niazid chemoprophylaxis due to resistance of the infecting organism.

Decreased susceptibility to isoniazid among *M. kansasii* isolates is common (*7*,*8*), and this microorganism is naturally resistant to pyrazinamide (*9*). This pattern of resistance is a serious obstacle for the use of these drugs in monotherapy or when combined with rifampin in the prevention of lung disease caused by *M. kansasii* (*10*).

The source of the infection in this patient is unknown. In a large series of infectious diseases associated with infliximab therapy, nontuberculous mycobacteria were isolated in 9% of the patients who had mycobacterial diseases (*2*). As in our patient, these infections developed shortly after initiation of treatment with infliximab, which suggests that reactivation of a latent infection is the most probable origin of the disease. Although a mildly positive tuberculin skin test result can be observed in patients infected with atypical mycobacteria, the strong reaction seen in this patient suggests a latent infection with *M. tuberculosis* (*10*). We could speculate on the possibility of a double infection with *M. tuberculosis* (contracted through household contacts with his father) and *M. kansasii* through environmental exposure. In this scenario, isoniazid chemoprophylaxis could have prevented the former but not the latter.

In summary, failure of isoniazid chemoprophylaxis can be anticipated in patients who initiate treatment with infliximab and who have latent infections due to *M. kansasii*. Despite routine antituberculous chemoprophylaxis, patients receiving infliximab therapy should be carefully evaluated for lung infection caused by atypical mycobacteria.

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Extensively Drug-Resistant *Mycobacterium tuberculosis*, India

To the Editor: India is contributing nearly one third of the world's tuberculosis (TB) cases and has the highest rate of new TB cases (*1*). Prevalence of multidrug-resistant TB (MDR TB) cases is on the rise in India, and proportions of new cases of MDR TB have been observed to vary from 1.1% to 5.3% in most of the reported studies. The proportion of previously treated patients with MDR TB varied from 8% to 67% (*2*). Although these studies have been conducted in different parts of India, they indicate an increasing trend of MDR TB cases.

MDR TB cases threaten the effectiveness of chemotherapy for both treatment and control of TB and require the use of second-line drugs that are more expensive, toxic, and less effective than first-line anti-TB drugs (*3*). The Green Light Committee established by the Stop TB partners (*4*), which ensures the proper use of second-line drugs to prevent increasing drug resistance in MDR TB cases in resource-limited countries, encountered resistance to these drugs. This led to the emergence of new terminology in relation to drug-resistant TB, i.e., extensively drug-resistant TB (XDR TB). XDR TB is defined as TB caused by a *Mycobacterium tuberculosis* strain that is resistant to at least rifampin and isoniazid among the first-line anti-TB drugs (MDR TB) in addition to resistance to any fluoroquinolones and at least 1 of 3 injectable second-line drugs (*5*). A recent report describes the current prevalence of XDR TB worldwide (*6*). Although India has high annual risk for TB cases and increasing prevalence of MDR TB cases, XDR TB has not yet been described in India.

From December 2000 through December 2002, 68 MDR TB isolates

were obtained from sputum samples from pulmonary TB patients, referred to Department of Microbiology, King George's Medical University, Lucknow Uttar Pradesh, India, for culture and sensitivity testing. Drug susceptibility testing for first-line drugs was performed by 1% proportion method against streptomycin (4 μg/mL), isoniazid (0.2 μg/mL), rifampin (40 μg/mL), and ethambutol (2 μg/mL) (*7*). The susceptibility of MDR TB isolates against second-line drugs was done by the absolute concentration method (MIC) for ofloxacin (0.5–16 μg/mL) and kanamycin (2–64 μg/mL) and by 1% proportional sensitivity method for ethionamide (40 μg/mL), p-amino salicylic acid (0.5 μg/ml), clarithromycin (2 μg/mL), and capreomycin (40 μg/mL). Resistance to ofloxacin, kanamycin, and ethionamide was determined by a cut-off of MIC ≥8 μg/mL, ≥64 μg/mL, and ≥128 μg/mL, respectively (*8*). All drugs were procured from Sigma (St. Louis, MO, USA), and quality control for drug susceptibility test was provided by the Tuberculosis Research Center, Chennai, India.

