

groups of persons and could lead to generation of specific preventive recommendations.

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References

1. Popescu GA, Fuerea R, Benea E. Meningitis due to an unusual human pathogen: *Streptococcus equi* subspecies *equi*. *South Med J*. 2006;99:190–1.
2. Korman TM, Boers A, Gooding TM, Curtis N, Visvanathan K. Fatal case of toxic shock-like syndrome due to group C *Streptococcus* associated with superantigen exotoxin. *J Clin Microbiol*. 2004;42:2866–9.
3. Fernandez E, Blume V, Garrido P, Collins MD, Mateos A, Dominguez L, et al. *Streptococcus equi* subsp. *ruminatorum* subsp. nov., isolated from mastitis in small ruminants. *Int J Syst Evol Microbiol*. 2004;54:2291–6.
4. Carlier JP, Marchandin H, Jumas-Bilak E, Lorin V, Henry C, Carrière C, et al. *Anaeroglobus geminatus* gen. nov., sp. nov., a novel member of the family *Veillonellaceae*. *Int J Syst Evol Microbiol*. 2002;52:983–6.
5. Altschul SF, Madden TL, Schaffer AA, Zhang J, Zhang Z, Miller W, et al. Gapped BLAST and PSI-BLAST: a new generation of protein database search programs. *Nucleic Acids Res*. 1997;25:3389–402.
6. Bordes-Benítez A, Sánchez-Oñoro M, Suárez-Bordón P, García-Rojas AJ, Saéz-Nieto JA, González-García A, et al. Outbreak of *Streptococcus equi* subsp. *zooepidemicus* infections on the island of Gran Canaria associated with the consumption of inadequately pasteurized cheese. *Eur J Clin Microbiol Infect Dis*. 2006;25:242–6.
7. Kuusi M, Lahti E, Virolainen A, Hatakka M, Vuento R, Rantala L, et al. An outbreak of *Streptococcus equi* subspecies *zooepidemicus* associated with consumption of fresh goat cheese. *BMC Infect Dis*. 2006;6:36.
8. Bradley SF, Gordon JJ, Baumgartner DD, Marasco WA, Kauffman CA. Group C streptococcal bacteremia: analysis of 88 cases. *Rev Infect Dis*. 1991;13:270–80.
9. Bateman AC, Ramsay AD, Pallett AP. Fatal infection associated with group C streptococci. *J Clin Pathol*. 1993;46:965–7.
10. Höner OP, Wachter B, Speck S, Wibbelt G, Ludwig A, Fyumagwa RD, et al. Severe *Streptococcus* infection in spotted hyenas in the Ngorongoro Crater, Tanzania. *Vet Microbiol*. 2006;115:223–8.

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Rabies Prophylaxis for Pregnant Women

To the Editor: Rabies poses a 100% risk for death to pregnant women and an indeterminate risk to the fetus (1,2). Although a theoretical risk exists for adverse effects from rabies immune globulin and killed rabies virus vaccines, several studies assessing the safety of this treatment have failed to identify these risks (3–6). Indeed, the consensus is that pregnancy is not a contraindication to rabies postexposure prophylaxis (PEP) (7). Despite this consensus, healthcare providers resist treating pregnant women with rabies PEP. We describe a case of a pregnant woman with uncertain rabies exposure.

A 35-year-old pregnant woman (at 34 weeks gestation) sought treatment 3 weeks after being exposed to a bat. The patient reported awakening at 3:00 AM to find a bat flying in her bedroom. She attempted to confine the bat to 1 section of the home and then called for help. A relative trapped

and retrieved the bat, then disposed of the animal without further incident. The patient denied being bitten by the bat, and she had no obvious bite marks after the event. Initially, the patient sought information from online resources, her primary care physician, and her obstetrician. She was uncertain whether rabies PEP was warranted, given what she believed to be the low probability of the bat being rabid and the low likelihood of her having had direct exposure to the bat. The patient did express concern about the safety of rabies PEP in pregnant women. Because no unequivocal recommendations were made by either her primary care physician or obstetrician, she sought further advice from the Infectious Diseases Department at the University of Michigan on how best to proceed.

The 1999 recommendations of Centers for Disease Control and Prevention Advisory Committee on Immunization Practices state, "... postexposure prophylaxis can be considered for persons who were in the same room as the bat and who might be unaware that a bite or direct contact had occurred ..." (8). Bat bites may not be apparent when they occur, even with careful examination. In fact, most of the recent human rabies patients have no known history of exposure to a rabid animal (9,10). Of the 21 cases of bat-associated rabies in the United States during 1980–1999, 12 (57%) occurred in persons with apparent bat contact but no detectable bites (8). Our patient woke up with a bat flying in her room and did not know how long it had been there. The best course of action would have been to test the bat for rabies. However, because the animal had already been disposed of, laboratory testing for rabies was not possible. Furthermore, given that 5%–9% of bats tested in Washtenaw County, Michigan, are positive for rabies (www.mdch.state.mi.us/pha/epi/cded/cd/batcoframe.htm), the exposure risk was not insignificant. Therefore, it

was our opinion that this patient qualified for rabies PEP.

