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*Short Communication*

# Occurrence of Human Cutaneous Leishmaniasis in Zouagha My Yacoub Province (Morocco)

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## ABSTRACT

This paper reports 135 cases of human cutaneous leishmaniasis (CL) in Zouagha My Yacoub province of Morocco. *Phlebotomus sergenti* was found to be the predominant sandfly in the area of outbreak. There was no evidence of CL in animals. Enzymatic typing indicated *Leishmania tropica* as etiological cause of this disease in this area.

**Key Words:** Cutaneous leishmaniasis; *Leishmania tropica;* Morocco

## INTRODUCTION

In Morocco, the endemicity of cutaneous leishmaniasis (LC) due to *Leishmania tropica* has been well documented (Marty *et al*., 1989; Guessouss-Idrissi *et al*., 1997). Man and sandfly, *Phlebotomus sergenti* play, respectively the role of probably effective reservoir and main vector (Guilvard *et al*., 1991), except for some zymodemes in Azilal, Essaouira and Agadir area (Pratlong *et al*., 1991).

This paper reports results of study of a new "microfocus" of human cutaneous leishmaniasis (HLC) at Zouagha My Yacoub (ZMY) province, which represents the northern part of Fès state.

## MATERIALS AND METHODS

**Field work.** The ZMY region supports a semi-arid climate with mean annual rainfall about 420 mm. The vegetation is mainly represented by olive tree. Affected quarters (Ras-elma & Benslimane) were selected in ZMY region. A passive survey was carried out in order to determine the prevalence of the disease and the autochthony of cases, and to gather data for the development of guidelines to halt the spread of the outbreak.

**Patients:** Passive case detection. Patients with clinical lesions of CL were passively enrolled in this study during 3 months from March to May 2002 at local hospital of ZMY for diagnostic and treatment.

**Data collection.** For each clinical case: sex, age, migratory history, number of current cases of CL in each house, history of past CL, presence of dogs and rodents in the peridomicile zone were determined.

**Parasitological Studies**

**Microscopy.** Cases were examined, their lesions counted and the duration of disease was noted. The nodular margin of the most active-looking lesion was sliced open and a smear taken using a scalpel blade. Smears were fixed in methanol, stained with Giemsa and examined during evening by experienced microscopists.

**Parasite culture.** Biopsy samples of patients were inoculated into biphasic NNN medium comprised fresh, aseptic and decomplemented rabbit blood. The samples were transported on ice into Institut National d'Hygiène, where were incubated at 23°C and examined for sterility and presence of *Leishmania* promastigotes each week for 4 weeks.

**Entomological Studies**

**Sandflies catches.** 17 stations were selected for sandfly collection. A total of 105 sticky traps and 11 CDC light traps were used.

**Mounting and identification.** Collected samples were placed in 70% alcohol, labelled and transferred to Medical Entomology Laboratory for mounting and morphological identification.

**Animal diagnosis.** Domestic and semi-domestic dogs were clinically examined for signs of LC. The rodents were caught and identified using the Identification-key described in activities guideline of the Ministry of Health (Ministere de la santé, 1997).

## RESULTS

**parasitological study.** Observation of stained slides showed that 135 from 350 cases were positive for *Leishmania* amastigotes. However, out of 76 cultures 16 were positives. Isolated strains were mass cultivated and identified biochemically compared to common species circulating in Morocco. The enzymatic profile was identical with *Leishmania tropica* MON 102 (Rhajaoui *et al*., 2004).

**Collected data.** During the survey, 350 patients were examined for CL. 38.6%, were confirmed to have CL. According to questionnaire, all cases were recent, the mean duration of active lesions was 5 months and 18 lesions were reported to be older than 12 months. 54.8% of infected population had one lesion, 19.6% had 2 lesions, 3 lesions

were noted in 9.9% cases and 15.7% had more than 3 lesions. 35% of lesions were localised on the face, 42% on posterior members and 23% on anterior members. The average age of confirmed cases was 34 years. The sex ratio (females to males) being 1.5. There were 73.4% of CL among people aged 0 - 15 years followed by 12.6% with ages between 16 - 30 years and 14.1% among those aged more than 30 years. However, the infected population was stable, only 12% had moved within the past year (Table I).

