

Stress, Infertility and Herpes Infection

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Our most frequent discussions about Herpes in dogs occur because of neonatal puppy death. Herpes causes puppies to die in the first two to three weeks of life, when body temperature cannot be regulated by the puppy. After three weeks, the disease no longer causes death.

We rarely find much in references about this disease in the adult dog. Where it is mentioned, it is generally in regard to future breeding advisability, or the presence of vesicles (blister like lesions) on the vulva or prepuce. Recent papers published by Dr. James Everman of Washington State University, have demonstrated that the disease as we know it in dogs is very similar to the disease in horses (Rhino). This information fills in the remainder of the picture for dogs in a very dramatic fashion.

Those of us who have owned horses are likely to be familiar with the equivalent Herpes virus infection in horses, a disease called Rhino (Rhino-pneumonitis). Rhino in horses is characterized by a mild respiratory disease or by abortion. In the respiratory form of the disease, the horses have a clear nasal discharge, may snort or cough, and have reduced exercise tolerance. It is a mild condition, and unless the horse is being actively used or campaigned, or is pregnant, it is rarely vaccinated against. The vaccine, somewhat like the common cold virus, does not give a good duration of immunity, and if protection from Rhino is desired, it has been necessary to vaccinate every 4 months. Rhino in horses also causes abortion. On breeding farms, an epidemic of Rhino will cause what is called an "abortion storm" in brood-mares. The phrase says it all. Rhino is highly contagious, spread by aerosol or contact with secretions, and devastating to pregnancy.

The fact that Herpes virus infection in dogs has been given such short change, when its effects might well have anticipated by reproductive experts, serves as an excellent demonstration of the historical lack of interest in canine reproduction by the Veterinary establishment in general.

The respiratory form of Herpes infection in adult dogs is minimal in its signs. It is however, extremely important in the transmission of the disease. It is not necessary for dogs to acquire Herpes as a venereal disease. A dog may acquire Herpes as an aerosol, or from secretions on your clothing, for instance, and abort or resorb a litter. I have personally heard of only two cases of adult dogs which were sneezing, in the manner of a human with a cold. Any dog may sneeze once or twice in response to inhaling an irritant. But sneezing consistently, over a protracted period, is extremely rare. In one instance of frank sneezing, 6 week old puppies, who were 3 weeks older than another litter in the same household which had Herpes as neonates, showed sneezing and a clear nasal discharge. The younger puppies, under 3 weeks of age, had suffered a 50% mortality and were confirmed as having Herpes on post mortem examination.

The older puppies who could regulate their body temperature, were affected only with the sneezing. Puppies die of Herpes only so long as they are unable to mount a fever response, or have the lower body temperature of neonates. After 3 weeks of age puppies can raise their body temperature is high enough to resist the overwhelming infection which results in death. The treatment for Herpes in young puppies with the appropriate signs is elevation of the body temperature. Check with your veterinarian if you think this may be the problem in your litter under three weeks of age. As Herpes is a virus, there is no particular reason for administering antibiotics, unless a secondary bacterial infections occurs. If there is no clear indication as to whether it is Herpes or a neonatal bacterial infection which is causing puppy death, antibiotics are appropriate. A cervical culture and sensitivity of the bitch prior to whelping to determine the presence of E. coli will provide help in making this decision.

Puppies may acquire Herpes virus as they pass through the vaginal canal at birth (along with E.coli bacteria), in utero prior to birth, or by contact with infective secretions (respiratory aerosols or vaginal discharges) after birth. We expect high levels of mortality among infected puppies over a course of several days. The best way of preventing newborn



puppies from acquiring the disease is to quarantine them and their dam from 3 weeks prior to birth and 3 weeks after whelping. If there are surviving puppies in a Herpes litter, they may or may not have permanent damage to the nervous system, kidney, or lymphoid tissue, much in the way that puppy strangles may damage internal organs and cause problems later in life. Beside the first three weeks of a puppy's life, the other extremely sensitive time in the dog for Herpes virus infection is during pregnancy. Thus, it follows that relative quarantine of the bitch for her entire gestation is desired if early resorption and abortions are to be avoided. Herpes infection of the dam which does not result in abortion may result in low birth weight, weak or stillborn puppies.

