African Sleeping Sickness in Uganda

Murchison Falls National Park is a 2500 square mile protected area near Lake Victoria in Uganda where the lucky safari-goer might see wild giraffes, elephants, hippopotami, crocodiles, antelopes, water buffalo, lions, and leopards. The park is also home to a much smaller animal that human visitors hope to avoid: the tsetse fly, best known as the vector for the parasite *Trypanosoma brunei* that causes African sleeping sickness. However, tourists have the tsetse fly to thank for the development of the national park. In the first decade of the twentieth century, nearly 250,000 people died of African sleeping sickness along the shores of Lake Victoria in what is now Murchison Falls National Park. The human inhabitants were evacuated, along with their livestock, effectively halting the epidemic and simultaneously paving the way for Uganda's first national park.

In Uganda, both subspecies of *Trypanosoma brunei* (the West and Central African *T.b. gambiense* and the East African *T.b. rhodesiense*) are known to cause disease. Though the onset of illness in the rare *T.b. rhodesiense* is more acute, the illness these two strains cause is similar, beginning with nonspecific symptoms of headache, fever, and fatigue before progressing to severe neurological symptoms and ultimately coma and death. The transmission cycle is the primary difference and plays an important role in disease control efforts. Animals serve primarily as a reservoir for *T.b. gambiense*, with most transmission occurring between humans via the tsetse fly. *T.b. rhodesiense*, on the other hand, is more zoonotic with transmission typically involving both a human and an animal host.

Vector control is the primary mechanism for addressing *T.b. gambiense* and a variety of methods have been utilized including insecticide-treated livestock, aerial spraying of insecticide, and tsetse fly traps. Tsetse fly traps, which are prevalent in Murchison Falls National Park, are small pieces of blue and black fabric that attract the tsetse fly coupled with a mesh trap that allows the flies to enter through slits at the bottom but not exit as they do not fly down. A recent cost-effectiveness study suggests that small versions of these traps can decrease the prevalence of the tsetse fly in a given area by up to 90%. Based on population modeling, this is sufficient to reduce the transmission of African sleeping sickness to levels where individual screen and treat management is appropriate. Compared with widespread screen and treat programs and compared with other vector control options, use of small traps is less expensive and easier to maintain. Another study in western Uganda found that local acceptability of the traps varied by village based on familiarity, suggesting that further education may be required to increase acceptance of this otherwise cost-effective vector control solution.

References:

WHO African Sleeping Sickness
2 studies