LEPTOSPIROSIS: Notes about the Disease

Leptospirosis (Weil's disease) is a spirochetal disease transmitted to man directly or indirectly via contact with urine from any of a variety of infected domestic and wild animals (e.g., dogs, swine, cattle, equines, sheep, rats, raccoons, squirrels, and foxes). In cattle, the infection commonly produces abortions and fertility difficulties. In recent years, increasing infection rates among pet dogs have generated some concern because of the risk of transmission to their human owners. One national serosurvey of dogs showed a <10% infection rate for North Carolina dogs in 2003, but 10-20% rates for 2002 and 2004.[1] A pentavalent vaccine has been in use in cattle for some time, as has a bivalent vaccine for dogs.

Although the disease was first definitively described over a century ago by Adolf Weil in Germany and the etiologic agent was discovered in 1915, NC occupies a prominent place in the history of leptospirosis. The work of Dr. Hugh Tatlock in the 1940s with an organism isolated from a patient later documented as *Leptospira autumnalis*, one of the "Tatlock agents," led the way to eventually showing this to be the cause of "Fort Bragg fever." The disease described by Tatlock (also called "pretibial fever") included "moderate prostration, fever, splenomegaly, a rash localizing particularly on the anterior aspects of the legs, and a short course."[2] This description falls into the mid-range of the wide spectrum of clinical manifestations seen with leptospirosis.

The evolution of the taxonomy of the leptospires over the past two decades has created confusion in the literature about this disease. The older classification scheme was based on the recognition of only two species of the *Leptospira* genus: *L. interrogans* (pathogenic) and *L. biflexa* (non-pathogenic). The current system—which is still in flux—is based on bacterial genotype characteristics so that there are now over a dozen recognized *Leptospira* species. However, not everyone has adopted this new taxonomy, in part, because it categorizes pathogenic and non-pathogenic serovars into the same species and is not compatible with the former system of serogrouping serovars with similar ecological properties, a useful method for both epidemiologists and clinicians.[3]

Leptospirosis is a disease that is much more commonly seen in tropical areas than temperate ones like the majority of the United States. The leptospires are the only spirochetes capable of survival in the inanimate environment, and they do so much more readily in warm climes. Thus, why should North Carolinians be particularly concerned about this disease? First of all, leptospirosis does exist here, even though at apparently low levels. If the infection were suspected more often and tested accordingly, it very well might be detected and reported more frequently. Secondly, outbreaks of leptospirosis occur from time to time, even in temperate climate areas of the world (e.g., Fort Bragg fever), and public health workers need to be aware of this possibility. Finally, educating the public to exercise care and good personal hygiene in handling animals and avoiding swimming in water that might be contaminated with animal urine is also worthwhile in preventing this disease and several others that are more common than leptospirosis.

1. George E. Moore et al., "Canine Leptospirosis, United States, 2002-2004," *Emerging Infectious Diseases* 12, no. 3 (2006): 501-3, www.cdc.gov/ncidod/eid/vol12no03/pdfs/05-0809.pdf.
2. Hugh Tatlock, "Studies on a Virus from a Patient with Fort Bragg Fever (Pretibial Fever)," *J Clin Invest* 26, no. 2 (1947): 287-97, www.pubmedcentral.nih.gov/picrender.fcgi?artid=435668&blobtype=pdf.
3. Paul N. Levett, "Leptospirosis," *Clin Microbiol Rev* 14, no. 2 (2001): 296-326, http://cmr.asm.org/cgi/reprint/14/2/296.