Risk assessment of potential anthropozoonotic pathogen transmission from ecotourists to wildlife populations in Borneo

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Background: Over half of all human infections are zoonotic in origin. Nonhuman animal populations are also susceptible to human pathogens. Expanding travel and ecotourism are increasing the likelihood of contact between populations of immunologically-naïve animals and potentially infectious travelers. While the benefits of ecotourism appear clear, anthropozoonotic pathogens transmitted from ecotourists could negatively impact wildlife populations.

Methods: To better understand potential infection transmission associated with ecotourism travel, we employed the largest survey to date of self-perceived health and vaccination status in ecotourists. Anonymous surveys were randomly obtained from 633 visitors at the Sepilok Orangutan Rehabilitation Centre (Sabah, Malaysia), Asia’s most frequented wildlife tourism destination. The questionnaire recorded demographic information, history of recent travel, recalled recent contact with livestock, domestic and wild animals, recent diagnoses and symptoms of various infections, and recalled current vaccination status for several infectious diseases.

Results: Over half of the sample reported being currently vaccinated against tuberculosis, hepatitis A, hepatitis B, polio, and measles. 15% of the sample self-reported at least one of the following current symptoms: cough, sore throat, congestion, fever, diarrhea, and vomiting. Participants with recent animal contact were more likely to report current respiratory symptoms compared to individuals with no such animal contact (aOR 2.4). Likewise, participants with a medical-related occupation were more likely to report current respiratory symptoms compared to participants with non-medical occupations (aOR 2.2). 67.1% of those with medical-related occupations reported not being currently vaccinated for influenza.

Conclusion: Ecotourists represent a potentially significant source of anthropozoonotic infections. Like other international travelers, ecotourists are not adequately protected against vaccine-preventable illnesses. We demonstrate that potentially infectious tourists were visiting a wildlife sanctuary, despite significant animal contact prior to arrival (which may have exposed them to other sources of infection), and despite having at least some basic knowledge about infection transmission (i.e., medical-related occupation). We conclude that a significant proportion of ecotourists are uninformed of the risks they pose to nonhuman animal health. It is the combined responsibility of the medical and tourism communities to accurately communicate the risks of zoonotic and anthropozoonotic infections in ways that best support the needs of humans and wildlife alike.

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Malaria in a community hospital


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Background: To identify all the cases of malaria in our region during the last decade, clinical features, diagnosis, severity, prophylaxis and treatment.

Methods: Descriptive retrospective study of malaria cases in Osona (Barcelona) admitted to the Department of Internal Medicine in a community hospital since January 2000 to November 2009. We reviewed all cases with the microbiological diagnosis of malaria. We analyzed the epidemiological and clinical data. The inclusion criteria were: older than 15 years, and admission in hospital > 24 h.

Results: We had 48 cases of malaria (40 with the inclusion criteria). The age average was 33.78 years (21-71): 31 men (75.03%) and 9 women (24.97%). We classified the cases according to their nationality: Ghana 19 (47.5%), Nigeria 10 (25%), Iberian Peninsula 7 (17.5%), Mali 1 (2.5%), Senegal 3 (7.5%). 85% (34 cases) were black, and 6 caucasians (15%). The average stay in Spain before the episode was 54.28 months (12-96). 17.5% (7 cases) had previous episode of malaria. The classification according to the visited area was: Ghana 19 (47.5%), Nigeria 10 (25%), Senegal 5 (12.5%), Honduras 2 (5%), Guinea Bissau 1 (2.5%), Cameroon 1 (2.5%), Mali 1 (2.5%), Uganda 1 (2.5%). The average stay in hospital was 4.02 (1-13 days). 25% of cases (10) took any prophylaxis, 3 cases (7.5%) were successful. The most frequent type of Plasmodium was falciparum 37 (92.5%), only one case due Plasmodium ovale (2.5%), and two were undetermined for Plasmodium. 92.5% had thrombocytopenia (<150000). All cases were treated with quinine sulfate and doxycycline, except 2 cases treated with chloroquine and one case with the unknown treatment. We found one case of recurrence.

Conclusion: Most reported cases were people from endemic areas (most of Ghana) and were black people. The most frequent type of Plasmodium was falciparum. 75% of patients did not took any prophylaxis. The thrombocytopenia was the most frequent laboratory finding, without any relation with severity criteria. Complications were rare, probably related to the epidemiological characteristics of patients (originating from endemic areas, black race . . . ).

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