Southern Sudan is one of the areas in eastern Africa most affected by visceral leishmaniasis (kala-azar), but lack of security and funds has hampered control. Since 2005, the return of stability has opened up new opportunities to expand existing interventions and introduce new ones.

Visceral leishmaniasis (kala-azar) is a deadly disease caused by the Leishmania protozoan parasite and transmitted through the bite of sandflies. Without prompt appropriate treatment, as many as 95% of kala-azar patients die, resulting in at least 50,000 deaths per year worldwide (1). Each death equates to a loss of 34 disability-adjusted life years (2). Continuous and large-scale control of kala-azar in the 2 foci of Southern Sudan has been hampered by war and instability. However, after the Comprehensive Peace Agreement between Northern and Southern Sudan was signed on January 9, 2005, the return of relative stability to Southern Sudan is now opening up new opportunities for supporting and improving healthcare delivery. To raise international awareness of kala-azar in Southern Sudan, we reviewed the available data and interventions and report the current status and plans for control of kala-azar.

The Review

Kala-azar occurs in 2 foci (Figure 1) and is caused by L. donovani. In the northern focus (Upper Nile, Jonglei, and Unity states), Phlebotomus orientalis is the vector; in the southern focus (parts of Eastern Equatoria state), P. martini is the vector (3,4). Although studies in eastern Sudan have found domestic animals infected with the parasite (5,6), whether these animals play a role as disease reservoirs has not yet been proven; thus, transmission is still thought to be anthroponotic.

The disease was first reported from Southern Sudan in 1904, and the first epidemic was documented in 1940 with a death rate of 80% (7). Beginning in 1984, an epidemic (unrecognized until 1988) devastated the western part of Upper Nile state, ultimately causing ≈100,000 deaths in a population of 280,000 over a 10-year period (3).

Passive case-detection data on kala-azar in Southern Sudan, collected by the World Health Organization (WHO) since 1989, indicate a cyclical pattern of kala-azar with considerable variation in the caseload from year to year (Figure 2). The dynamics presented in Figure 2 also suggest that Southern Sudan is currently between epidemics and provide a warning that cases may rise dramatically in coming years. In 2006, a total of 1,117 cases were reported, 65.4% of which were primary cases; the remainder were either relapses or cases of post–kala-azar dermal leishmaniasis. From January through June 2007, a total of 492 cases were reported, of which 88.2% were primary cases. The 5 locations accounting for 74.2% of the primary cases in 2007 were Malakal (n = 83), Ulang (n = 72), Nasir (n = 63), and Kiechkuon (n = 25) in Upper Nile state and Lankien (n = 79) in northern Jonglei state. Since 2002, the case-fatality rate recorded at healthcare facilities has been 4%–6%.

These data likely underestimate the actual number of cases because healthcare providers do not always provide complete reports and many kala-azar patients never visit healthcare facilities. Epidemiologic modeling of data from Upper Nile state estimated that those who visited healthcare facilities from October 1998 through May 2002 represented only 55% of cases and that 91% of kala-azar deaths were undetected (8). Health coverage is so minimal that some patients must walk for several days to access even the most basic healthcare services.
Much remains unknown about the epidemiology of kala-azar in Southern Sudan (11). In the absence of detailed information on risk factors (cultural, demographic, epidemiologic, clinical, and geographic), use of long-lasting insecticide-treated nets seems a suitable method of prevention. Results from studies in North Sudan showed that insecticide-treated nets provided 27% protection from kala-azar (12). Whether similar protection can be achieved in Southern Sudan’s disease-endemic areas requires confirmation because effectiveness is dependent on human and vector behavior (13).

The return of stability to Southern Sudan has opened up new challenges and opportunities for kala-azar control. Large-scale population movement of susceptible or infected populations into kala-azar–endemic or –nonendemic areas respectively, poses a major epidemic risk. The healthcare systems are weak and rely on support from faith-based and nongovernment organizations, which need to be coordinated to ensure consistency in diagnosis, treatment, and prevention. As health infrastructure and human resources are being built up, kala-azar will need to be addressed as an integral part of multifunctional healthcare delivery by government staff, but this requires training and the provision of essential supplies.

Kala-azar falls under the mandate of the Director General of Preventive Medicine within the Ministry of Health—Government of Southern Sudan. The Ministry of Health, with support from WHO and in conjunction with nongovernment organizations working on kala-azar, has embarked on a number of activities to strengthen case-management. Laboratory technicians in most referral facilities have now been trained on the direct agglutination test; case-management guidelines have been updated; the essential drugs list is being reviewed and expanded to include alternatives for second-line treatment; and rK39 dipsticks are being distributed to peripheral health facilities to complement clinical diagnosis. With the revision of diagnosis and treatment guidelines, facilities are now able to obtain sodium stibogluconate by providing Pharmaciens sans Frontières with a positive rapid diagnostic test result, but they are encouraged to also take a blood sample for direct agglutination testing, as this is still considered more reliable (8). Meanwhile, the UK-based Malaria Consortium is providing long-lasting insecticide-treated nets to areas in Jonglei and Eastern Equatoria, where malaria and kala-azar are co-endemic.

Conclusions
A strong presence of international donors and the Southern Sudan government’s desire to quickly reconstruct the healthcare sector provide ample opportunity to reduce the incidence of kala-azar. However, this goal can be achieved only with the necessary resources.
Acknowledgments

We thank all agencies and their staffs involved in the control of kala-azar in Southern Sudan, in particular, Médecins sans Frontières.

Dr Kolaczinski is the Neglected Tropical Diseases and Public Health Specialist of the Malaria Consortium, Africa. He has a broad interest in infectious disease epidemiology and the design, implementation, and evaluation of control programs in resource-poor settings.

References


Address for correspondence: Jan H. Kolaczinski, Malaria Consortium Africa, PO Box 8045, Plot 2, Starrock Rd, Kampala, Uganda; email: j.kolaczinski@malarialconsortium.org

etymologia

Leishmaniasis

[lēsh-ma’-ne-ə-sis]

Disease caused by protozoan parasites of the genus Leishmania, named in 1901 for British Army doctor William Leishman, who developed a stain to detect the agent. It is transmitted by the bite of certain species of sand fly, including the genus Lutzomyia in the New World and Phlebotomus in the Old World.

Leishmaniasis has 2 major forms: cutaneous, characterized by skin sores, and visceral, which affects internal organs and is characterized by high fever, substantial weight loss, swelling of the spleen and liver, and anemia. If untreated, the disease is universally fatal within 2 years. Visceral leishmaniasis is also called kala-azar, a Hindi term meaning “black fever.” The causal agent, Leishmania donovani, was also named for physician Charles Donovan, who discovered the agent in India in 1903. An estimated 500,000 cases occur each year; India has the greatest number, followed by Bangladesh, Brazil, Nepal, and Sudan.