

Chlamydiae, and plant plastids, and uses a specific DNA probe. We considerably decreased the risk of horizontal and vertical contamination of the PCR reaction by using uracil and uracil-N-glycosylase and by keeping reaction cups closed since the first amplification cycle.

More importantly, our study showed that *Parachlamydia* DNA is rarely found in bronchoalveolar lavage samples (0.083%). This suggests that persons are infrequently exposed to *Parachlamydia* organisms and, consequently, members of the *Parachlamydiaceae* seldom cause pneumonia in humans. In the only positive sample, whether *Parachlamydia* originated from bacteria in the oropharynx, from water, or from a colonization of the lower respiratory tract was not known; whether they caused the patient's pneumonia is also not known. That two strains of *Parachlamydia* found in amoebae were recovered from the nasopharynx of healthy volunteers (7) favors the first hypothesis. However, that the positive broncholarveolar lavage specimen was taken from an HIV-positive patient with community-acquired pneumonia suggests that *Parachlamydia* might occasionally play a pathogenic role in AIDS patients. Moreover, any amoebae-associated bacteria should be considered as a potential emerging pathogen because intra-amoebal growth may lead to the selection of virulence traits and to the adaptation to professional phagocytes, such as alveolar macrophages (1,2). Further studies are warranted to determine whether *Parachlamydiaceae* causes community-acquired pneumonia, particularly in HIV-infected persons.

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References

1. Greub G, Raoult D. Parachlamydiaceae, potential emerging pathogens. *Emerg Infect Dis* 2002;8:625–30.
2. Greub G, Raoult D. Crescent bodies of *Parachlamydia acanthamoeba* and its life cycle within *Acanthamoeba polyphaga*: an electron micrograph study. *Appl Environ Microbiol* 2002;68:3076–84.
3. Birtles RJ, Rowbotham TJ, Storey C, Marrie TJ, Raoult D. Chlamydia-like obligate parasite of free-living amoebae. *Lancet* 1997;349:925–6.
4. Marrie TJ, Raoult D, La Scola B, Birtles RJ, de Carolis E. Legionella-like and other amoebal pathogens as agents of community-acquired pneumonia. *Emerg Infect Dis* 2001;7:1026–9.
5. Corsaro D, Venditti D, Le Faou A, Guglielmetti P, Valassina M. A new chlamydia-like 16s rDNA sequence from a clinical sample. *Microbiology* 2001; 147:515–6.
6. Wolf YI, Aravind L, Koonin EV. *Rickettsiae* and *chlamydiae* evidence of horizontal gene transfer and gene exchange. *Trends Genet* 1999;15:173–5.
7. Amann R, Springer N, Schonhuber W, Ludwig W, Schmid EN, Muller KD, et al. Obligate intracellular bacterial parasites of *Acanthamoebae* related to *Chlamydia* spp. *Appl Environ Microbiol* 1997;63:115–21.

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Hantaviruses in the Czech Republic

To the Editor: Infections caused by hantaviruses have been known for

a long time, but their causative agent was not detected until 1976 (1). These viruses of the genus *Hantavirus*, family *Bunyaviridae*, have >20 genotypes. Hantaviruses circulate in wild rodents within natural foci over Euroasia and North and South America. They cause asymptomatic persistent infections in these small mammals. Humans may acquire infection accidentally from inhalation of virus-contaminated aerosols of rodent excreta. Hantavirus genotypes may be nonpathogenic for humans or cause serious diseases with high death rates. In Eurasia, these pathogens involve primarily the kidney and cause hemorrhagic fever with renal syndrome; in North and South America, these pathogens involve primarily the lung and cause hantavirus cardiopulmonary syndrome.

First reports on the occurrence of hantaviruses in central Europe originated from former Czechoslovakia (2,3) and Germany (4) and date back to 1984 and 1985, respectively. The first cases of hantavirus disease in humans in the Czech Republic were reported in 1992 (5). This flulike disease accompanied by microhematuria was recorded in southern Moravia. Another severe imported case was described in a soldier on active military duty in the Balkans (6). The first isolation of nonpathogenic hantavirus Tula was reported in the Czech Republic (7). Currently, several hantavirus infections have been recorded in humans, manifesting mainly as interstitial nephritis. One fatal case was also reported in a patient who had never travelled outside the Czech Republic.

We conducted studies of hantavirus ecology in the Czech Republic and hantavirus seroprevalence in the Czech population. As in neighboring Slovakia (8), hantaviruses of three genotypes, i.e., Dobrava, Puumala, and Tula, were identified in the Czech Republic. Most serious infections are caused by the Dobrava genotype; Tula genotype

remains nonpathogenic for humans, although a case of human infection without clinical signs has been described in the Czech Republic (9).

