

IMPORTED HUMAN AFRICAN TRYPANOSOMIASIS IN EUROPE, 2005-2009

P Gautret (surveillance@eurotravnet.eu)¹, J Clerinx², E Caumes³, F Simon⁴, M Jensenius⁵, L Loutan⁶, P Schlägenhauf⁷, F Castelli⁸, D Freedman⁹, A Miller¹⁰, U Bronner¹¹, P Parola¹, for EuroTravNet¹²

1. Infectious and Tropical Disease Unit, Hôpital Nord AP-HM, Marseille, France
2. Department of Clinical Sciences, Institute of Tropical Medicine, Antwerp, Belgium
3. Infectious and Tropical Disease Unit, Hôpital Pitié-Salpêtrière, Paris, France
4. Infectious and Tropical Disease Unit, Military Hospital Lavéran, Marseille, France
5. Oslo University Hospital, Ullevål, Department of Infectious Diseases, Oslo, Norway
6. Division of International and Humanitarian Medicine, Geneva University Hospitals, Geneva, Switzerland
7. Zurich University, WHO collaborative Centre for Travel Medicine, Zurich, Switzerland
8. Infectious and Tropical Disease Unit, University of Brescia, Brescia, Italy
9. Traveler Health Clinic, William C. Gorgas Center for Geographic Medicine, Division of Infectious Diseases, University of Alabama, Birmingham, United States
10. Tropical and Infectious Disease Unit, Royal Liverpool University Hospital, Liverpool, United Kingdom
11. Department of Infectious Diseases, Karolinska University Hospital, Stockholm, Sweden
12. ECDC collaborative network for travel and tropical medicine: <http://www.istm.org/eurotravnet/main.html>

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Physicians in Europe are likely to see more African trypanosomiasis cases because of the increasing popularity of travel to Africa. In this paper the literature on imported cases in Europe, since 2005 is reviewed. Because of the high mortality risk associated with acute Rhodesian trypanosomiasis, travellers should be informed about preventive measures and the early disease manifestations.

Introduction

Human African trypanosomiasis (HAT) is endemic in sub-Saharan Africa. *Trypanosoma brucei rhodesiense* (East Africa) and *T. b. gambiense* (West Africa) are transmitted to humans by tsetse flies of the *Glossina morsitans* group (*T. b. rhodesiense*) and of the *G. palpalis* group (*T. b. gambiense*) which are found only in Africa. West African sleeping sickness has almost exclusively a human reservoir, while East African trypanosomiasis is a zoonosis involving antelopes, cattle and humans. Infections by both *T. b. gambiense* and *T. b. rhodesiense* are generally under-reported in humans due to acuteness and lack of specific symptoms at the onset of disease as well as its rural distribution. *T. b. rhodesiense* is focally endemic in many eastern and southern African countries. It tends to occur in form of epidemic outbursts. Human infections have been reported mainly from Malawi, south-east and central Uganda and Tanzania, and sporadically from Kenya, Mozambique, Rwanda, Zambia and Zimbabwe. *T. b. gambiense*, the parasite causing West African sleeping sickness is focally endemic in Angola, Democratic Republic of the Congo, Central African Republic, Chad, Republic of the Congo, Côte d'Ivoire, Guinea, southern Sudan and north-west Uganda. Cases have been sporadically reported from Burkina Faso, Cameroon, Equatorial Guinea, Gabon, Nigeria, Benin, Ghana and Mali [1]. All countries listed so far have a surveillance system for HAT, however, there is no dedicated structure for surveillance in Burundi, Ethiopia, Gambia, Guinea-Bissau, Liberia, Niger,

Senegal and Sierra Leone, where under-reporting may be likely [2]. A new HAT atlas initiative for sub-Saharan Africa has led to the creation of a geographic database to store and regularly update HAT epidemiological data. The resulting detailed, high quality regional level maps allow the geo-location of autochthonous cases that have been detected through active and passive surveillance [3].