Among 68 MDR strains, 21 were from patients who had never been previously treated, and 47 were from patients whose medical history was positive for anti-tubercular treatment in the past, for at least 4 weeks. All MDR TB isolates were tested for susceptibility to second-line drugs, and high resistance to these drugs was found. MDR strains, which were further resistant to ofloxacin, and to at least 1 of 2 injectable second-line drugs tested (i.e., kanamycin or capreomycin), were classified as XDR TB. A total of 5 (7.4%) of 68 MDR TB strains met criteria for XDR TB. XDR TB isolates were usually resistant to almost all 4 first-line and second-line anti-TB drugs tested (Table). Global data on XDR TB are limited; however, a recent article reported that the problem of XDR TB is worldwide and includes a prevalence of 6.6% XDR TB cases in the studied countries (*6*). The Republic of Korea reports the maximum numbers of such cases, with 200 (15.4%) of 1,298 XDR TB strains tested from MDR TB patients included in the study. On December 1, 2006, World AIDS Day, South Africa reported >300 cases of XDR TB (*9*).

Here, we report, to our knowledge, the first XDR TB cases in India and the emergence of XDR TB in settings like India, where adequate monitoring of treatment regimens for MDR TB in TB control programs is difficult to implement due to a huge population and the high annual risk of acquiring TB is of great concern. A limitation to accurate detection of XDR TB is those existing tests for resistance to second-line drugs is not yet standardized and is less reproducible than results for first-line drugs (*10*). Access to management and treatment of MDR TB cases with second-line drugs, standardized methods, improved diagnostics, and quality assurance for susceptibility testing are needed to ensure reliable testing and the design of appropriate drug regimens.

Our study has some limitations, however. The data are not representative of the whole community and are limited to 1 hospital. Limited numbers of drugs were used in drug susceptibility testing, and the sample size is also not statistically adequate. A community-based, multicenter study, which includes all parts of the country and uses the full spectrum of drugs, is needed to describe the true prevalence of XDR TB in India.

Table. Resistance pattern of XDR TB isolates*

Strain no.	Resistant to first-line drugs	Resistant to second-line drugs
RM 55	S, H, R, E	K, O, CAP, CLA, PAS, ETH
RM 490	S, H, R, E	K, O, CAP, CLA, PAS, ETH
RM 552	S, H, R, E	K, O, CAP, CLA, PAS, ETH
RM 585†	S, H, R, E	K, O, CLA, PAS, ETH
RM 789	S, H, R, E	K, O, CAP, CLA, PAS, ETH

*n = 5; XDR TB, extensively drug-resistant tuberculosis; S, streptomycin; H, isoniazid; R, rifampin; E, ethambutol; K, kanamycin; O, ofloxacin; CAP, capreomycin; CLA, clarithromycin; PAS, p–amino salicylic acid; ETH, ethionamide.
†Sensitive to capreomycin.

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Stray Dogs and Leishmaniasis in Urban Areas, Portugal

To the Editor: In southern Europe, zoonotic visceral leishmaniasis caused by *Leishmania infantum* used to be considered a rural disease, but it is becoming more prevalent in urban areas. Outbreaks in urban/periurban settings are associated with the urbanization of natural zoonotic foci (*1*). The presence of a high number of stray dogs in urban/periurban settlements may contribute to the spread and increase of new infections.

A canine survey was performed twice a month from December 1, 2002, through December 31, 2003. A total of 374 dogs from urban areas of Lisbon were screened for leishmaniasis. Owners voluntarily brought 277 domestic dogs; 97 stray dogs were from public shelters. Indirect fluorescent assay was used for detection of anti-*Leishmania* antibodies using a cut-off of 1/64, and popliteal lymph node aspirates for Novy, Nicolle, and MacNeal cultures were tested (*2*).

