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Dreaded doggie diarrhea: canine viral enteritis revisited

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Canine Parvovirus (CPV-2) Infection

Studies on pound dogs, family dogs, and samples submitted to state diagnostic laboratories have shown that parvoviral diarrhea is more severe and prevalent than all other cause of viral diarrhea. Bloody diarrhea, fever, leukopenia and death are much more likely to be associated with parvoviral diarrhea than coronaviral or parasitic diarrheas. The fecal antibody tests measure viral antigen in the feces. Modified-live canine vaccine strains shed in the feces and can cause weak positive reactions in some situations. Viral antigen - stool....There are limitations for detecting virus particles in the feces of diseased animals. This appears very early in the course of infection and can disappear after 4 to 5 days of clinical illness causing false-negative results. Large amounts of viral particles are most significant and occur very early in association with clinical signs. Lower levels of vaccine antigen will occur in stool causing false-positive results. Extremely small numbers of particles are shed by dogs in contaminated environments. What methods might be too sensitive to use for diagnosis in detection of parvovirus?

Treatment varies in the disease according to the severity of clinical illness (eg. watery vs bloody, leukopenia, etc) Studies on pound dogs, family dogs and samples submitted to diagnostic labs have shown that parvoviral diarrhea is more severe and more prevalent than all other forms of viral diarrhea. Bloody diarrhea, fever, leukopenia and death are much more likely to be associated with parvovirus diarrhea. Animals with such symptoms will be treated differently than those with milder watery diarrhea. Blood and protein loss requires transfusions with blood or plasma. Antimicrobials must be used when hemorrhage and necrosis indicates transmucosal bowel damage.

Studies on treatment of canine parvovirus infection have shown that passively administered virus-specific antisera has been effective in reducing the severity of infection. Furthermore, treatment with high dose interferon omega has also shown benefit in reducing the clinical severity and mortality. Around 1996, vaccine manufacturers introduced potentiated products in the United States. These were: high titer, lower passage vaccines which are now in use by most major manufacturers. They provide protection as early as 12 weeks of age in most puppies. Vaccines available through other sources and over the counter may still contain conventional parvoviral antigen. Initially conventional vaccines were claimed to break through maternal immunity as early as 6 weeks of age. However, the titers of pups the litters protected by such vaccination programs were low. For this reason, a complete series, with vaccines were given every three weeks until the dogs were 16 weeks old, has been recommended. With some breeds, veterinarians were continuing out to 18 weeks of age. These breeds include Dobermans, Rottweilers, (some studies also suggest increased susceptibility for English springers, Dalmatians, Siberian huskies, German shepherds, Labradors, and greyhounds). Conventional products are still sold at feed stores and in catalogs.

A shifting of antigenic determinants and genetic composition of canine parvovirus has taken place at least twice. Cross-protection still exists between the old strains in the vaccine and the new field strains. Vaccine breaks that occur in dogs that seemingly went through a “good” vaccine schedule are probably accounted for by maternal antibody blockade. Increased virulence of the new parvoviral strains might explain more severe illness that is detected in some dogs that become infected. Most of the current isolates are of the CPV-2b variety. Some manufacturers have products containing newer parvoviral strains (CPV-2b). The CPV-2b strain may infect cats. What relationship this has to the resurgence of FPV is uncertain.

Canine Parvovirus-1

CPV-1 outbreaks have been associated with neonatal or in utero mortality and may be responsible for diarrhea and reported vaccine breaks in young pups (≤ 6 weeks). CPV-2 immunodiagnostic tests do not cross-react with CPV-2. Since the CPV-1 disease looks grossly and microscopically like CPV-2 infection, cultural diagnosis is impractical but essential to separate them.

Canine Coronaviral Infection

Infection with CCV is less severe than that with canine parvovirus (CPV). Viremia and generalized tissue infections seen with CPV are not found with CCV infection because the latter infection is localized to the intestinal tract. Nevertheless, CCV infection can increase the severity of that seen with CPV infection alone. Most recently, a more virulent disease-producing strain of canine enteric coronavirus has been reported. More severe morbidity, and in some cases mortality, has been reported. There are several products licensed for protection against canine coronavirus (CCV)

infection. These are inactivated strain vaccines, and there is one modified-live product. Further work needs to be done to see if these vaccines protect against the more virulent strains of enteric coronavirus which have originated worldwide. It is recommended that at least 2 vaccines be given at an interval of 2 to 3 weeks, beginning at 6-8 weeks of age. However, puppies <12 weeks of age should be given an additional dose between 12 and 16 weeks of age. There are few adverse reactions with these products and they do not interfere with other biologics. Combinations of inactivated coronavirus vaccine with leptospirosis fraction have resulted in increased allergenicity. This has been overcome by reducing excessive protein fractions in the leptospirosis bacterins. Still combination of leptospiral and inactivated coronaviral vaccines in the youngest of pups may potentiate allergic reactions. I do not recommend this combination in pups less than 9 weeks unless the MLV coronaviral vaccine is used.

Although duration of immunity to challenge with CCV has not been established for longer than 2 to 3 weeks, protection is probably of longer duration. During challenge studies, vaccinates had reduced intensity of viral replication in their intestinal epithelial cells. Because of the additional cost to clients for coronaviral protection, vaccination may not be recommended routinely but rather when clients desire all possible disease prevention in areas where endemics occur with CCV. If the vaccines are shown to protect against the new virulent strains, then more widespread and routine vaccination will be recommended.

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