HAT has always been an exceptional travel-associated disease. It is a rare cause of fever [4] cutaneous lesions and/or neurological signs in travellers returning from endemic areas. Although it has been estimated that about 50 cases are reported yearly outside Africa [5], no recent estimate is available. In Europe, the largest published data on imported HAT included 109 cases registered between 1904 and 1963 [6]. Over the last decades, 26 cases (including 24 West African HAT) seen in France between 1980 and 2004, were reviewed [7]. In addition, imported cases were reported in Italy [8,9], Spain [10], the United Kingdom [11-13], Germany [14], the Netherlands [15-19], Belgium [20], Norway and Sweden [21,22], Switzerland [23], Poland [24] and France [25-26].

We present the clinical and epidemiological characteristics of published HAT cases imported in Europe since 2005 (Table).

Diagnosis

T. b. gambiense represents more than 90% of all reported cases of HAT worldwide (autochthonous and imported cases) but *T. b. rhodesiense* accounts for 60% of imported cases. *T. b. rhodesiense* infection in humans is characterised by high grade fever, an inoculation chancre and substantial parasitaemia in its acute stage. Incubation period is about 6 to 10 days, but may be as short as three days. Gambian HAT may follow an indolent course with a very low or absent parasitaemia. It may remain

unrecognised for years [5]. *T. b. gambiense* is better adapted to its human host, allowing humans to be infective for extended periods thereby sustaining its endemicity. In active infection, *T. b. gambiense* and *T. b. rhodesiense* specific IgG and IgM antibodies are present in high concentration and can be detected by ELISA or immunofluorescence from about three to four weeks after infection. Parasite detection using blood concentration techniques should be done to confirm the infection. Furthermore, in 60% of infections with *T. b. gambiense*, parasites can be detected in lymph aspirate from enlarged cervical nodes. Cerebrospinal fluid examination is always required to evaluate neurological involvement which determines the choice of therapy [5].

Implications for travellers

Whereas imported HAT due to *T. b. gambiense* is more often seen in migrants and expatriates residing in rural endemic areas, HAT due to *T. b. rhodesiense* is more likely to be seen in travellers to East African game parks where the ungulate wildlife serves as a reservoir for the pathogen. In recent years almost all reported cases have been infected in northern Tanzania (Serengeti, Tarangire) or in Uganda (Queen Elizabeth National Park) [17,18,22,24,28]. Some emerging tourist destinations (Malawi: Kasungu National Park, Waza Game Reserve; Rwanda: Akagera National Park; Zambia: South Luangwa National Reserve; Tanzania: Moyowosi Game Reserve) are known foci of *T. b. rhodesiense*, and may pose a risk for travellers.

In travellers infected with *T. b. rhodesiense*, an evolving chancre on the bite site precedes the onset of high grade fever, and usually persists for a few days thereafter. This is an important clinical sign not to be missed by the attending physician. Fulminant disease progression has been reported in a German tourist in her forties with a history of tsetse bites during a visit to the Serengeti National Park. She died only six days after fever onset (13 days following tsetse bites), in Nairobi Hospital, after air ambulance evacuation from a private clinic in Dar es Salaam where the HAT diagnosis was made. She had two typical chancres that were missed when she first presented with fever in another clinic seven days after the tsetse bites, and a malaria diagnosis was alleged [29]. A history of tsetse fly bites in patients with clinical symptoms has to be considered a medical emergency. Early treatment with suramin (Germanin®, Bayer 205) or in case of non-availability, with pentamidine is essential to prevent severe complications and death. All available drugs for HAT treatment, including suramin can be obtained through the World Health Organization (WHO) trypanosomiasis control and surveillance unit, by contacting Dr. Simarro (simaropp@who.int) and Dr. Franco (francoj@who.int). A small stock of HAT drugs should be made available at one tropical medicine/travel medicine centre per country, in order to enable early treatment when required.

