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Occurrence, characteristics and control of pigeon paramyxovirus type 1 in pigeons.

[Pestka D](#), [Stenzel T](#), [Koncicki A](#).

Abstract

Newcastle disease (ND) is a highly contagious and devastating viral disease of poultry and other birds that has a worldwide distribution. ND in pigeons is called paramyxovirosis and is caused by antigenic "pigeon variant" of the virus (pigeon paramyxovirus type 1, PPMV-1). During PPMV-1 infections, central nervous system symptoms and sometimes high mortality are observed. In the case of infection with viscerotropic strains which exhibit specific affinity for the kidneys, the first observed sign is polyuria, and neural symptoms appear only in individual birds in the flock. Due to the similarity of symptoms of paramyxovirosis to the pigeon herpes virus infection (PHV), sodium chloride poisoning, overdose of ronidazole or vitamin B1 deficiency, it is necessary to perform laboratory tests to make a correct diagnosis. After virus isolation PPMV-1 can be detected initially by haemagglutination assay (HA). PPMV-1 can be confirmed by conventional serological tests such a haemagglutination inhibition test (HI) or molecular-based techniques. In the prophylaxis of paramyxovirosis in pigeons, inactivated vaccines are used, administered by subcutaneous injection in various prevention programs. However, vaccination should be only one component of a strategy of PPMV-1 control, on a par with effective biosecurity and proper, effective methods of prevention and diagnostics of paramyxovirosis.

[Avian Pathol.](#) 2013 Dec;42(6):557-65. doi: 10.1080/03079457.2013.852157. Epub 2013 Nov 4.

Epidemiological investigations on the role of clinically healthy racing pigeons as a reservoir for avian paramyxovirus-1 and avian influenza virus.

[Teske L](#)¹, [Ryll M](#), [Rautenschlein S](#).

Author information

Abstract

Clinically healthy racing pigeons may harbour notifiable pathogens and serve as an unnoticed reservoir. Thus, 3480 healthy racing pigeons from 172 different lofts were monitored over a period of 2 years for the presence of avian influenza virus (AIV) and avian paramyxovirus-1 (APMV-1). Pharyngeal and cloacal swabs as well as blood samples were collected from juvenile and adult pigeons. Pools of five pharyngeal swabs per loft and age group were initially screened by real-time reverse transcriptase-polymerase chain reaction (rRT-PCR). Pharyngeal and cloacal samples from lofts that were positive or suspect in the AIV rRT-PCR or the APMV-1 rRT-PCR were inoculated into embryonated chicken eggs for virus isolation. In addition, sera were examined for antibodies against AIV by enzyme-linked immunosorbent assay. The antibody levels after vaccination against APMV-1 were determined by haemagglutination inhibition assay. Of the investigated lofts, 0.0 to 1.4% were positive by rRT-PCR for APMV-1 and 0.0 to 6.7% for AIV during this 2-year period with a total of four samplings. No sample yielded replicating virus in egg culture. No antibodies against AIV were detected. Haemagglutination inhibition test of vaccinated racing pigeons indicated age-dependent APMV-1 titres. The results suggest that the examined racing pigeons may have had contact with AIV, but virus replication may have been too low to induce detectable circulating antibody levels. Only a low percentage of samples were positive for APMV-1, but two outbreaks were observed in monitored flocks, indicating ongoing circulation of APMV-1 in the racing pigeon population. These observations highlight the relevance of APMV-1 vaccination and indicate the importance of flock immunity.

[Avian Dis.](#) 2006 Sep;50(3):336-41.

Susceptibility and protection of naive and vaccinated racing pigeons (*Columbia livia*) against exotic Newcastle disease virus from the California 2002-2003 outbreak.

[Kapczynski DR](#)¹, [Wise MG](#), [King DJ](#).

