



## EMERGENCE OF PARVOVIRUS IN DOGS: A QUESTION OF ORIGIN

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Parvovirus produces lethargy, fever, vomiting, abdominal pain and bloody diarrhoea. The animal suffers severe dehydration and shock. Dogs who survive by early veterinary intervention have life-long immunity. Young puppies and immuno-compromised adults are most at risk from this disease. Maternal antibodies do protect pups for a period of time.

There are two distinct forms of this virus. One involves the myocardium (heart muscle) with no previous signs other than occasional diarrhoea a few weeks previous; the second and more prevalent form is the intestinal involvement which produces the clinical symptoms described above.

Before the emergence of Parvovirus, dogs in Australia were vaccinated against Canine Distemper and Canine Hepatitis only.

The first reports of this new disease came from metropolitan Brisbane. W.R. Kelly from the University of Queensland published his letter in the *Australian Veterinary Journal*, Vol. 54, December 1978. "A number have been young animals (up to 6 weeks of age) sold by an animal refuge after a short stay in the refuge during which time the animals received treatment for round worms and vaccination against distemper. Affected pups were returned by the new owners within a week because of persistent diarrhoea and illthrift. Many have had to be destroyed; others have been saved with supportive therapy."

The next article to be published in Australia was from Townsville by R.H. Johnson, Dept. of Tropical Veterinary Science, James Cook University and P.B. Spradbrow of the University of Queensland dated 13<sup>th</sup> of December 1978, in the *Australian Veterinary Journal*, Vol. 55, March 1979. They state, "We wish to report the isolation of parvoviruses (CPV) from these dogs and the demonstrations that the parvovirus is serologically indistinguishable from the parvovirus causing feline panleucopaenia (FPV)."

Amazingly, this new disease materialised world-wide almost simultaneously between October 1978 and March 1979. Reports started coming in from all corners of the globe. The United States of America (Appel et al 1978), Canada (Thompson and Gagnon, 1978), The United Kingdom (Jefferies and Blakemore 1979), Scotland (Dr. H. Thompson et al 1979) and New Zealand (Gumbrell 1979).

Theories regarding the possible origin of this new disease quickly became of major concern among veterinary scientists. Scientists quickly realised that this disease could not have spread naturally in only 5 months.

"For two distinct, frequently fatal, new pandemic disease syndromes to emerge in dogs - in any species for the matter - suddenly and seemingly in multiple foci around the world is a remarkable phenomenon. Some may wish to argue that both diseases have existed unrecognised prior to 1978. Most opinion, including our own, holds that both are truly

new diseases. The absence of antibody in 70 canine serums collected prior to any known canine parvovirus disease in Australia supports this view. If new, what are the possible origins of the virus? Administration of live, attenuated FPV vaccine to dogs in error or contamination of canine viral vaccines with FPV, especially if the particular vaccine was marketed internationally, are possibilities." (C. Lenghaus, M.J. Studdert, *Aust. Veterinary Journal*, Vol. 56, 1980).

"It is difficult to explain why this apparently new disease should appear simultaneously in widely separated areas of Australia. A possible source might be a veterinary biological product, especially one produced in cell culture in which a contamination parvovirus might pass unnoticed and in which biologically modified mutants might be selected." (R.H. Johnson, *Aust. Veterinary Journal*, Vol. 55, 1979).

"The origin of a putative mutant remains a matter for speculation and would need to be sought, both in the field and the laboratory. As FPV disease in cats has been known for so long while CPV disease is apparently a new entity in dogs, it seems only remotely possible that CPV has arisen by spontaneous mutation of wild-type FPV in the field. The possibility of mutation of a vaccine strain of FPV should be seriously considered. It is suggested that this may have occurred in the laboratory, with subsequent incorporation of such mutants into biological products, especially live virus vaccines, or mutation may have occurred following accidental or deliberate vaccination of dogs with live FPV. In either case, very few primary foci of CPV infection would have been required to account for the subsequent rapid spread world-wide." (C. Lenghaus, *Aust. Veterinary Journal*, Vol. 56, 1980).

Due to the widespread concern that this new disease may involve live virus vaccines, debate regarding future vaccines for this disease ensued, particularly on the subjects of safety and necessity.

"If CPV has originated by mutation from FPV, then there is nothing to suggest that FPV would not mutate further and expand its host range to include other domestic animals and even man. Clearly the use of live FPV vaccines is in need of review. The general use of an inactivated CPV vaccine has been questioned; any development of a live CPV vaccine should be viewed with some concern as this could provide even more selection pressures for still further mutation of this virus." (C. Lenghaus, *Australian Veterinary Journal*, Vol. 56, 1980)

[Author's note: A live virus Parvo vaccine is now in routine use world-wide, including Australia.]