TABLE

Imported cases of African trypanosomiasis in Europe, since 2005, by date of publication

Sex	Age	Nationality	Clinical features (time before first symptoms and diagnosis)	Sub-species	Country of exposure (reason for travel)	Treatment	Reference (year)
M	44	Italian	Fever, headache, fatigue, weight loss, paresthesia, day-time somnolence, insomnia, hepatosplenomegaly, lymph nodes, ataxia (6 months)	<i>gambiense</i>	Gabon (expatriate)	Eflornithine	9 (2005)
F	54	Italian	Fever, headache, fatigue, splenomegaly, insomnia, hyperesthesia (3 months)	<i>gambiense</i>	Central African Republic (expatriate)	Eflornithine	9 (2005)
F	52	Dutch	Fever, headache, vomiting, diarrhea, confusion, depression, hallucinations, sleepiness. One relapse episode. Death. (4 days)	<i>rhodesiense</i>	Serengeti national park of Tanzania (tourist)	Suramin, Melarsoprol	17 (2006)
M	37	French	Fever, fatigue, anorexia, headache, arthralgia, insomnia, rash, pruritus, paresthesia, lymph nodes, weight loss (8 months)	<i>gambiense</i>	Gabon, Cameroon, Guinea (expatriate)	Pentamidine	26 (2007)
M	72	French	Fever, fatigue, pruritus, lymph nodes, weight loss (5 months)	<i>gambiense</i>	Gabon (expatriate)	Pentamidine	26 (2007)
M	26	British	Fever, insomnia, lethargia, vomiting chancre, erythema, jaundice (5 days)	<i>rhodesiense</i>	Malawi (military)	Suramin	12 (2007)
M	38	British	Fatigue, somnolence, headache, fever, lymph nodes, hepatomegaly, myalgia. One relapse episode. (4 months)	<i>rhodesiense</i>	Namibia, Mozambique, Malawi (unknown reason, travel for 2.5 years)	Suramin, Melarsoprol	13 (2007)
F	25	Dutch	Fever, headache, cellulitis, red papule, lymphangitis (4 days)	<i>rhodesiense</i>	Serengeti National park of Tanzania (tourist)	Suramin	18 (2009)
M	61	Polish	Fever, jaundice, respiratory distress, bleeding (disseminated intravascular coagulation - DIC), oliguria, skin rash, hepatosplenomegaly (8 days)	<i>rhodesiense</i>	Queen Elizabeth national park of Uganda (tourist)	Pentamidine	24 (2009)
M	50	French	Fatigue, fever, double skin ulceration, lymph nodes (7 days)	<i>gambiense</i>	Gabon (expatriate)	Pentamidine	27 (2009)
F	27	Dutch (immigrant from Angola)	Fatigue, apathy, sleepiness, loss of appetite, depression, coma (32 months)	<i>gambiense</i>	Angola (immigrant)	Eflornithine	19 (2009)

Conclusions

Physicians in Europe are likely to see more HAT cases because of the increasing popularity of travel to Africa, the only region that has recorded a growing number (3%) of tourist arrivals in 2009 according to the United Nations World Tourism Organization (UNWTO, www.unwto.org). The average annual growth of tourism in some sub-Saharan countries such as Tanzania and Uganda has ranged between 10 and 20% with a focus on safari travel. Because of the high mortality risk associated with acute Rhodesian trypanosomiasis, European travellers to destinations where the disease is endemic, particularly game parks and safari areas in eastern and southern Africa, should be informed about the early disease manifestations and advised to report tsetse bites to their physician upon return, when presenting symptoms. Although thousands of travellers are bitten by tsetse flies each year, the majority will not develop HAT. Nevertheless, caution is recommended. Preventive measures against tsetse fly bites are helpful. The tsetse fly is active during the daytime and is particularly attracted by motion and dark colours, with a marked preference for blue. Bites are painful and can be prevented by wearing wrist- and ankle-length clothing of thick material and avoiding bright or contrasting coloured clothing. Because the tsetse fly is able to bite through thinly woven fabric, the impregnation of clothing with permethrin is recommended together with the application of a skin repellent [30].

At present, imported HAT cases are not systematically reported through the existing channels to signal emerging infections (ProMED) or in the accessible medical literature. To harmonise reporting, we would recommend the creation of an electronic reporting form. This would allow for the evaluation of long term trends in imported HAT, and contribute to identifying risk factors and risk areas.

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