

Kala-azar in south-west Ethiopia: seasonal variation in disease occurrence

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Summary

In a 12-year retrospective study of patients with kala-azar from Gidole Hospital in south-west Ethiopia it is demonstrated that most patients are diagnosed during the months August to November with another small peak from March to May. It is suggested that transmission is associated with two main periods of annual rainfall.

Introduction

The description of the epidemiology of kala-azar from south-west Ethiopia has been based on isolated clinical and vector studies as well as leishmanin skin testing (COLE *et al.*, 1942; FULLER *et al.*, 1974, 1979; GEMETCHU *et al.*, 1976; LINDTJØRN & OLAFSSON, 1983), but there are no accounts of any longitudinal studies from Ethiopia.

The objectives of this paper are to describe the variation in disease occurrence over a 12-year period from the Gardula area (Sagan and Woitu valleys) in the south-west Ethiopian kala-azar focus and to describe the monthly distribution of cases and relate these findings to climatological data.

Patients and Methods

A retrospective study of patients with kala-azar diagnosed at Gidole Hospital from 1.1.1970 to 31.12.1981 was made by reviewing all the medical records from the period.

The diagnosis of kala-azar was based on the presence of leishmaniae in bone marrow or spleen aspirates (36 patients). Positive cultures on NNN medium were also obtained in five.

Climatological data from the Sagan and Woitu valleys are not available. Regular measurements of temperature and rainfall have, however, been kept at the Mekane Yesus Church station in Konso (altitude 1550m), 20 km from the Sagan valley (altitude 500 to 900 m). These data, although not representative of the total annual rainfall and temperature in the Sagan valley, are thought to indicate the timing and duration of the rainy seasons. Generally, the Sagan and Woitu valleys are known to be warmer and drier than the upland Konso station. The annual mean rainfall for the period 1971-81 was 617.5 mm (range 259.2 to 1174.2 mm), and the mean monthly rainfall distribution for the same period is seen in Fig. 1 (FUGLESTAD, 1980; Haugen, personal communication, 1982).

Results

36 patients (33 men and 3 women, mean age 21.7 years, range 4 to 45 years) had kala-azar. All patients had homes near the Sagan (31 patients) and Woitu (5 patients) valleys.

A few cases (up to two per year) were diagnosed yearly up to 1980, 11 in 1980 and 17 in 1981. The monthly distribution of diagnosis is shown in Fig. 1.

Discussion

Kala-azar is a disease well known to the Konso people, of whom many use the Sagan valley for agriculture. The disease is most often referred to as

"golloba", which is characterized as: "The spleen gets big, as does the abdomen, sometimes with water. The patient becomes thinner and thinner in spite of always eating. He is not able to walk up hills. There is no treatment and the patient dies".

Although acute malaria is referred to as "binne", the clinical description of "golloba" may also include cases with splenomegaly of malarial aetiology. Patients with parasitologically verified kala-azar are,

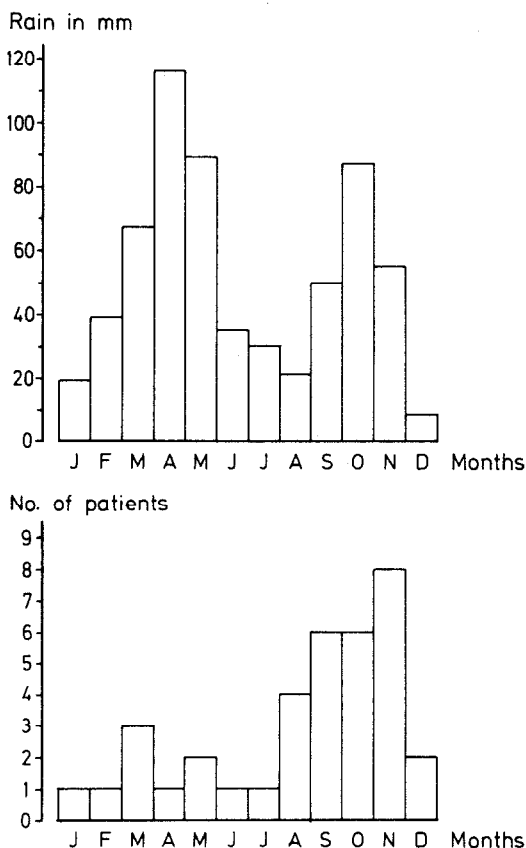


Fig. 1. Rainfall data recorded at Konso compared with monthly distribution of diagnosis of patients with kala-azar.

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however, also referred to as "golloba" (Lindtjørn, unpublished data, 1981). As the Konso language contains a specific name for a disease of which kala-azar must be at least a part, it seems reasonable to assume that the disease has been known by the local people for some time, and probably before its first description from south-west Ethiopia in 1942 (COLE *et al.*, 1942).

The data presented in this review are based on hospital diagnosed cases and are therefore probably not representative of the incidence of kala-azar in affected communities in the Sagan and Woyto valleys. The relatively marked increase during the period 1980-1981 may, however, be significant: the Konso clinic (the only clinic in the Konso area) has been visited monthly by the doctor in Gidole, and a substantial proportion of patients coming to Gidole Hospital are from the Konso area. It is therefore unlikely that any major epidemic would have passed unnoticed. However, an increased awareness of the disease and factors which might determine the patients presenting at hospital (planting, harvesting, cultural factors, distance from hospital, etc.) may also account for an increase in hospital diagnosed cases.

Fig. 1 shows that most cases were diagnosed during the months August to November, with another small peak during March to May. As the incubation period in patients with kala-azar in south-west Ethiopia is thought to be 6 to 10 months (LINDTJØRN & OLAFSSON, 1983), it seems reasonable to assume that transmission is associated with the two main periods of annual rainfall.

An association between density of man-biting sandflies and rainfall has previously been demonstrated from the Sudan where *Phlebotomus orientalis* has been established as the vector (HOOGSTRAAL & HEYNEMAN, 1969). A similar seasonal variation has been demonstrated from Kenya where *Ph. martini* is

thought to be the vector (MINTER, 1964). *Ph. orientalis* is thought to be responsible for transmitting kala-azar in the south-western Ethiopian focus (GEMETCHU *et al.*, 1976; FULLER *et al.*, 1979), but it has not been found east of the Omo river. The vector of kala-azar in the Chew Bahir drainage basin (Sagan and Woyto valleys) therefore remains unknown.

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