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**CASE REPORT**

# VISCERAL LEISHMANIASIS FROM AN AREA PREVIOUSLY NOT KNOWN TO BE ENDEMIC; DANGUR, BENSHANGUL-GUMUZ, REGIONAL STATE, NORTHWEST ETHIOPIA: A CASE REPORT

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## ABSTRACT

*Visceral leishmaniasis (VL) is a fatal and growing public health problem in Ethiopia. VL is recently reported outside the major endemic foci, the lowlands in the northwest and the Omo and Abaroba-plain, Segen and Woito valleys in the southwest. Here, we report a visceral leishmaniasis case from Benishangul-Gumuz Regional state near the Guba area. The patient had no history of travel to known VL endemic areas. The patient is a temporary farm laborer from West Gojjam Zone, Wanberma District in Amhara Regional State. While in Benishangul-Gumuz, the patient was diagnosed with prolonged and intermittent fever, epistaxis, splenomegaly, skin pallor, diarrhea, cough and oedema. Laboratory diagnosis results showed that he had marked leucopenia, thrombocytopenia and anemia. The patient was suspected of having VL and checked with rK39 immunochromatography and direct agglutination tests which were positive for anti leishmanial antibodies. After getting full dose of sodium stibogluconate as per the national visceral leishmaniasis treatment guideline, was clinically cured. As the area in Benshangul-Gumuz where this patient contracted visceral leishmaniasis is under social and ecological transformation with large scale projects attracting huge influx of temporary laborers and settlers, due attention is needed with respect to introduction or emergence of VL transmission.*

***Keywords: Splenomegally, Guba, VL endemic, rK39.***

## INTRODUCTION

Visceral leishmaniasis (VL) or Kala-azar is a (re) emerging and is becoming a growing public health concern in Ethiopia. VL is endemic in approximately 366, 633km$^2$ (33%) of total land mass mainly in the fertile lowland of Ethiopia and over 3.2 million people are at high risk of being infected (1). According to federal ministry of health an estimate of 2000 to 4,500 new cases occur annually (2). The high risk areas being under active change due to new large scale projects; including the great Ethiopian Renaissance Dam, sugar industries and sugar cane farms, large scale irrigation based commercial farms and explorations for natural resources, there is a huge influx of immigrants either temporarily and/or settlers.

The resettlement schemes to accommodate the developmental plans that brought widely spread settlements into relatively large villages, might increase the population at risk if any outbreak occurs. Thus these areas need a great attention with respect to introduction or (re) emergence of infectious diseases like VL. That is why this VL case attracted our attention and merits wider dissemination. Moreover, the self report case might be the tip of the ice-berg and there could be ongoing VL transmission in Benshangul-Gumuz which calls for rapid surveillance before it grows to a public health challenge.

## CASE DESCRIPTION

A 23 years old male patient was admitted to Addis Zemen Health Center, South Gonder, Amhara Regional State on 25 June 2014 with complaints of prolonged fever and weight loss. He had history of joint pain, dry and non productive cough, watery diarrhea, epistaxis, sweating and chills. Physical examination showed body temperature of 38$^o$C, pulse rate of 92 beats/minute and respiration rate of 32/minute. He had splenomegaly (6cm), oedema, and skin pallor. Laboratory tests showed leucopenia (WBC counts: 1000/µl) and thrombocytopenia (platelet cell count: 43,000 /µl); normal RBC count (RBC cells count: 4.29 x 10$^6$/µl) and moderate anemia (hemoglobin: 10.7 g/dl).

White blood cell differential count showed Granulo-

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cytopenia (28%) and Lymphocytosis (62%). Results of biochemical laboratory tests were normal except for a high (67 IU/L) serum Glutamic-Oxaloacetic transaminase (SGOT) and low (15 IU/L) serum Glutamic Pyruvic transaminase (SGPT). Blood urea was 22.1 mg/dl (normal range up to 50 mg/dl) and creatinine 0.94 mg/dl (normal range up to 1.1 mg/dl). Serological tests for rK39 (InBiOS, the Netherlands) revealed positive for anti-leishmanial antibodies. Further, Direct Agglutination Test (DAT) (Institute of Tropical Medicine, Belgium, Antwerp) was positive with titration value of 1: 204,800. His serological test for HIV was non-reactive.

The patient had no travel history to known VL endemic areas. He lived in the Amhara Regional State, West Gojjam Zone, Wanberma District before moved to Benshangul-Gumuz for a temporary work.

The patient was treated with intramuscular injections of sodium stibogluconate (SSG, Albert David, Kolkotta, India) at a dose of 20 mg/kg per day for 30 days. He improved clinically after he received a full dose of the treatment: he had no complaint of illness, good appetite, and was healthy looking. His chest was clear on auscultation and he had regular S1 and S2 heart sounds. The spleen was palpable just under the left costal margin. The patient was discharged after a successful treatment.

