Treatment of human African trypanosomiasis

Michel Dumas[1] & Bernard Bouteille[2]

Human African trypanosomiasis presents a health challenge to the international community — a challenge both to poor countries and to rich countries (where there is often a shocking surfeit of health resources).

In the year 2000, human African trypanosomiasis is on the increase, even though we know how to tackle it since the tsetse fly, which transmits the trypanosomes that cause the disease, can survive only in tropical Africa and there is no human-to-human transmission. Although control and perhaps eradication of the disease are therefore theoretically possible, its incidence is on the rise despite having been well under control 50 years ago. The emergence of independent nations, political upheaval, the frequent state of insecurity that results, and the consequent disappearance of the health monitoring systems established during the colonial era, are some of the factors behind this. To these must be added the growing poverty of the countries affected by the disease. A further complication has been the need to take immediate action to deal with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), while there has been a background of marked demographic growth in the countries concerned.

Over and above all this there is, however, a much more basic reason: the absence of a non-toxic treatment that is easily administered, reasonably priced, and effective at every stage of the disease, especially the neurological.

Suramin and pentamidine are effective drugs during the initial phase of the disease but are almost totally ineffective in the neurological phase, since they are not able to cross the blood–brain barrier.

Melarsoprol is effective against all stages of the disease but is particularly so against the neurological and is consequently kept in reserve for this purpose; it is also toxic and expensive (ca US$ 100 per patient).

Elfornithine is an alternative to melarsoprol and is active against all stages of the disease, but has the great advantage of being less toxic; however, it is prohibitively expensive (ca US$ 700 per patient) and recipients have to be hospitalized and given the drug by perfusion for at least two weeks. With an effort from wealthy countries, these financial considerations could be overcome, although the necessary medical facilities are rarely to be found outside of towns in the areas where the patients with sleeping sickness live.

[1] Director, Institut d'Epidémiologie neurologique et de Neurologie tropicale, Faculté de Médecine, Université de Limoges, 2 rue du Docteur Marchand, 87025 Limoges Cedex, France. Correspondence should be addressed to this author.

[2] Assistant, Institut d'Epidémiologie neurologique et de Neurologie tropicale, Faculté de Médecine, Université de Limoges, Limoges, France.

Ref. No. **00-0126**

The challenge presented by human African trypanosomiasis must be taken up by developed countries. The disease can be curtailed because it is geographically limited. Smallpox has been eradicated; and poliomyelitis is on the way to elimination thanks to vaccination strategies that have been pursued despite political upheavals, wars and other tragedies. A political willingness, in particular the release of funds, has facilitated these successes. Trypanosomiasis, whose very existence preserves underdevelopment, could enjoy a similar fate. In the year 2000, indifference to the havoc wrought by this disease is inadmissible — it threatens the fringes of major African cities, decimates herds of domesticated animals, and thereby leads to food shortages and misery. The net result is to increase the burden on governments in the affected countries, which already are overladen with many other pressing problems.

Although research on combinations of drugs or the development of a new drug against trypanosomiasis is not straightforward, there are several promising avenues; however, progress has not been made because there is a lack of real political will to allocate sufficient funding, while the funding that has been made available has not been always used optimally. One of the basic reasons for this lack of interest is that there is no risk of the disease spreading outside of tropical Africa. It therefore comes as no surprise that the pharmaceutical industry has not shown a great deal of interest in this type of research — even though trypanosomiasis is regarded as an "orphan disease", and thus carries tax advantages for companies that perform research on it.

The reluctance to pursue this type of research persists even with promising drugs such as nitroimidazole derivatives (Ro 15-0216 or megazol) that are efficacious against experimental African sleeping sickness. Research on nitroimidazoles, which present a real hope for treatment of sleeping sickness, should be allowed to proceed, despite the reservations that have been expressed about this class of compounds. The same is true for vaccine research, although the antigenic variability of trypanosomes may make progress difficult.

The antitrypanosomal drugs of the future should be atoxic, active at all stages of the disease, easily administered in a short course, and if possible, cheap. The distribution of such drugs will not, however, be something that can be left to individual governments since the disease is prevalent over large areas of Africa. International agencies such as WHO will therefore have to take the lead in coordinating such activities. A single strategy will be needed since there is little to be gained by having effective control of the disease on one side of a frontier if infected patients and the insect vectors cross from the other side. The success or failure of any campaign against human African trypanosomiasis hinges on this approach. ■

