

6 Summary

West Nile virus (WNV) belongs to the flaviviruses and is transmitted from mosquitoes to vertebrates. Birds represent the natural reservoir. The virus incidentally infects vertebrates like men or other animals. In 1999 the pathogen was imported to the US for the first time and was dispersed over the continent by migrating birds. WNV infections were also observed in Europe since the middle of the last century but the epidemics were time-limited to regions of Southern and Eastern Europe. There was no evidence of WNV infections in Germany. Due to the world-wide discussion a project was initiated to investigate the situation of WNV in Germany.

The first aim of this study was the establishment and the validation of diagnostic methods. The WNV genome detection was conducted with real-time PCRs. Antibodies against WNV were investigated by immunofluorescence test (IFT), enzyme-linked-immuno-sorbent-assay (ELISA), and neutralisation test (NT). Currently the neutralisation test is considered as the gold standard for the differentiation of antibodies against flaviviruses and WNV.

Samples from birds, horses, and humans were collected and investigated with the different test systems. No WNV genomes were detected in the samples, which leads to the conclusion that there were no WNV viraemic animals in the collectives. Specific antibodies against WNV were detectable in human and bird samples. Birdbanders of Germany and Austria which had a close contact to wild birds were investigated by serological tests. At a low level antibodies against WNV were detectable in three persons, two of them travelled to endemic regions of WNV, so the infection was probably not acquired in Germany or Austria. Serologically investigations of wild birds indicated, that basically migratory birds had antibodies against WNV at a level of 10 %. Most of the investigated migratory birds overwinter in Africa, where WNV is endemic.

Data this study shows, that the risk to acquire a WNV infection in Germany is currently negligible. Nevertheless the import of WNV infections was described from endemic regions to Germany. It is discussed that WNV might become endemic in Germany due to global warming.