Author information

Abstract

The susceptibility, immune response, and protection to challenge after vaccination in racing pigeons (*Columbia livia*) was assessed with the 2002-2003 exotic Newcastle disease (END) virus responsible for the most recent major outbreak in Southern California. Immunologically naïve pigeons appeared resistant to disease, regardless of dose, after a natural route of exposure. Twenty percent morbidity was observed in each group of birds receiving between 10(2.1) and 10(8.1) 50% embryo infectious dose (EID50) per bird, with one bird succumbing to challenge in the 10(8.1) EID50/bird group at day 12 postinoculation. Although resistant to disease, birds in all groups continued to shed virus from either oral or cloacal route at the end of the 14-day sampling period, and seroconversion was only observed in birds receiving > or =10(6.1) EID50. Single or double vaccination of juvenile and adult birds with pigeon paramyxovirus virus type 1 (PPMV-1) vaccine followed by END challenge with 10(6.1) EID50/bird decreased the duration, incidence, and viral load. A positive correlation was observed between the presence of hemagglutination-inhibiting antibody titers at challenge and decreased viral shedding. Overt clinical signs of disease were not observed in any PPMV-1-vaccinated birds after challenge.

[Dtsch Tierarztl Wochenschr.](#) 2003 Oct;110(10):403-6.

Undesirable reactions of domestic pigeons to vaccination against paramyxovirustype 1.

[Bönner BM](#)¹, [Koehler K](#), [Reichel U](#), [Beck I](#), [Jaeger S](#), [Barbeito J](#), [Redmann T](#), [Kaleta EF](#).

Author information

Abstract

Subcutaneous vaccination of fancy and racing pigeons with inactivated oil-based vaccines protects against all clinical manifestations caused by the Paramyxovirus type 1. Correct application of the vaccine may occasionally result in the development of granulomas or abscess-like lesions on the site of vaccine application. Although protected against disease as proven by challenge experiments, a variable proportion of vaccinated pigeons do not react with the formation of detectable serum antibodies. The pathogenesis of granuloma and abscess-like lesion developments and the failure to form humoral antibodies are presently not understood. Questions relating to legal liability of vaccinating veterinarians are briefly discussed.

Efficacy of an inactivated aqueous-suspension Newcastle disease virus vaccine against paramyxovirus type 1 infection in young pigeons with varying amounts of maternal antibody.

[Duchatel JP¹](#), [Flore PH](#), [Hermann W](#), [Vindevogel H](#).

Author information

Abstract

Pigeons aged 3 weeks were vaccinated, subcutaneously, with an inactivated aqueous-suspension LaSota vaccine. Irrespective of the level of maternally-derived antibodies the single vaccination gave protection lasting 1 year as shown by resistance against an intramuscular challenge with a virulent 'pigeon' PMV-1 strain.

[Avian Dis.](#) 1989 Jan-Mar;33(1):157-62.

Efficacy of oil-emulsion vaccines prepared with pigeon paramyxovirus-1, Ulster, and La Sota Newcastle disease viruses.

[Stone HD¹](#).

Author information

Abstract

Three strains of avian paramyxovirus-1 virus (PMV-1) were used to prepare four experimental monovalent oil-emulsion vaccines. A pigeon PMV-1 isolate (PPMV-1) and the Newcastle disease virus strains La Sota and Ulster were used to prepare four pools of beta-propiolactone-inactivated allantoic fluid for the vaccines. Groups of susceptible white rock chickens and racing homing pigeons were vaccinated subcutaneously with one of the vaccines, and their serologic responses were determined using the hemagglutination-inhibition (HI) test at frequent intervals up to 9 weeks postvaccination. Pigeons were challenged after 10 weeks with a virulent PPMV-1 isolate given intravenously, observed for signs of disease for 5 weeks, and then tested for secondary serologic HI responses. The HI responses were measured using the three strains of virus as HI test antigens. The titers were generally greater when the hemagglutination antigen used in the test was homologous with the antigen used to prepare the vaccine. All vaccines protected pigeons against morbidity and death but not against infection with the challenge virus. The shedding of PPMV-1 challenge virus from PPMV-1 vaccinates was greatly reduced 6 days after challenge.

