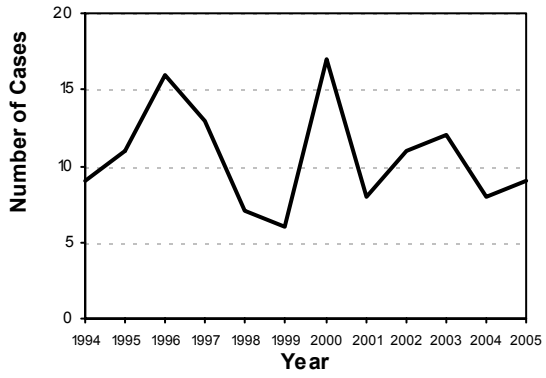
TYPHUS, MURINE

CRUDE DATA	
Number of Cases	9
Annual Incidence[a]	
LA County	0.09[b]
United States	N/A
Age at Diagnosis	
Mean	46
Median	49
Range	10–65 years
Case Fatality	
LA County	0.0%
United States	N/A

[a] Cases per 100,000 population.
[b] Rates based on less than 20 observations are unreliable.

Figure 1
Murine Typhus
Cases by Year of Onset
LAC, 1994–2005



DESCRIPTION

Typhus refers to a group of infectious diseases that are caused by rickettsial organisms and result in an acute febrile illness; arthropod vectors transmit the etiologic agents to humans. The principle diseases of this group are epidemic (or louse-borne) typhus, murine (or endemic) typhus, and scrub typhus. Murine typhus is the only one of these diseases naturally occurring in LAC and is caused by two bacteria *Rickettsia typhi* and *R. felis*; both are transmitted through the bite or contact with feces of an infected flea. Reservoir animals are predominantly rats and opossums that live in areas with heavy foliage. In LAC, most reported cases of typhus occur in residents of the foothills of central LAC. Symptoms include fever, severe headache, chills, and myalgia. A fine, macular rash may appear three to five days after onset. Occasionally, complications such as pneumonia or hepatitis may occur. Fatalities are uncommon, occurring in less than 1% of cases. The disease is typically mild in young children. Typhus infection is not vaccine preventable, but can be treated with antibiotics.

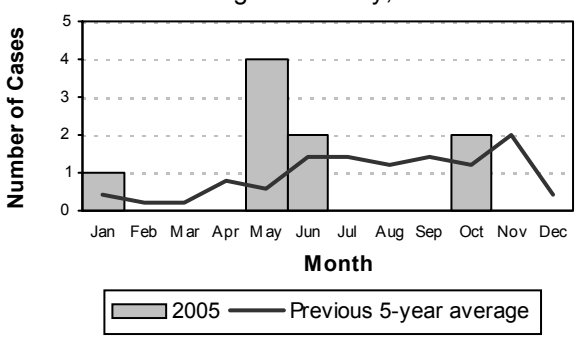
DISEASE ABSTRACT

- An outbreak of four cases, two confirmed and two probable, occurred during May in a South Pasadena neighborhood. All cases recovered with doxycycline treatment.
- Despite the occurrence of an outbreak, all trends and demographics remain similar to 2004.

STRATIFIED DATA

Trends: The number of cases reported in 2005 (N=9) is similar to that reported in 2004 (N=8). The majority of cases (n=6, 67%) occurred during the spring (May

Figure 2
Murine Typhus
Cases by Month of Onset
Los Angeles County, 2005



and June) (Figure 2).

Age: The mean and median ages of cases were higher in 2005 than in 2004. In 2005, the mean and median ages were 46 and 49 years, respectively. Ages ranged from 10 to 65 years. Most cases occurred among adults age 18 years and over (n=8, 89%).

Sex: The number of males and females were nearly equivalent. The male to female case ratio was 0.8:1.0.

Race/Ethnicity: Most cases were of White race/ethnicity (n=6, 67%). The remaining cases were Latino.

Location: Of the nine cases, four were residents of Alhambra, two from Hollywood-Wilshire, and one each from Central, Foothill and Glendale health districts, respectively. Typhus is endemic in the foothills of central LAC and rats, opossum, and cats from these areas have tested positive for typhus-group rickettsial antibodies.

Transmission and Risk Factors: Human infection most commonly occurs by introduction of infectious flea fecal matter into the bite site or into adjacent areas that have been abraded by scratching. Over half of the cases in 2005 (n=5, 56%) reported an exposure to fleas or flea bites within the 2-weeks prior to onset of illness. Of the cases that were not exposed to fleas, most reported observing other types of small mammals (e.g., rats, opossums, dogs and cats) on their residential property, and thus may have had exposure to fleas. Typhus infection cannot be transmitted from person to person.

PREVENTION

Typhus infection can be prevented through flea control measures implemented on pets. Foliage in the yard should be trimmed so that it does not provide harborage for small mammals. Screens can be placed on windows and crawl spaces to prevent entry of animals into the house.

COMMENTS

In May 2005, an outbreak of four cases involving residents within one street block in South Pasadena was investigated. Two cases were confirmed and two were probable; two additional suspects had compatible symptomatology but refused testing. Although smaller clusters of typhus cases in LAC have been reported in past years, this was the largest outbreak documented in LAC. The four confirmed and probable cases reported seeing opossums near their residence. Interestingly, the two confirmed cases required convalescent serology to make the diagnosis. When a diagnosis of typhus fever is suspected a convalescent serological test is recommended. However, most clinicians obtain only acute serology, which can be negative early in the infection. It is possible that many cases in LAC are missed in this manner. For further details of this outbreak, see the Special Studies Report section.

When a diagnosis of typhus fever is confirmed by serology, each case is interviewed regarding potential exposures. If possible, LACDHS an environmental health specialist conducts field studies of the property where exposure occurred and surrounding areas in the neighborhood. In addition, local residents are contacted and provided with education about typhus and prevention of the disease by controlling fleas and eliminating harborage for potentially typhus-infected animals that carry fleas.

The nonspecific clinical presentation and the lack of a definitive test during the acute phase of the illness make the early diagnosis of typhus fever difficult. Thus, diagnosis of typhus fever depends on the clinical acumen of the treating physician and often requires acute and convalescent serology, and so is frequently confirmed after the patient has recovered. Reporting of typhus or suspect typhus cases can help identify areas in LAC that may require monitoring for the presence of disease in the animal populations and the institution of control measures.

ADDITIONAL RESOURCES

General information about typhus fever is available from the ACDC website at:
www.lapublichealth.org/acd/vectormurine.htm

Publications:

Azad AF, Radulovic S, Higgins JA, Noden BH, and Troyer JM. Flea-borne rickettsioses: ecologic considerations. Emerg Infect Dis 1997;3:319–27.

Sorvillo FJ, Gondo B, Emmons R, Ryan P, Waterman SH, Tilzer A, Andersen EM, Murray RA, and Barr AR. A suburban focus of endemic typhus in LAC: association with seropositive domestic cats and opossums. Am J Trop Med Hyg 1993;48:269–73.

Williams SG, Sacci JB Jr, Schriefer ME, et al. Typhus and typhus-like rickettsiae associated with opossums and their fleas in Los Angeles County, California. J Clin Microbiol 1992;30:1758–62.