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EPIDEMIC SPREAD OF USUTU VIRUS IN SOUTH-WEST GERMANY IN THE YEARS 2011 AND 2012

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Usutu virus (USUV) is an arthropod-borne (arbo), single-stranded RNA virus belonging to the Japanese encephalitis virus group within the family Flaviviridae. After the initial detection of USUV in German mosquitoes in August 2010, the virus spread in 2011 and 2012 and caused epizootics among wild and captive birds in southwest Germany which cumulated in a massive die-off of black birds in cities and the neighboring Rhine valley areas.

Purpose

Our aim was to investigate the spread of USUV in Germany over the years and the development of protective antibodies in the resident wild bird population.

Methods

Different RT-qPCR methods for the detection of viral genome in organs of dead birds were used and also virus neutralization tests for the discrimination of antibodies against different flaviviruses in wild bird sera.

Results

89 USUV-infected individuals from 6 species (wild and captive birds) were confirmed in 2011 and 86 positive birds in 2012 (to date). The first USUV-specific antibody titers in resident wild birds were detected in 2012.

Conclusions

The phylogenetic analyses suggest that the epizootic USUV strain has most likely spread from Austria to Germany. So far there is hardly a decline in the number of USUV infected wild birds in 2012 noticeable compared to the year before. Interestingly, USUV seems to have hardly spread as infections were found only in areas where cases were found already in 2011. An overwintering of the USUV in the mosquito-population could be shown. Albeit USUV is considered to carry only a low zoonotic potential, public health authorities in Germany should be aware of the possibility of USUV infections also in humans.



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EPIDEMIOLOGICAL SPREAD OF USUVIRUS IN SOUTH-WEST GERMANY IN THE YEARS 2011 AND 2012

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The USUVirus (USUV) is a mosquito-borne (vector) single-stranded RNA virus belonging to the Japanese encephalitis virus group within the family Flaviviridae. The first USUV case in Germany was reported in August 2010, the virus spread in 2011 and 2012 and caused epidemics among wild and captive birds in southern Germany which culminated in a massive die-off of black birds in cities and the surrounding rural valley areas.

Objectives: Our study was to investigate the spread of USUV in Germany over the years and the occurrence of protective antibodies in the resident wild bird population.

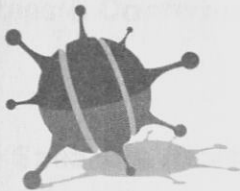
Methods: We used RT-PCR method for the detection of viral genome in organs of dead birds. We used dot-blot virus neutralization test for the identification of antibodies against the USUV virus in wild birds.

Results: The USUV-infected individuals from 6 species (wild and captive birds) were confirmed in 2011 and 2012 in southwest Germany (2012 to date). The first USUV-specific antibody in resident wild birds were detected in 2012.

Conclusions: The seroprevalence analysis suggests that the epidemic USUV strain has most likely spread from Austria to Germany. Our data indicate a steady decline in the number of USUV-infected wild birds in 2012 compared to the year before. In addition, USUV-specific antibodies were found only in those species which were found infected in 2011. An examination of the USUV in the region of southwest Germany would be needed. Whether USUV is considered to carry only a low morbidity or could be spread to Germany should be aware of the possible USUV infection and outbreak.

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