Zoonosis Update

For most people, mention of plague conjures up images of an antiquated threat. Infection by the bacterium *Yersinia pestis* is most often associated with the infamous Black Death of the Middle Ages, a pandemic that cost Europe a third of its population in the 14th and 15th centuries.

retropharyngeal, submandibular, sublingual, and tonsillar regions and were evident by days 4 to 6 after exposure. *Yersinia pestis* was isolated from the throats of 15 of 16 and from the oral cavity of 5 of 13 orally exposed cats (culture of oral cavity specimens was not attempted for 3 cats).[11] Of the 6 SC exposed cats, 4 developed clinical illness, and illness status was not described in detail for 2 cats. Three of 6 cats died. None of the 6 SC exposed cats had palpably enlarged lymph nodes in the head or neck region, but 4 developed a subcutaneous abscess at the site of inoculation. *Yersinia pestis* was not isolated from the throats or oral cavities of 2 cats exposed SC; however, this information was not specified for the remaining 4 cats.

Findings from these studies indicate that cats with oral exposure are more likely to develop enlarged lymph nodes in the head and neck region, whereas cats

ing. Antigen detection will initially consist of a screening fluorescent antibody test that detects the F1 antigen on *Y pestis* cells. The fluorescent antibody test is the most sensitive and specific test that can be done rapidly (within hours). *Yersinia pestis* grows slowly, requiring up to 48 hours for visible growth. Presumptive cultures of *Y pestis* are confirmed by use of biochemical profiling and susceptibility to bacteriophage lysis.

Early in the course of disease, results of serologic tests are often negative because animals have not yet seroconverted; therefore, an acute serum specimen should be collected but held for testing until a convalescent serum sample can be obtained 2 to 3 weeks after illness onset. Serologic confirmation of plague requires demonstrating a 4-fold increase in antibody titer between acute and convalescent samples. Eidson[9] recommended that a single titer of 1:32 or greater, accompanied by signs consistent with plague, is also supportive of a diagnosis of plague. Serologic testing for antibodies against the F1 antigen of *Y pestis* is performed by use of either an ELISA or passive hemagglutination.

The state health department should be contacted prior to sending samples to the state public health laboratory. In the event that a state public health laboratory is unable to perform necessary tests, samples can be tested at the CDC.[c] The state health department and CDC should be contacted by telephone before sending samples for diagnostic testing to CDC.

Treatment

Treatment should be initiated quickly and prior to obtaining a definitive diagnosis in an animal in which plague is suspected. Prompt initiation of appropriate antimicrobial treatment is essential. Human deaths from plague usually occur because of delays in treatment with appropriate antimicrobials either because of a delay in seeking medical care or misdiagnosis by health care providers. The treatment of choice for humans with plague is streptomycin[6]; however, this drug is not available for veterinary use. Gentamicin has been used successfully to treat humans with plague[6] and is the drug of choice in veterinary medicine, particularly for seriously ill animals. Doxycycline is an appropriate choice for less complicated cases. Other treatment options include tetracycline and chloramphenicol. Sulfonamides can be used but only if other antimicrobials are not available. The recommended duration of treatment is 10 to 21 days; rapid improvement including defervescence should be expected within 3 days.[6,13] Penicillins are not effective in treating plague, despite having in vitro activity against *Y pestis*. The fluoroquinolones ofloxacin and ciprofloxacin were comparable to streptomycin in treatment studies of mice exposed to *Y pestis*.[14-16] However, there are no data regarding the performance of these fluoroquinolones in a clinical setting in either human or veterinary medicine; therefore, fluoroquinolones are not recommended at this time.

Because of the risk of disease transmission to their owners, cats should not be sent home immediately but should be hospitalized, especially if there is evidence of pneumonia. Sending a cat with suspected plague home with oral medications poses a substantial risk to the person caring for the ill cat. Human plague cases have occurred in pet owners, and in some cases were attributable to contact with the oral cavity and associated secretions while administering oral medications to cats with plague.

The duration of infectivity in treated cats has not been studied, but similar to humans with plague, cats

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