"It is suggested that any attempt to control the syndrome in dogs with FPV vaccines be made using inactivated rather than attenuated vaccine until the origin of the disease is established." (R.H. Johnson, *Aust. Veterinary Journal*, Vol. 55, 1979)



"In addition, with the relationship between FPV virus and CPV still unclear, caution in the use of attenuated live FPV vaccines in dogs would seem advisable." (J.R. Smith, R.H. Johnson and T.S. Farmer, Aust. Veterinary Journal, Vol. 56, 1980).

"I agree with Lenghaus (1980) that use of a live canine parvovirus vaccine would be inadvisable." (M. Sabine, Aust. Veterinary Journal, Vol. 56, 1980)

The remaining question regarding the need for a vaccine was highly disputed. The high morbidity and mortality of the disease when it first occurred were not in question, however considering the available data on the antigenic ability of the disease and the life-long immunity available to dogs via natural contact encouraged some scientists to suggest that over the next few years, this disease would very quickly become non-life-threatening and limited due to widespread passive immunity. (J.R. Smith, T.S. Farmer, R.H. Johnson, 1980)

Later findings, (G.E. Gooding and W.F. Robinson, 1982) suggested that reproductive efficiency is affected by parvovirus infection. This finding must bring into question what possible effects on our bitches the live vaccine may be having today. Many breeder's bitches have experienced widespread inability to conceive and reduced litter numbers in recent years. An example of this ability of live vaccine to produce the same effects as the disease is the measles vaccine and the condition SSPE. (Paediatrics, Vo. 59, No. 4, April 1977)

Also well documented are the possible reasons why parvovirus is so age-specific, occurring only in dogs under 24 months of age and most severe in pups under 3 months of age. A study undertaken in Queensland concluded that environmental causes, such as low grade bowel damage associated with hookworms, giardia, weaning or even vaccination is associated with susceptibility to infection and the severity of damage. (J.R. Smith, T.S. Farmer, R.H. Johnson, 1980)

In personal conversations with veterinarians over the last ten years, it has been interesting to note the changing views in relation to parvovirus and the parvovirus vaccine's ability to protect against this disease. Ten years ago, we were told that vaccinated dogs would not acquire parvovirus; five years later, we were told the vaccine would not necessarily protect against death. Now, we are told that vaccinated dogs have a better chance of survival but there are no guarantees.

Data collected privately over the last ten years by myself and valued breeder colleges, has found that many litters Australia-wide are contracting parvovirus from their vaccinations, and some, after hundreds of dollars in veterinary care, are dying. This causes great concern, considering that registered breeders are not allowed to sell unvaccinated puppies and owners cannot take their pets to dog training or boarding kennels without proving that their dogs have been vaccinated within the previous 12 months.

All this information, combined with the knowledge that the vaccine manufacturers were the ones who suggested that dogs and cats be vaccinated every year for life; that veterinarians do health checks yearly to boost their prac-

tice's bottom line despite no scientific studies to back the need for vaccinating every year, should cause all animal owners to be cautious in their choices.

### DEJA VU ALL OVER AGAIN

*From our "The more things change, the more they stay the same" file, the following article from the Sunday Mail, 9/8/87 is presented. Does this ring a bell for anyone else?*

Alternative medicine and lifestyles are being blamed for a resistance to immunisation which threatens a measles epidemic.

A full-scale epidemic was likely if the immunisation rate among Queensland children was not increased, the Health Department's director of child health, Dr. Tony Clements, said. Pockets of resistance to immunisation had been recognised throughout Queensland.

...Dr. Clements said a measles outbreak probably would occur within a year if the current eradication campaign was not successful.

"At the moment we can predict there'll be an epidemic about every three years." Dr. Clements said. "Unless we succeed in raising the immunisation rate much higher, there is likely to be a full-scale epidemic either later this year or next year.

Compulsory immunisation would be a last resort if efforts to control and eradicate the disease by other means were unsuccessful.

"But I don't think we can wait much longer," he said. "We're working towards attaining proof of immunisation before a child enters school. If a child has not been immunised we will try to persuade the parents to have them immunised. Children won't be excluded from school if they are not immunised, but that could be possible in an outbreak."

...Dr. Clements said: "Parents who don't get their children immunised are unnecessarily putting them at risk of serious disabilities and even death."

### Some Viruses We May See Vaccines for Soon...

#### OPRAH WINFREY VIRUS

Your 200MB hard drive suddenly shrinks to 80MB, and then slowly expands back to 200MB.

#### FEDERAL BUREAUCRAT VIRUS

Divides your hard disk into hundreds of little units, each of which does practically nothing, but all of which claim to be the most important part of your computer.

#### AIRLINE LUGGAGE VIRUS

You're in Dallas, but your data is in Singapore.

#### FREUDIAN VIRUS

Your computer becomes obsessed with marrying its own mother board.

#### HEALTH CARE VIRUS

Tests your system for a day, finds nothing wrong, and