**Sandfly collection.** As shown in Table II, 884 sandflies were caught and identified. Fly species belonged to 2 Genders: *Phlebotomus* and *Sergentomyia*. *Phlebotomus* sergenti (39.93%) and *Phlebotomus papatasi* (35.63%) were more frequent.

**Animal reservoirs.** The incriminated animals (captured dogs & rodents) didn't show any CL lesions or signs of the disease.

**Table I. Age distribution of infected cases**

| Age groups (years) | Number of cases |
|---|---|
| 0-15 | 99 (73.3%) |
| 16-30 | 17 (12.6%) |
| 31-70 | 19 (14.1%) |

**Table II. Percentage of identified sandflies**

| Sand flies | Total of sandflies | |
|---|---|---|
| | Number | Percentage |
| *P. segrenti* | 353 | 39.93 % |
| *P. papatasi* | 315 | 35.63% |
| *P. longiscuspis* | 116 | 13.12 % |
| *P. spp* and *S. minuta* | 100 | 11.31 % |

## DISCUSSION

In Morocco, three types of *Leishmania* parasite could cause HCL: *Leishmania major*, responsible of zoonotic leishmaniasis localized in South of Atlas mountains (Rioux *et al*., 1986). This type occurred as epidemic disease with high number of cases (more than 5000 case). *Leishmania infantum*, etiological parasite of rare cases of HCL. It was found in northern area (Ministere de la santé, 1997). Finally, *Leishmania tropica* recently known as polymorphic complex (Pratlong *et al*., 1991). Last reports indicated that occurrence of *Leishmania tropica* infections followed a hypoendemic rhythm with few cases. This is probably due to presence of 7 zymodemes, which lived in epidemic equilibrium in sporadic sites through the centre of the kingdom. In 1995 and for the first time, we reported an epidemic HCL due to *Leishmania tropica* from Taza province with almost 128 cases. Therefore, another outbreak with more than 235 cases was reported within July-August 2000 in Chichaoua province.

According to result similarity between Chichaoua, Taza and Zouagha My Yacoub, we thought that the HCL focus in ZMY was probably due to *Leishmania tropica.* First, because of the presence only of HCL and aspect, duration and size of human lesions were different from those caused by zoonotic leishmaniasis and also predominance of *Phlebotomus sergenti* previously demonstrated to be the effective vector of *Leishmania tropica* (Guilvard *et al*., 1991) (Table II). However, absence of infected animals (dogs or rodents) indicated probably an anthroponotic transmission.

This assumption was confirmed by biochemical typing of 16 strains of *Leishmania* parasite, which showed that the causal parasite is *Leishmania tropica* MON 102 (Rhajaoui, *et al*., 2004), which was more anthropofilic than zoophilic.

Infection of all age groups, population stability and absence of history of past HCL led to suggest that ZMY province was a new focus, where population lack a homologue immunity against *Leishmania tropica.* However, the higher incidence of infection among females in affected population may due to two factors. Men do not seek medical advice and tend to have fewer activities around houses. Women have habit to rest outside of their homes especially during the sun-set time. In addition, the emergence of LC due to *L. tropica* as an increasingly important public health problem appears to be due to several factors. Likely, the most important, was ecological and demographic changes. This is most apparent in ZMY. In fact, the rapid human population growth together with concomitant development of new farmland led to conditions supporting large populations of the vector *P. sergenti.* The spread of the disease was, also facilitated by remarkable urbanization process in the settlements usually over-crowded and with inadequate housing and poor sanitations (Guessouss-Idrissi *et al*., 1997).

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