Several studies of the safety of rabies PEP for pregnant patients demonstrated no association between treatment and adverse outcomes (3–6). In 1 study, tissue culture-derived vaccines and human immune globulin did not lead to an increased risk for congenital anomalies; no effects were observed on intrauterine or infant growth or development with a follow-up period of 1 year postpartum (6). Although these studies are not comprehensive in their assessment of all reproductive outcomes, they do suggest that PEP is generally safe.

On the basis of the exposure and our literature review, we recommended that the patient receive rabies PEP. After discussing options with her husband, the patient chose not to receive treatment, citing continued concern about the effect of rabies PEP on the fetus. There must be a greater public health effort to educate clinicians and the public about proper response to bat exposures, particularly undetectable bite exposures such as this case. Had public health authorities been contacted to collect and test the captured bat for rabies, there would have been no ambiguity as to the appropriate course of action.

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References

1. Sipahioglu U, Alpaut S. Transplacental rabies in humans. *Mikrobiyol Bul.* 1985;19:95–9.
2. Muller-Holve W, Leitritz H, Knorr E. Early development of a child following rabies

of the mother during pregnancy. *Infection.* 1977;5:49–50.

3. Chutivongse S, Wilde H. Postexposure rabies vaccination during pregnancy: experience with 21 patients. *Vaccine.* 1989;7:546–8.
4. Chutivongse S, Wilde H, Benjavongkulchai M, Chomchey P, Punthawong S. Postexposure rabies vaccination during pregnancy: effect on 202 women and their infants. *Clin Infect Dis.* 1995;20:818–20.
5. Figueroa Damián R, Ortiz-Ibarra FJ, Arredondo-García JL. Post-exposure antirabies prophylaxis in pregnant women [in Spanish]. *Ginecol Obstet Mex.* 1994;62:13–6.
6. Sudarshan MK, Madhusudana SN, Mahendra BJ. Post-exposure prophylaxis with purified vero cell rabies vaccine during pregnancy—safety and immunogenicity. *J Commun Dis.* 1999;31:229–36.
7. American College of Obstetricians and Gynecologists. ACOG Committee opinion. Immunization during pregnancy. *Obstet Gynecol.* 2003;101:207–12.
8. Centers for Disease Control and Prevention. Recommendations of the Advisory Committee on Immunization Practices (ACIP). Human rabies prevention—United States. *MMWR Recomm Rep.* 1999;48(RR-1):1–21.
9. Rupprecht CE, Gibbons RV. Clinical practice. Prophylaxis against rabies. *N Engl J Med.* 2004;351:2626–35.
10. Messenger SL, Smith JS, Rupprecht CE. Emerging epidemiology of bat associated cryptic cases of rabies in humans in the United States. *Clin Infect Dis.* 2002;35:738–47.

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Letters

Letters commenting on recent articles as well as letters reporting cases, outbreaks, or original research are welcome. Letters commenting on articles should contain no more than 300 words and 5 references; they are more likely to be published if submitted within 4 weeks of the original article's publication. Letters reporting cases, outbreaks, or original research should contain no more than 800 words and 10 references. They may have one Figure or Table and should not be divided into sections. All letters should contain material not previously published and include a word count.

**Novel Orthoreovirus
from Diseased
Crow, Finland**

To the Editor: Corvids, especially American crows (*Corvus brachyrhynchos*), are reported to be highly susceptible to lineage 1 of West Nile virus (WNV), which causes them to show symptoms of encephalitis. They are regarded as indicator species in the surveillance of WNV in the United States (1). In parts of Europe, WNV is endemic and studies are ongoing to detect WNV in wild birds. Thus far, no evidence of WNV in birds has been found in northern Europe.

In August 2002, in southern Finland, a diseased wild hooded crow (*Corvus corone cornix*) was found flying abnormally with coordination problems, abnormal postures, cramps, and paralysis. Because WNV infection was suspected, virologic tests were performed, which resulted in the isolation of a novel orthoreovirus, which was likely the causative agent of the disease.

Avian orthoreoviruses (ARVs) belong to the family *Reoviridae*, genus *Orthoreovirus*. They infect wild and farm-raised birds and are important fowl pathogens associated with various disease conditions such as gastrointestinal malabsorption syndrome, tenosynovitis (arthritis), growth retardation, and sudden death. They have also been isolated from asymptomatic birds. The reovirus virion is icosahedral, nonenveloped, and has a double-capsid structure that shelters the segmented double-stranded RNA genome (2).

Heart, lung, liver, kidney, and brain tissues of the diseased crow tested negative for WNV RNA. Virus isolation from brain homogenate was carried out in BHK (baby hamster kidney)–21 cells. On day 2 after infection, a strong cytopathic effect was observed, including syncytium formation. Spherical, spiked virus particles,