A high overall prevalence (19.2%) of canine leishmaniasis was found, despite use of conventional tests only. The infection rate would probably have been higher had more sensitive techniques, such as molecular tools, been used. During the 1980s, Abranches et al. (*2*) performed a similar seroepidemiologic survey and found a prevalence rate of 5.5%.

Our results show an increase of canine leishmaniasis cases in Lisbon. In our study, the prevelance of infection in domestic dogs was 18.4% (51/277), and the prevelance in stray dogs was 21.6% (21/97), with no statistical difference ($p = 0.48$, significance level 95%). These results support the importance of the role of stray dogs in parasite transmission in Lisbon but differ from the 7.8% seroprevalence found in Madrid, where 1,803 stray dogs were studied over a 10-year period (*3*). However, the sample size and duration of both studies are different. In other urban areas of large European cities and Brazil, the existence of a high canine seroprevalence has shown an urbanization of the parasitosis (*4*,*5*). This is associated with an increase in 1-family homes with gardens in the peripheries of cities. Dogs are commonly kept in these gardens, which can provide good habitats for sandflies. On the other hand, the development of suburban areas can also lead to an increase of solid waste and deficient sanitary conditions, thus attracting infected stray dogs. The difference in percentage of domestic dogs (39.21%) and stray dogs (28.57%) that appeared healthy, although infected, was not statistically significant ($p = 0.39$). The percentage of apparently healthy dogs was lower than expected, as different studies have shown that more than half of the seropositive dogs are asymptomatic (*3*,*6*). Moreover, stray dogs are more likely to experience deficient health and nutritional conditions, and we thus expected larger differences between the 2 groups of animals. Of note, asymptomatic infected dogs can be a source of infection to the vectors, although symptomatic dogs are more effective reservoirs (*6*).

Along with the canine survey, from June through September a total of 488 sandflies were collected from 99 biotopes selected from the studied areas where canine or human cases have been diagnosed. The vectors were morphologically identified by standard entomologic keys (*7*) as follows: 392 (80.33%) *Phlebotomus perniciosus*, 93 (19.06%) *Ph. ariasi*, and 3 (0.61%) *Ph. sergenti*. Phlebotomine density ranged from 0.08 to 7.70 specimens/CDC trap/night. *Ph. ariasi* was found infected, reflecting an overall infection rate of 1.22 % (1/82).

In Portugal, *Ph. ariasi* and *Ph. perniciosus* are the proven vectors of *L. infantum* (*8*). Although phlebotomine infection was proven in Lisbon, it was low when compared with the canine infection rate, highlighting the need for a more extensive vectorial study in these areas. From 2002 through 2006, 20 new cases of kala-azar in immunocompromised patients (16 children and 4 adults) were diagnosed in our laboratory. In spite of the number of new cases being higher in immunocompromised persons, namely, HIV-infected patients, generally only the cases of immunocompetent persons reflect natural zoonotic transmission. Immunocompromised patients can also experience the reactivation of an old latent infection or be infected by zoonotic transmission or by anthroponotic transmission without a vector. Despite some studies that have shown a direct relationship between the prevalence of leishmaniasis in canine and human populations, canine leishmaniasis is much more prevalent and more widely distributed than visceral leishmaniasis, and it does not strongly correlate with the prevalence in humans (*6*). Moreover, *Ph. ariasi* and *Ph. perniciosus* are known to be preferentially zoophilic.

In domestic dogs, if the owner takes preventive measures, the infection risk may be reduced. Stray dogs, however, are an easier target for infection and sandfly biting due to precarious physical conditions and outdoor living habits that make canine leishmaniasis control much more difficult.

In conclusion, sanitary conditions and animal health must be improved to prevent the transmission risk of leishmaniasis by this group of animals. The absence of surveillance or preventative measures and equilibrium rupture in