Blood serum samples from 710 randomly selected persons >20 years of age from the Czech Republic were screened for antibodies against Puumala and Hantaan antigens with commercial enzyme-linked immunosorbent assay (ELISA) sets manufactured by PROGEN (Biotechnik, Heidelberg, Germany). The Hantaan antigen was used because of its antigenic relatedness with Dobrava virus, which is not included in available commercial ELISA sets.

Five participants showed immunoglobulin (Ig) G reactivity to Hantaan virus (cross-reactive with Dobrava antigen), and two participants tested positive for both IgG and IgM antibodies. Two other persons showed IgM reactivity alone. These findings indicate that as many as seven (1.0%) study participants showed reactivity to Hantaan antigen. Eight persons showed IgG reactivity to Puumala antigen, none of them IgM positive. Altogether, 10 (1.4%) study participants were reactive to Puumala antigen. Three persons showed reactivity to both antigens tested.

A total of 1,494 small mammals of different Czech regions were screened with ELISA for hantavirus antigen in the lungs. The antigen was detected in the lungs of 101 animals; the highest positivity rate was in Common Voles (*Microtus arvalis*). The difference in positivity between male and female voles was not statistically significant. The positivity rate was markedly associated with rodent size. With the use of molecular genetic methods (polymerase chain reaction), genotype Tula was identified as the causative agent of infection in rodents. Genotype Puumala was identified in bank voles (*Clethrionomys glareolus*) in Moravia. Nucleotide sequences of Dobrava genotype were identified in southern Bohemian rodents

(K. Krivanec, pers. comm.).

In the Czech Republic, Tula virus is the most frequent hantavirus circulating in Common Voles. This agent is not pathogenic for humans. The hantavirus seroprevalence rate in the adult population of the Czech Republic is close to 1%. Dobrava and Puumala viruses are causative agents of these infections in humans.

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References

1. Lee HW, Lee PW, Johnson KM. Isolation of the etiologic agent of Korean hemorrhagic fever. *J Infect Dis* 1978;137:298-308.
2. Grešikova M, Rajcáni J, Sekeyova M, Brummer-Korvenkontio M, Kozuch O, Labuda M, et al. Haemorrhagic fever virus with renal syndrome in small rodents in Czechoslovakia. *Acta Virol* 1984;28:416-21.
3. Danes L. [Hemorrhagic fever with renal syndrome (HFRS)] (in Czech). *Acta Hygienica, Epidemiologica et Microbiologica* 1985;15:52-7.
4. Pilaski J, Zöller L, Blenk H. Hämorrhagisches Fieber mit renalem Syndrom (HFRS): eine durch Nagetiere übertragene Nephropathie des Menschen. *Wehrmedizinische Monatschrift* 1986;10:435-44.
5. Kobzik J, Danes L. [Laboratory-confirmed cases of hemorrhagic fever with renal syndrome which occurred in Breclav 1989-1990] (in Czech). *Ceskoslovenska Epidemiologie, Mikrobiologie a Imunologie* 1992;41:65-8.
6. Petru K, Pejcoch M, Monhart V, Matyasov al. [Hemorrhagic fever with renal syndrome] (in Czech) *Cas Lek Cesk* 1997;136:739-40.
7. Plyusnin A, Cheng Y, Vapalahti O, Pejcoch M, Unar J, Jelinkova Z, et al. Genetic variation in Tula hantaviruses: sequence analysis of the S and M segments of strains from central Europe. *Virus Res* 1995;39:237-50.
8. Sibold C, Meisel H, Lundkvist, Schulz A, Cifire F, Ulrich R, et al. Short report: simultaneous occurrence of Dobrava, Puumala, and Tula hantaviruses in Slovakia. *Am J Trop Med Hyg* 1999;61:409-11.
9. Vapalahti O, Lundkvist A, Kukkonen SK, Cheng Y, Gilljam M, Kanerva M, et al. Isolation and characterization of Tula virus, a distinct serotype in the genus Hantavirus, family *Bunyaviridae*. *J Gen Virol* 1996;77:3063-7.

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Antibiotics and Airline Emergency Medical Kits

To the Editor: Medical events during airline flights have drawn some attention in recently published articles and letters (1-4). We would like to share our experience of meningococemia/ and meningococcal meningitis during a transatlantic flight.

In June 2000, a 20-year-old student with a mild viral illness (diagnosed before the flight) boarded a flight from Tel-Aviv, Israel, to Newark, New-Jersey, USA (approximate flight time, 11-12 hours), with a tour group of college-age students and their chaperones. We, a neonatologist and a neonatal intensive care nurse, were on the same flight to later transport a prematurely born infant from the United States back to Israel.

About 90 minutes before landing in New Jersey, the chief flight attendant asked me (B.B-O.) to check the passenger, who said he did not feel well. His medical history indicated no past illness, which was corroborated by the director of the tour group. The patient reported general malaise and numbness in his feet. In the 2 weeks before the flight, he had traveled in Israel, visiting cities, caves, and mountains. He and his group had slept in different hostels in those areas.

On examination, he was fully conscious, and his blood pressure and