and New Zealand (3–5, 7). We were unable to confirm the original source of these isolates, and continuous surveillance for carbapenemase producers in our hospital has not uncovered any bla<sub>oxa</sub>-positive isolates since 1996. To our knowledge, there are no reports of bla<sub>oxa</sub>-positive isolates in Bangladesh. However, this country borders India, which is a source of bla<sub>oxa</sub>-positive Enterobacteriaceae. These cases highlight potential problems that may arise from medical tourism (the rapidly increasing practice of traveling across international borders to obtain health care) and document the expanding range of a newly emerging mechanism of carbapenem resistance.

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Dengue Fever in South Korea, 2006–2010

To the Editor: Dengue fever is an acute, febrile disease caused by a flavivirus and is transmitted by Aedes aegypti mosquitoes (1). South Korea is not considered as a region to which dengue virus is endemic because it is located above 35°N latitude and has an isotherm of 10°C in winter, which potentially limits year-round survival of Aedes aegypti mosquitoes (2). Thus, dengue fever was seldom recognized as a public health concern in South Korea. However, the first case of dengue fever in South Korea was reported in 1995 in a woman who had traveled to Sri Lanka (2). A second case was found in a sailor who had worked in countries in Africa in 2000 (4).

Since 2001, dengue fever has been a notifiable infectious disease in South Korea because of concerns about increasing international travel as a source of infection and because the less efficient potential dengue vector, Ae. albopictus mosquitoes, were found in this country. All cases reported through the surveillance system should be complemented by thorough epidemiologic investigations to determine whether a case was imported or originated in South Korea. Thus, we analyzed dengue fever–associated data from the Korea Centers for Disease Control and Prevention.

During 2006–2010, a total of 367 suspected cases were reported by physicians through the National Infectious Disease Surveillance System. IgM ELISA and reverse transcription PCR results identified 324 cases as dengue fever. Investigation of 34 cases could not be completed because some cases were in foreigners and in Korean persons who resided in foreign countries, left South Korea after diagnosis, or could not be reached by the contact information that was provided. Investigation of 290 cases was completed by reviewing medical records and by interviews. Interviews were conducted by provincial and Korea Centers for Disease Control and Prevention Epidemic Intelligence Service officers, who used a standardized investigation form.

All 290 case-patients had a history of international travel before onset of dengue fever symptoms.

References


Destination information was available for all 290 case-patients; 17 countries were identified. Visitors to the Philippines (34.1%) contributed the largest number of cases, followed by visitors to Indonesia, India, Thailand, Vietnam, Cambodia, Laos, Malaysia, Myanmar, Bangladesh, China, East Timor, Maldives, Palau, Sri Lanka, Brazil, and Nigeria (Table). These countries are in areas to which dengue fever is endemic or have reported cases (1).

The time interval between the last day of travel and symptom onset was known for 272 (93.8%) of the 290 case-patients. A total of 271 case-patients had traveled within 14 days before symptom onset, and 89 (32.7%) had symptom onset or were given a diagnosis of dengue fever during travel. Symptoms developed within 7 days after travel in 171 (62.9%) persons and 8–14 days after travel in 11 (4.0%) persons. Mean ± SD duration from the last day of travel to symptom onset among 182 case-patients who had symptom onset after travel was 3.20 ± 2.61 days.

Our results indicate that all investigated case-patients had a history of international travel and times of symptom onset during or after travel but within the incubation period for dengue infection. One case-patient had a time to symptom onset of <34 days. This person was eventually given a diagnosis of infection with Epstein-Barr virus but was tested for dengue virus. Because the incubation period exceeded that for dengue virus incubation, this case was classified as an asymptomatic dengue virus infection and an Epstein-Barr virus infection.

Most dengue cases in South Korea are likely imported, and most presumptive countries from which dengue fever originated are in Southeast and southern Asia. These countries are popular holiday destinations for persons from South Korea. Because of distances, few tourists from South Korea travel to Africa and South America (5). China is the most popular destination for travelers from South Korea. However, the proportion of persons who acquired dengue infection in China was low (0.7%) because most persons who traveled to China went to Beijing or Shanghai, not to areas in southern China where dengue epidemics have occurred (5,6).

We report that all dengue fever cases in South Korea during 2006–2010 were imported by persons who had traveled abroad. Global expansion of dengue virus and an increase in international travelers have increased the likelihood of additional cases of dengue fever. In addition, Ae. albopictus mosquitoes have been detected in South Korea and can potentially transmit autochthonous dengue infection, as reported in Croatia, France, and Hawaii, USA (7–9). Thus, more intensified surveillance and investigations should be focused on dengue transmission by Ae. albopictus mosquitoes in South Korea.

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References

Brucellosis in Takins, China

To the Editor: Brucellosis is a highly contagious bacterial disease and one of the world’s major zoonoses. It is responsible for enormous economic losses in livestock, and it threatens human health and wildlife populations (1). In most host species, brucellosis primarily affects the reproductive system, leading to concomitant loss in productivity of affected animals (1). Brucellae have been found in wildlife, such as bison, elk, and wild boar, potentially posing a threat for zoonosis (2). Currently, the genus Brucella comprises 10 species, which are divided according to host specificity and ability to cause chronic infections in human and animals (3,4). Most Brucella species are associated primarily with certain hosts, presumably the result of evolutionary adaptation to a successful host. Brucella melitensis is the species most pathogenic in humans and the species most commonly involved in ovine and caprine brucellosis.

In January 2009, in the nature reserve in Qinling Mountains, China, hygromas were found on the knees, stifles, hocks, haunches, and bursae between the nuchal ligament and the primary thoracic spines of 10 free-ranging takins (Budorcas taxicolor). The hygroma contents and tissue samples were collected by using aseptic technique, packed separately, cooled immediately, and stored frozen at -20°C until cultured. The samples were streaked onto blood agar and MacConkey agar and incubated aerobically or anaerobically with 5% CO₂ at 37°C for growth and did not produce hydrogen sulfide. The isolate could be agglutinated by A- and M-monospecific antiserum but not by M-monospecific antiserum or rough Brucella-specific antiserum. It was sensitive to Berkeley and Iz phages at routine test dilution but not sensitive to Tbilisi, Weybridge, Firenze, and R/C phages. According to classical biotyping methods, the isolate was identified as B. melitensis biotype 2 (5).

Molecular identification by 16S rRNA gene sequencing was used in this study (6). According to nucleotide–nucleotide GenBank search by using BLAST (http://blast.ncbi.nlm.nih.gov/), the sequence was 100% identical to the sequences of 16S rDNA of brucellae, especially reference strains including B. melitensis 16M (GenBank accession no. NC_003317), B. abortus biovar 1 str. 9–941 (NC_006932), B. suis 1330 (NC_004310), B. canis American Type Culture Collection 23365 (NC_001013), and B. ovis American Type Culture Collection 25840 (NC_009505). The isolate was further confirmed as B. melitensis according to the 731-bp product by using AMOS-PCR, which discriminates among species by the unique locations of the IS711 element (7,8). The restriction pattern of the omp2b gene by HinI 1 was accordant with pattern 3 reported by Cloeckaert et al. (9); this finding further indicated that the isolate was B. melitensis (9).

The takin (Budorcas taxicolor) is a ruminant belonging to the family Bovidae, subfamily Caprinae, genus Budorcas (Figure). Takins are found in eastern Asia and Southeast Asia and are listed as “vulnerable A2cd” by the International Union for Conservation of Nature (10). Brucellosis might pose a major direct or indirect threat to the conservation of endangered species,