudden onset of very frequent seizures may indicate an acute symptomatic disorder, whereas epilepsy per se, or seizures occurring with a longstanding neurologic deficit, is more suggestive of a remote symptomatic disorder (5).

This chapter reviews the tropical diseases that manifest with acute symptomatic seizures or lead to symptomatic epilepsy.

Parasitic Infections

Metazoan Infections

Neurocysticercosis

Epidemiology

Neurocysticercosis is the most frequent parasitosis of the central nervous system (CNS) in several countries in Latin America, Africa, and Asia (6). The disease is a scourge in Mexico, Brazil, Peru, and Ecuador (7), where, in some areas, the estimated prevalence, based on autopsies and biopsies in general hospitals, is over 3000 per 100,000 population (8). In Mexico, neurocysticercosis is responsible for 10% of all neurologic hospital admissions. There is a growing incidence of the disease in Africa, except in the Muslim countries along the Mediterranean, and in the center and south of the continent, because of the fact that the Koran prohibits consumption of pork (7). In Asia, the disease is widely distributed, particularly in China, and it is endemic in India and Thailand but uncommon in Pakistan, which is also a Muslim country (7). Because of migrating workers, neurocysticercosis is being recognized more frequently in North America, Europe (9), and Australia (10).

Seizures are the most common manifestation of neurocysticercosis (11,12) and in Mexico are the main cause of late-onset epilepsy, accounting for half the cases (6,13). In Ecuador, seizures account for nearly one-quarter of all new cases of epilepsy (14) and in Brazil, are the single most identifiable cause of epilepsy (15).

In Africa, neurocysticercosis is considered an important cause of epilepsy in Bantus and southern Rhodesians (16–19) but not in West Africans (20). However, a more recent survey in northern Togo of West Africa has attributed neurocysticercosis as the cause in about one-third of epilepsy patients over 15-yr-olds and two-thirds of those whose epilepsy began after the age of 50 (21,22).