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Leishmaniasis among Gold Miners, French Guiana

To the Editor: In 2004, the Cayenne General Hospital and public health centers recorded 348 new cases of cutaneous leishmaniasis (CL) in French Guiana (*1*). A case of CL was considered confirmed if cutaneous lesions were present for ≥2 weeks; the patient had a compatible epidemiologic history; and microscopic examination of dermal scrapings, parasite cultivation, or both showed positive results for *Leishmania*. According to the population estimate given by the French National Institute for Statistics and Economical Studies (INSEE, Cayenne), the incidence of CL in 2004 was 0.2%–0.4% and has been relatively stable since 1979 (*2*,*3*). However, when the annual number of cases per village were examined, new CL cases were heterogeneously distributed. Saint Elie, a gold-mining village in the inland neotropical forest, had an apparent incidence rate of 25.9% in 2004 and 28.9% in 2005 (Figure); risk for infection in this village was, on average, 65× higher than anywhere else in French Guiana. We tested samples from 12 random CL patients with a *Leishmania*-specific polymerase chain reaction–restriction fragment length polymorphism test that targeted the internal transcribed spacer 1 of ribosomal RNA genes with primers SSU-12103-D (5′-GGGAATATCCTCAGCACGT-3′) and 5.8S-13333-R (5′-CGACACTGAGAATATGGCATG-3′) (*4*). All these patients were infected with *Leishmania guyanensis.*

Isolated in dense rainforest (no road or airport) and with 239 inhabitants (INSEE, Cayenne), Saint Elie is situated on a gold seam; miners illegally create trails from the village to deposits in a 10-km circumference in the dense forest around the village. Compared to other French Guianan villages, such as Saül and Régina, which are similarly isolated in the rainforest and have 160 and 765 inhabitants (INSEE, Cayenne), respectively, and Iracoubo, the village closest to Saint Elie with 1,430 inhabitants (INSEE, Cayenne), substantially more new CL cases have been observed in Saint Elie since 2003. Since 2000, medical rounds have been undertaken every 15 days in the villages of Saint Elie and Saül, whereas people from Régina and Iracoubo have doctors at their disposal every day.

Official records indicate that the population of Saint Elie has doubled in the past 10 years, reaching 239 inhabitants in 1999 (INSEE, Cayenne). However, 860 new medical files have been registered in the Saint Elie Health Centre since 2000. This finding could be explained by the high number of illegal workers in this area. Patient interviews showed that most of these workers (≈90%) originated from the poorest northern Brazilian states (Pará, Amapá, Roraima, and especially Maranhão). Thus, the incidence rate of 25.9%, calculated on the basis of 239 inhabitants, was likely overestimated. Taking into account a substantial turnover in migrant populations, the denominator could be 500–1,000 inhabitants, and the incidence rate would be 6.2%–12.4%. All patients worked in the small-scale gold mines surrounding Saint Elie, and CL cases were recorded without seasonal fluctuations. Imported cases are possible, but reports are likely to be anecdotal because clinical observations, estimated dates of infection, and duration of patient stay in Saint Elie were congruent and because all genotyped strains were Guianan *L. guyanensis* (*1*).