[Avian Dis.](#) 1987 Jul-Sep;31(3):601-6.

Pathogenicity and cross-protection of pigeon paramyxovirus-1 and Newcastle disease virus in young chickens.

[Gelb J Jr¹](#), [Fries PA](#), [Peterson FS](#).

Author information

Abstract

Avian paramyxovirus-1 (PMV-1) isolates from Delaware racing pigeons were compared with Newcastle disease virus (NDV) in pathogenicity and cross-protection studies in young chickens. The pathogenicity of pigeon PMV-1 isolates was more closely related to mesogenic (Roakin) NDV than to lentogenic (La Sota) or velogenic (Texas GB) NDV strains. Pigeon PMV-1 produced 100% mortality in 1-day-old NDV-susceptible chickens following intratracheal and intracerebral inoculation. Laboratory tests often used in conjunction with chicken pathogenicity procedures for patho-typing NDV gave conflicting results. Pigeon PMV-1 isolates produced large clear plaques (up to 3.5 mm) in chicken-embryo-fibroblast cultures. Chicken embryo mean death times were considerably greater for pigeon PMV-1 (88 and 109 hr) than for Roakin (66 hr) and Texas GB (48 hr). B1 strain NDV and pigeon PMV-1 produced complete cross-protection in challenge studies in chickens. Extensive cross-reaction between pigeon PMV-1 and NDV occurred in hemagglutination-inhibition tests using polyclonal antisera. However, pigeon PMV-1 and NDV were readily distinguishable using a NDV monoclonal antibody, 2F12.

[Vet Rec.](#) 1986 Mar 8;118(10):262-6.

Avian paramyxovirus type 1 infections of racing pigeons: 4 laboratory assessment of vaccination.

[Alexander DJ](#), [Parsons G](#), [Marshall R](#).

Abstract

The immune response and protection from challenge afforded to adult pigeons by four different vaccination schedules were assessed. Intravenous challenge with a field pigeon isolate was done four weeks after the second of two doses of vaccine given four weeks apart. Little difference in protection was seen between two 0.25 ml and two 0.5 ml doses of oil emulsion vaccine, although the latter produced a slightly higher immune response. In both cases one of 10 challenged pigeons became sick and died. One dose of Newcastle disease virus B1 live vaccine followed four weeks later by 0.5 ml oil emulsion vaccine gave a comparable immune response to two 0.25 ml doses of oil emulsion but only six birds survived challenge. Two doses of Newcastle disease virus B1 vaccine gave a poor immune response and little protection from challenge; all 10 birds became sick and eight died. Assessment of the onset of protection following one dose of either 0.5 ml oil emulsion vaccine or Newcastle disease virus B1 indicated some partial protection in the latter group as early as five days after vaccination. Both groups showed protection at 10 days but by 21 days, although protection was sustained in the oil emulsion group, birds receiving live vaccine were fully susceptible. Measurement of the duration of protection in pigeons given two 0.5 ml doses of oil emulsion vaccine indicated that protection had begun to wane by 40 weeks after the first dose.

[Vet Q.](#) 1985 Jan;7(1):60-5.

Paramyxovirus disease in racing pigeons. Clinical aspects and immunization. A report from the Netherlands.

[Lumeij JT](#), [Stam JW](#).

Abstract

Since 1981 a highly contagious viral disease causing high morbidity and low mortality in racing pigeons has spread over Europe. The virus belongs to the avian paramyxovirus sero group I. Clinical signs include watery droppings, polydypsia and neurologic signs in a high proportion of infected animals. Definitive diagnosis can be made by virus isolation in cell cultures or chicken embryos, and virus identification by haemagglutination and haemagglutination inhibition (HI) tests. The HI test, using sera from suspected animals, is a useful clinical tool to confirm the diagnosis. The most important differential diagnosis is salmonellosis. Good immunity against this disease can be acquired by subcutaneous vaccination with an inactivated oil adjuvant poultry NDV-vaccine. For the benefit of pigeon racing a plea is made for compulsory vaccination in countries in which the disease is endemic.