Trypanosoma Brucei

Trypanosoma brucei is a flagellated protozoan that causes the disease African sleeping sickness. This disease is transmitted by the tsetse fly which has a painful bite and is endemic in regions of Africa. The disease symptoms occur in two stages. The first is known as the hemo-lymphatic stage and is characterized by fever, headaches, and joint pain. These fevers are usually recurring due to antigenic variation leading to evasion of the immune system. The parasites can invade the circulatory and lymphatic system causing severe swelling of the lymph nodes. The second phase is called the neurological phase and occurs when the protozoa invades the central nervous system and can cause an encephalitis. Symptoms include confusion and disruption of the sleep cycle with episodes of fatigue interrupted by manic periods. There are two subspecies of this organism that cause disease including T. gambiense and T. rhodesiense. Trypanosoma gambiense is found in west and central Africa and accounts for over 95% of the reported cases of sleeping sickness. This form often causes a chronic infection where a person can be infected for months to years without major signs of disease. When symptoms emerge, the individual often already has advanced disease. Trypanosoma rhodesiense is found in eastern and southern Africa and accounts for less than 5% of reported cases. Unlike T. gambiense, the first signs and symptoms are seen within a few weeks to months after infection, and disease develops rapidly with invasion of the CNS. This disease is fatal without treatment, which consists of suramine for blood borne disease and the addition of melarsoprol when the CNS is involved.



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Characteristics

Protozoa
Propeller-protozoa
Trypanosoma brucei is caused by a flagellated protozoan, which is a unicellular eukaryotic organism.

Trypanosoma Gambiense
Gumby
Trypanosoma gambiense is found in west and central Africa, and accounts for over 95% of the reported cases of sleeping sickness. This form often causes a chronic infection, where a person can be infected for months to years without major signs of disease. When symptoms emerge, the individual often already has advanced disease.

Trypanosoma Rhodesiense
Rodeo
Trypanosoma rhodesiense is found in eastern and southern Africa and accounts for less than 5% of reported cases. Unlike T. gambiense, the first signs and symptoms are seen within a few weeks to months after infection, and disease develops rapidly with invasion of the CNS.

Tsetse Fly
Titty Fly
This parasite is transmitted by the tsetse fly, which is a large brown, biting fly that is a host and vector for this organism. The infected tsetse fly injects Trypomastigotes into skin tissue during a bite.

Disease

Painful Bite
Painful Bite from Large Fangs
This parasite is transmitted during bite from an infected tsetse fly, which has a painful bite.

African Sleeping Sickness
African Sleeping Princess
This organism causes the disease known as African sleeping sickness because it is endemic in Africa, and causes confusion with altered sleep cycles when it invades the CNS.

Recurring Fever
Recurring Fever-beavers in Whack-a-mole game
In the first stage of disease, individuals often suffer from a recurring fever due to antigenic variation and evasion of the immune system.

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**Capacity for Antigenic Variation
**

Varying Ant-gems

Trypanosoma brucei, a causative agent of trypanosomiasis, or sleeping sickness,
has evolved a remarkable capacity for antigenic variation to evade the
antibody response elicited in infected humans. In the first stage of disease, individuals often suffer from a recurring fever due to antigenic variation and evasion of the immune system.

Enlarged Lymph Nodes

Lymph-limes

The parasites can invade the circulatory and lymphatic system causing severe swelling of the lymph nodes, often to tremendous sizes. Individuals may have extensive swelling of lymph nodes along the back of the neck, called Winterbottom's sign, which is characteristic of this disease.

Encephalitis

Brain-in-flames

This organism can cause encephalitis, which is inflammation of the brain, when the protozoa invades the blood-brain barrier and attacks the central nervous system. Symptoms include confusion and disruption of the sleep cycle, with episodes of fatigue interrupted by manic periods.

Treatment

Suramin for Blood-Borne Disease

Syrup-man and Blood-vessels

Suramin is used for the treatment of African sleeping sickness. It can be used alone when there is only evidence of blood-borne disease.

Melarsoprol for CNS Penetration

Mail box soap cleaning beaver head

Melarsoprol is used in the treatment of African sleeping sickness. This drug can penetrate the blood-brain barrier, and is used for treatment when there is evidence of CNS penetration.

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