Incursion of pigeon-derived genotype XXI Avian Orthoavulavirus-1 (AOAV-1) into Germany

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Abstract

Classical pigeon type paramyxovirus-1 (PPMV-1) has to be considered endemic worldwide, including Europe. In Germany, viruses of subgenotype VI.2.1.1.2 are predominant. However, over the last ten years, genotype XXI.1.1 has been detected repeatedly: Sporadically in 2011, 2013 and 2017and since then with increasing frequency (seven cases already in 2021). Those cases include homing and fancier pigeons but also feral pigeons. Pathogenicity testing revealed that all obtained genotype XXI.1.1 isolates are of intermediate virulence/mesogenic with intracerebral pathogenicity indices (ICPI) between 1.02 and 1.60. Determining intravenous pathogenicity index (IVPI) for isolate pi|DE-RP| NR 060/13 (ICPI: 1.6) in chickens resulted in an IVPI of 0.72: Four of ten inoculated five week-old specific pathogen free chickens suffered from paralysis of the legs and partially also of the wings on day five after inoculation and were unable to move. Furthermore, two additional chickens suffered from general depression between day 5 to 7, but recovered thereafter.

Both of the pigeon-derived lineages of Avian Orthoavulavirus-1 (AOAV-1 genotypes VI and XXI) can be detected reliably by established generic RT-qPCRs like the M RT-qPCR (Wise et al., 2004). For rapid verification of a virulent cleavage site the Fpp-RT-qPCR, established by Sabbre and colleagues (Sabbre et al., 2017) proved to detect both genotypes with high sensitivity. From pigeon-derived samples (n=382), the Fpp-RT-qPCR detected 96.1% of M RT-qPCR positive samples, compared to 78.8% positive samples by Wise F-RT-qPCR.

The repeated detection of genotype XXI.1 viruses in Germany points to possible incursions into and possible commencing endemic spread of exotic AOAV-1 within the EU. In this context, with circulation of two different AOAV-1 genotypes in pigeons, the need to revise the term “PPMV-1” will be discussed.

References

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