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Human monkeypox in the Kivus, a conflict region of The Democratic Republic of the Congo

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Background: Monkeypox is a zoonotic *Orthopoxvirus* infection with a clinical presentation similar to smallpox. Monkeypox virus is endemic in areas of western and central Africa, with the vast majority of reported cases in the Democratic Republic of the Congo (DRC). Ecological niche models predict disease in many areas of DRC, but exclude much of North and South Kivu Provinces. In 2011 and 2012, three human monkeypox cases were investigated in North Kivu (2 cases) and South Kivu (1 case).

Methods & Materials: A thorough epidemiological investigation was completed for one of the cases from North Kivu, including ascertainment of contacts and potential exposures to healthcare workers. The national laboratory in Kinshasa and the CDC performed real-time PCR assays specific for *Orthopoxvirus* and monkeypox virus for diagnostic confirmation.

Results: Each of these patients had travelled from or presented to clinics in the western most areas of the provinces; areas included in predictive ecological niche models of disease occurrence. The investigation of one case in Butembo, North Kivu revealed the patient had recently travelled from a highly forested area and had eaten bush meat during his voyage. The investigation identified 30 contacts while the patient was ill; 23 of these contacts (76.7%) were healthcare workers. Among all contacts, 16 (53%) had no prior vaccination against smallpox. No contacts became ill and no additional cases were reported from neighboring health zones.

Conclusion: These three cases are the first to be reported from the Kivu region since one report in 1983. This is an area that has experienced armed conflict and population displacements. There are an estimated 1.8 million internally displaced persons in the Kivus. Movement of people to less conflicted and more forested areas imparts a greater risk of zoonotic infections such as monkeypox. Education of health workers will be critical for clinical recognition, and enhanced surveillance will help to better characterize disease in this region of the country.

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Surveillance of avian influenza virus in poultry and wild birds in Ethiopian Rift Valley Lakes

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Methods & Materials: The surveillance was conducted in and the surroundings of the rift valley lakes of Ethiopia. These lakes were Ziway, Hora, Shalla, Awassa, Kuriftu, Chalakaka, Abiyatta, and Langano lakes. On wild birds and surrounding poultry farms. Using different laboratory techniques and PCR.

Results: All of the 117 pool and 607 single fresh fecal, cloacal, tracheal and serum samples taken from wild birds and local chicken were tested with haemagglutination, agar gel immuno diffusion, PCR and fludetect strip test. All were found for highly pathogenic avian influenza negative. All of the 87 pools and 435 single fecal samples from wild birds tested using haemagglutination test were found avian influenza virus negative. 10 pools and 50 single fresh fecal samples collected from wild birds around Clalakaka, Hora and Kuruftu lakes in Debre Zeit area was tested using the Fludetect test strip for the presence of avian influenza. All were found negative. All 15 cloacal and tracheal pool swab samples each (total of 150 single samples) and 20 blood serum samples collected from 3 markets, Enseno, Koshe and Debre Zeit and 1 backyard were tested by employing the agar gel immuno-diffusion test (AGID) for the presence of avian influenza virus showed negative results. The tissues (brain, heart, liver and spleen) of 6 wild birds found dead during the study period were tested with reverse transcriptase Polymerase chain reaction (RT-PCR) and that was also found to be negative.

Conclusion: Highly pathogenic avian influenza is zoonotic diseases acquired thorough contact with infected wild birds and chicken. Especially migratory wild birds are the main causes for the introduction of the diseases into a given country. Highly pathogenic avian influenza virus pose severe public health hazards and economic losses, impedes international trade and tourism. Under the current situation and the given survey employed it is highly unlikely that migratory birds over wintering in the environs of lakes in the Ethiopian Rift valley would transmit HPAI virus to endemic and local chicken in the rift valley of Ethiopia.

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