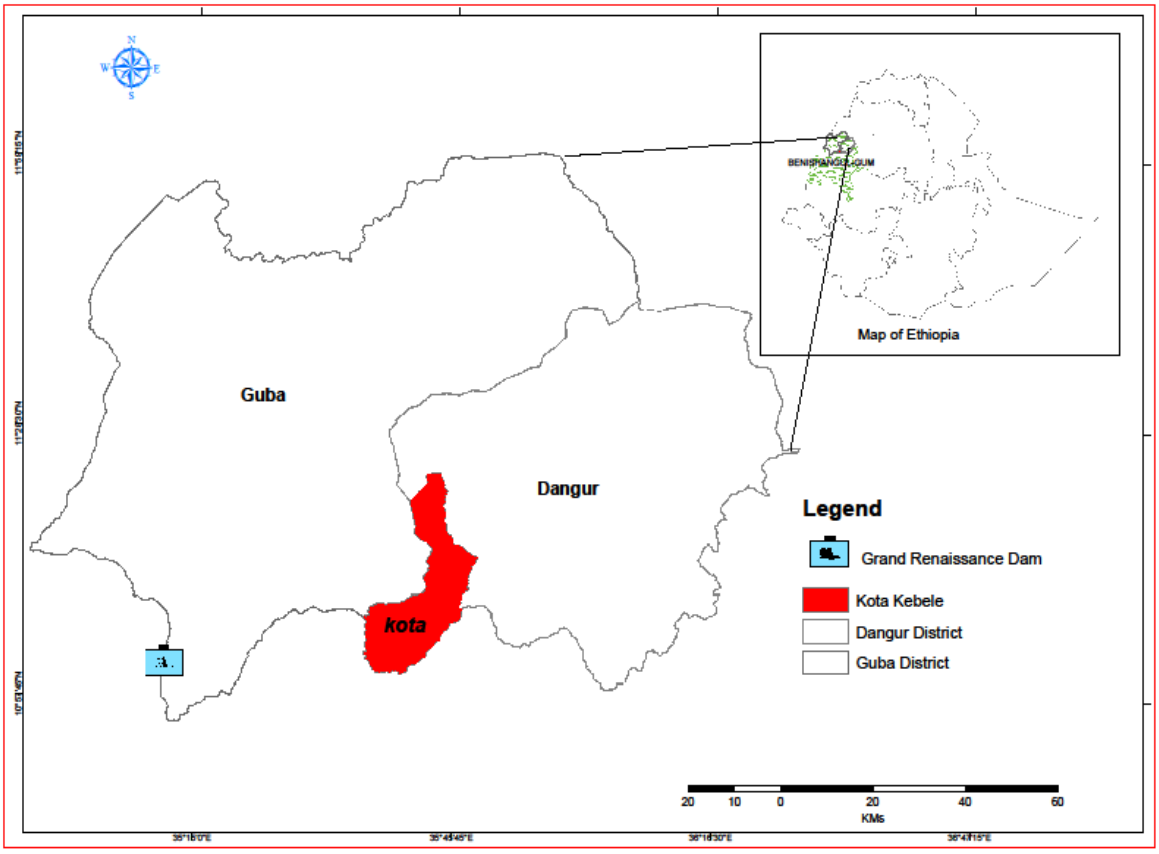


**Figure** 1: Kota Kebele of Dangur district, Benishangul-Gumuz Regional State, northwest Ethiopia, where the cotton farm in which the VL case was working at is found.

## DISCUSSION

VL is a disease caused by systemic infection with protozoa of the genus *Leishmania*, transmitted to mammalian hosts by the bite of infected phlebotomine sandflies. The poorest communities are most affected; for example east Africa alone contributes 17% of the global burden of which the Sudan, South Sudan and Ethiopia take the major share of the disease burden (3). During the last decades the region has experienced several small pockets of (re) emergence including during 2000 in Somali refugee (Ifo, Dagahaley, and Hagadera in Kenya) camps (4), 2002 in northern Jonglei and eastern Upper Nile states of south Sudan (5), 2002-2005 in Bakool region, Huddur and Tijelow district of Somali (6), and 2004-2007 in Libo Kemkem and Fogera districts.

VL is a growing public health problem in Ethiopia. In addition to the major outbreak in Libo Kemkem and Fogera, smaller outbreaks were reported to the Federal Ministry of health from Tahaty Adiabo District in the Tigray Regional State and Imey District of the Somali Regional State (2). Large scale migrations due to several reasons, civil wars, and large movements of temporary laborers, malnutrition and HIV-co-infection were the main implicated factors for this resurgence of VL which claimed several hundreds of human lives.

In response to the mounting challenge, the Ethiopian Federal Ministry of Health revised its VL diagnosis and treatment guideline in 2013 to accommodate aspects of prevention of spread of VL. The conducted a nationwide VL risk mapping which identified major environmental risk factors, and identified risk areas and population. This risk mapping added new areas that fall within high and very high risk groups to the historically known VL endemic lowlands in the north, south and the southwest Ethiopia (1, 7-9). To our knowledge, although some parts of the Benishangul-Gumuz Regional State were under very high risk by the risk model (1), there is no clinical VL case reported from the Region.

Thus the case from the Region reported here, a temporary farm laborer who worked in two farms in Guba and Dangur districts, two of 20 districts in Benishangul-Gumuz, is the first VL case. Guba District, which borders Dangur on the east, has a total population of 14,907, an estimated land area of 3,896.1 $km^2$, and a population density of 2.8 people per square kilometer. Dangur district has an estimated land area of 8,387.19 $km^2$, a population density of five people per square kilometer, a total population of 48,537, and an annual rainfall of 860 mm. The district is lowland with an altitude below 1,500 meters above sea level.

In East Africa, VL occurs in lowland ecological settings with either *Acacia-Balanites* savannah lowland in the north, where *Phlebotomus orientalis* (*P. orientalis*) is the major vector or the savannah lowland areas in the south, where *P. martini* and *P. celiae* are the dominant species (10). Thus, the presence of favorable environmental factors, vectors and large scale population movements might have contributed for the (re)emergence or introduction of VL into the Benishangul-Gumuz Region. The VL case reported here might be the tip of the iceberg and possibly there is ongoing transmission which underlines the urgent need for rapid survey and control planning considering the economic importance of the region and large scale social and environmental reforms taking place in the region, including the Ethiopian Grand Renaissance Dam and related agricultural developments and investments in irrigation-based or rain-fed large scale commercial farms which are attracting influx of temporary laborers and settlers and resettlement of local people to accommodate the reforms.

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