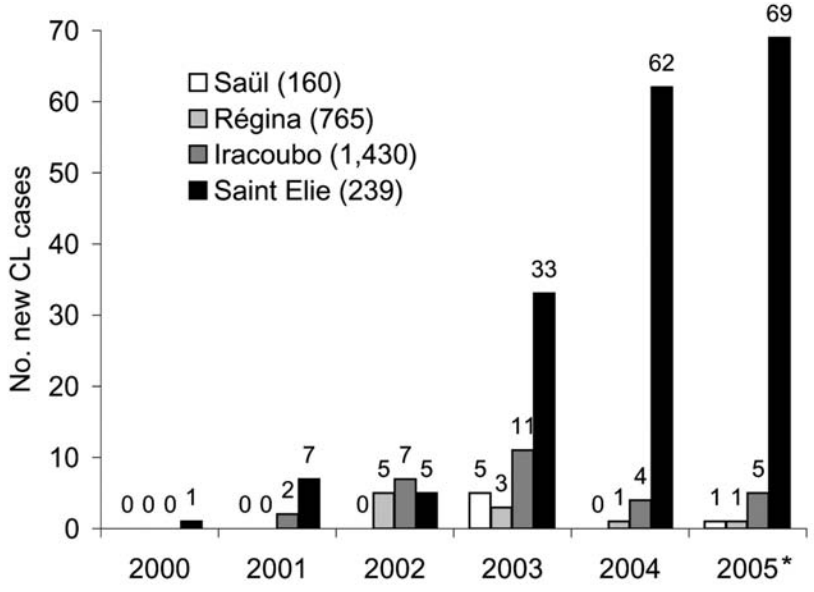

Figure. Number of new cutaneous leishmaniasis (CL) cases registered in health centers of 4 villages of French Guiana (Iracoubo, Régina, Saül, and Saint Elie) from 2000 to 2005. For each village, the 1999 population estimate (French National Institute for Statistics and Economical Studies, Cayenne) is given in parentheses. *Cases Jan–Aug 2005.

Several infection risk factors exist simultaneously in this situation. In a CL-endemic area, immigrant populations, who are mostly nonimmune, exert pressure on the environment (deforestation) that directly increases their risk for exposure to infected vectors, in the absence of prophylactic measures. The initial short-term effect of deforestation is the mobilization of aggressive adult sandflies, which have been disturbed while resting. However, the ability of zoophilic vectors to adapt to peridomestic environments has also already greatly influenced the distribution of leishmaniases in South America (*5*–*7*).

Considering the uncertainty of the population estimate, turnover, and immunity status, we assume that incidence rates should be considered cautiously. Nevertheless, we found that gold mining in forested areas constitutes a risk factor for CL, at least in French Guiana and probably in all Amazonian rainforests. This risk could be a public health concern. Larger studies in other gold-mining areas are required to quantify the incidence of CL among workers to effectively focus prophylactic and preventive campaigns.

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Mycobacterium tuberculosis Drug Resistance, Ghana

To the Editor: The directly observed treatment strategy (DOTS) for tuberculosis (TB) treatment has been implemented in Ghana since 1994. Before then, TB was treated without adherence to any concerted guidelines. The 2003 report of the Ghanaian National Tuberculosis Programme (NTP) stated a TB incidence of 281/100,000 (*1*). NTP ensures treatment of all patients with an 8-month course of streptomycin, isoniazid, rifampin, and pyrazinamide (for 2 months), followed by thiacetazone and isoniazid (6 months). The cure rate for 2003 was >50% (*1*), and >75% is anticipated for 2005.

To determine the extent of drug resistance and to make suggestions for future Ghanaian NTP strategies, we assessed resistance against anti-TB drugs used in Ghana. A total of 2,064 patients with new cases of pulmonary TB were recruited at Korle Bu Teaching Hospital, Accra; Komfo Anokye Teaching Hospital, Kumasi; 15 periurban hospitals; and hospitals in the Ashanti, Eastern, and Central Regions of Ghana. These patients were consecutively enrolled in a cross-sectional study from September 2001 to December 2004. On all patients' clinical examinations, chest radiographs, sputum smears for staining of acid-fast bacteria, HIV testing, and culturing of *Mycobacterium tuberculosis* complex strains were performed. Samples were taken only after informed consent was given. The study was approved by the appropriate ethics committees.

A total of 2,064 *Mycobacterium* isolates were cultured at the Kumasi Centre for Collaborative Research. After decontamination of sputum samples (N-acetyl-L-cysteine/NaOH) and centrifugation, sediments were transferred onto Lowenstein-Jensen (LJ) media, incubated (37°C), and read weekly for 10 weeks for mycobacterial growth. Subsequently, cultures were sent to the German National Reference Centre for Mycobacteria in Borstel, Germany, a reference laboratory of the World Health Organization, for drug sensitivity testing (DST; proportion method on LJ media). Sensitivity to isoniazid, rifampin, pyrazinamide,