Trypanosomiasis (Sleeping Sickness) Signs And Treatment

Trypanosomiasis (sleeping sickness) is a zoonotic vector-borne parasitic disease. It is caused by infection with protozoan parasites belonging to the genus Trypanosoma. They are transmitted to humans by the tsetse fly (Glossina genus) bites that have acquired their infection from human beings or from animals harboring human pathogenic parasites.

Forms of human African trypanosomiasis

Human African trypanosomiasis takes 2 forms, depending on the parasite involved:

Trypanosoma brucei gambiense is found in west and central Africa. This form currently accounts for 97% of reported cases of sleeping sickness and causes a chronic infection.

A person can be infected for months or even years without major signs or symptoms of the disease. When more evident symptoms emerge, the patient is often already in an advanced disease stage where the central nervous system is affected.

Trypanosoma brucei rhodesiense is found in 13 countries in eastern and southern Africa. Nowadays, this form represents under 3% of reported cases and causes an acute infection.

First signs and symptoms are observed a few months or weeks after infection. The disease develops rapidly and invades the central nervous system. Only Uganda presents both forms of the disease, but in separate zones.

Another form of trypanosomiasis occurs mainly in Latin America. It is known as American trypanosomiasis or Chagas disease. The causal organism belongs to a different *Trypanosoma* subgenus and is transmitted by a different vector.

Infection and symptoms

The disease is mostly transmitted through the bite of an infected tsetse fly but there are other ways in which people are infected:

- Mother-to-child infection: the trypanosome can cross the placenta and infect the fetus.
- Mechanical transmission through other blood-sucking insects is possible, however, it is difficult to assess its epidemiological impact.
- Accidental infections have occurred in laboratories due to pricks with contaminated needles.
- Transmission of the parasite through sexual contact has been documented.

In the first stage, the trypanosomes multiply in subcutaneous tissues, blood, and lymph. This is also called haemo-lymphatic stage, which entails bouts of fever, headaches, joint pains, and itching

In the second stage, the parasites cross the blood-brain barrier to infect the central nervous system . This is known as the neurological or meningo-encephalic stage. In general, this is when more obvious signs and symptoms of the disease appear: changes of behavior, confusion, sensory disturbances, and poor coordination.

Disturbance of the sleep cycle, which gives the disease its name, is an important feature. Without treatment, sleeping sickness is considered fatal although cases of healthy carriers have been reported.

Disease caused by Trypanosoma brucei rhodesiense is an acute febrile illness complicated by myocarditis and meningoencephalitis that is rapidly fatal if not treated, while that caused by T. brucei gambiense is a chronic debilitating illness with mental deterioration and physical wasting.

History of travel to an endemic area helps in the diagnosis.

Diagnostic Investigations

Disease management is made in 3 steps:

- Screening for potential infection. This involves using serological tests (only available for *T.b.gambiense*) and checking for clinical signs - especially swollen cervical lymph nodes.
- Diagnosing by establishing whether the parasite is present in body fluids.
- Staging to determine the state of disease progression. This entails examining the cerebrospinal fluid obtained by lumbar puncture.

Laboratory demonstration of trypanosomes in blood, bone marrow, cerebrospinal fluid, and scraping from chancre.

Management

Suramin is used for the treatment of the first stage of *T.b. rhodesiense*. for early cases 20mg/kg body weight, a maximum single dose of 1g. A test dose of 200mg required initially. Treatment is given on days 1, 3, 7, 8, 14, and 21. The total single course is 5g and should not exceed 7grams.

Pentamidine isethionate (clonidine is used for the treatment of the first stage of *T.b. gambiense* sleeping sickness starting with 4/kg IM on alternate days for a total of 10 injections.

Melarsoprol is used for the treatment of both *gambiense* and *rhodesiense* infections. Melsoprol (Mel B) for CNS disease 2–3.6mg/kg per day IM in 3 divided doses in days 1, 2, and 3, then repeat on days 10, 11, and 12 and again on day 21, 22, and 23.

Eflornithine is less toxic than melarsoprol but it is only effective against *T.b. gambiense*. The regimen is complex and difficult to apply.

Nifurtimox: A combination treatment of **nifurtimox** and **eflornithine** simplifies the use of eflornithine by reducing the duration of treatment and the number of IV perfusions.