Trypanosomiasis

Introduction

Trypanosomiasis is caused by parasitic protozoa of the genus *Trypanosoma.* There are two major forms of disease, African trypanosomiasis (sleeping sickness) and American trypanosomiasis (Chagas' disease).
Sleeping sickness is caused by *T.brucei* of which there are two sub-species that affect humans, *T. brucei rhodesiense*, which occurs mainly in east Africa, and *T. brucei gambiense*, which occurs mainly in west Africa. Both sub-species are transmitted by the tsetse fly.
Chagas' disease is caused by *T.cruzi* and transmitted by the reduviid bug. The disease occurs in south and central America and Mexico.

Epidemiology

(Data from the Travel Health Surveillance Section of the Health Protection Agency Communicable Disease Surveillance Section)

Global Epidemiology

Trypanosomiasis Risk in UK Travellers

Risk for Travellers

Trypanosomiasis is rare in travellers. However, in recent years there has been imported disease in European visitors to Tanzanian game reserves.[1]
Travellers visiting rural areas of endemic African countries are at greatest risk including those on safari in game reserves.

Similarly, the risk of Chagas' disease is extremely low in travellers. Those staying in poorly constructed rural accommodation made from mud or thatch would be at risk. Travellers residing in well constructed, modern buildings that do not provide a habitat for the vector of Chagas' disease, are at very low risk.

Transmission

African trypanosomiasis is transmitted by the tsetse fly of the genus Glossina. T.brucei protozoa are carried in tsetse fly saliva. Humans are the main reservoir for T. brucei gambiense and wild and domestic animals such as antelope and cattle are the main reservoirs for T. brucei rhodesiense.
Tsetse flies are grey-brown insects the size of a honey bee. They inhabit savannah areas, including game reserves and thrive in shade and humidity.

American trypanosomiasis is transmitted through contact with the faeces of an infected reduviid ("cone nose" or "kissing") bug (Triatoma infestans). The bugs inhabit walls and roofs of poorly constructed housing such as that made of mud and thatch. T. cruzi are excreted in the faeces of the bug and inoculated into the blood stream through skin or mucous membranes during feeding, or when the bite is scratched.

Transmission of both species can also occur via blood transfusion, contaminated needles, or the congenital route.

Signs and Symptoms

African trypanosomiasis

There are two types of illness, east African trypanosomiasis caused by T. brucei rhodesiense, and west African trypanosomiasis caused by T.brucei gambiense. East African trypanosomiasis is a more acute illness with a rapidly progressive course. The first symptom to occur is a skin reaction at the site of the tsetse fly bite, known as a trypanosomal chancre. This is commonly accompanied by regional lymphadenopathy and is more likely to occur in the east African disease.

Following this local reaction the parasites disseminate and cause an irregular pattern of fever persisting for several weeks. At this stage the symptoms of east African trypanosomiasis can be severe and if left untreated approximately 10% of infections are fatal.

During the next stage of the illness, trypanosomes cross the blood-brain barrier and cause encephalopathy with headache and mental status changes. This occurs within weeks in the east African trypanosomiasis and within months with the west African form. As the disease progresses to the terminal stage, patients become comatose which gives the disease its name of sleeping sickness.

American trypanosomiasis

The initial acute phase of Chagas' disease can often go undetected due to the non-specific signs and symptoms of vomiting, diarrhoea and anorexia. A cutaneous lesion at the site of exposure to infected bug faeces can develop. If the organism enters via the eye, unilateral conjunctivitis and oedema may be present which is known as Romaña sign.

This acute phase is then followed by an indeterminate phase with no clinical symptoms, and may last for the life of the patient. However, some patients will develop chagastic heart disease, with symptoms of palpitations, chest pain, oedema, syncope and dyspnoea and occasionally sudden death. Cardiac embolism can also occur.
In addition to cardiac disease a small number of patients develop abnormalities of the alimentary tract, with regurgitation, dysphagia, loss of peristalsis and constipation. This syndrome is termed mega disease

Treatment

Travellers suspected of having trypanosomiasis should be referred to a tropical disease specialist.
Parasites of both forms of illness can be detected in blood films, and in African trypanosomiasis from the initial chancre.
There are several drugs available for the treatment of acute illness of both African trypanosomiasis and Chagas' disease, but these have little effect on the chronic stage of Chagas' disease.
The cardiac and intestinal complications of Chagas' are managed by symptomatic therapy and occasionally with surgical intervention.

Prevention

There is no vaccine or chemoprophylaxis against trypanosomiasis. Awareness of risk and insect bite avoidance is therefore the only method of preventing infection.

Tsetse flies are attracted by movement and the colour blue. They have been known to follow moving vehicles; therefore windows should remain closed when driving through endemic areas. Tsetse flies are also capable of biting through loose weave fabrics and are unaffected by many insect repellents. Travellers are advised to wear insecticide treated close weave clothing.

Reduviid bugs inhabit cracks in the walls and roof of buildings constructed with mud or thatch. Travellers residing in such accommodation should sleep under a mosquito net and treat bedding with an insecticide solution.

Reference

1. Jelinek T, Bisoffi Z, Bonazzi L et al. Cluster of African trypanosomiasis in travellers to Tanzanian national parks. Emerging Infect. Dis. 2002; 8: 634-635

Reading List

Barrett MP, Burchmore RJS, Stich A et al. The trypanosomiases. The Lancet 2003; 362: 1469-1480.

Miles MA, Feliciangeli MD, Rojas de Arias A. American trypanosomiasis (Chagas' disease) and the role of molecular epidemiology in guiding control strategies. BMJ 2003; 326: 1444-1448

Stich A, Abel PM, Krishna S. Human African trypanosomiasis. BMJ 2002; 325: 203-206

Links

Centres for Disease Control and Protection
www2.ncid.cdc.gov/travel/yb/utils/ybDynamic.asp

World Health Organisation www.who.int/ith/chapter05_09.html#trypanosomiasis