Once we have experienced Herpes in a litter of neonates, we are critically interested in whether or not we are likely to experience a repeat occurrence if we breed the dam again. We are also interested in whether the stud dog must be infected, and what damages may have been suffered by the newborn puppies which will affect their health later on. Herpes in adult dogs tends to go dormant, as it does in humans, and to resurface and become acute in times of stress. Consider the stresses in play for the bitch being bred :

1. Hormonal events which temporarily impair the body's ability to fight infection.
2. Shipping, boarding, breeding and shipping again, should the bitch travel to the stud dog. Some one or all of these may affect a given bitch.
3. Possible concurrent bacterial vaginal or uterine disease.
4. In appropriate parts of the country, concurrent lyme disease.
5. Showing.
6. In the bitch or 5 years or older, decreased thyroid levels.

Knowing that stress may activate Herpes, (which may then in 3 weeks cause early embryonic death) goes a very long way in explaining those bitches we have been so certain were bred prior to the fourth week, or were palpated in whelp at 4 week, but failed to whelp at term, or which whelped a much smaller than anticipated litter. Where we have done thorough pre-breeding workups and have palpated normal vesicles in a bitch at 28 days of gestation, yet no puppies were delivered, we test for Herpes with paired serum samples taken 2 weeks apart, at about the time the bitch should have whelped. Where the bitch was in good health and clean of bacterial vaginal or uterine disease originally, had normal vesicles and later lost her litter, we have found positive Herpes titers in about 80% of cases.

This should be an extremely valuable piece of information for breeders, especially those who show regularly, have multiple animals in their kennel, who groom or run boarding kennels, or who give obedience lessons, and so on. Remember, this disease can literally be carried home on your clothing.

What is the expectation for a bitch which has whelped a known Herpes litter (diagnosed by post mortem exam), or has been shown by titers to have lost a litter due to Herpes? If she is stressed by some of the factors above, she may be affected again. If she is bred at home, given a complete pre-breeding medical workup, including thyroid testing, blood count, and cervical culture and sensitivity, and has any detrimental conditions cleared up, she is perfectly likely to have no problem. This also supposes that she is not travelled around during her gestation and taken to show, that she is kept apart from those dogs coming into the kennel from outside and those travelling to shows, and so forth. This includes not going to classes where there are other dogs as well. In a breed felt to be immunodeficient (Rottweilers, Dobermanns, Boxers and possibly Pugs, Collies, and Shelties) the risk will be greater of a repeat occurrence. But most bitches have no problem in subsequent breedings.

Nearly all dogs with any doggy contacts at all have been exposed to Herpes. It is not just or primarily a venereal disease. It is not usually or necessarily contracted through the breeding. It is usually contracted through exposure to the respiratory aerosols of other dogs. The very short-term immunity a new exposure may confer fades quickly, leaving the dog open to repeat infection as well as to dormant infections re-surfacing. In fact, it would be very hard to say that any repeat of the infection came from a dormant infection instead of a new exposure to high levels of infective particles. Just going to the stud dog's premises can be enough to expose the bitch; if there are frequent visiting bitches to the kennel, new infections may be brought with them. If the stud dog or his kennel mates are showing or training, he



may be shedding high levels of particles. It is simply not possible to avoid this virus in the dog's environment. But it is possible to limit that exposure; if going to the stud dog, don't travel by air, and stay in a motel with the bitch rather than leaving her at the stud's kennel. If going to a dog show, completely change clothes and wash before encountering any bred bitches at home. If training or showing kennel mates, isolate her from them and perform her 'chores' before doing theirs, always going from "clean to dirty".

The stud dog to an infected bitch may or may not be infected, either as the animal which passed the infection to the bitch or as a recipient of an acute infection she was harbouring when he bred her. Herpes testing at the time of breeding is meaningless, since almost all individuals in the bitch's environment may be in various phases of acquiring or recovering from infection. It bears repeating here, that the respiratory infection is very mild and rarely ever shows actual clinical signs in adult dogs. Only paired serum samples taken at different times to detect a rising (becoming infected) titer, or a falling (recovering from an infection) titer, can tell us anything.

Obviously the information generated in this way will be too late to be of use at the time of breeding. The usefulness of these paired titers is seen chiefly as a tool to identify if a bitch has lost her litter due to this, after the fact. We can rule Herpes in or out as one of the several options for causes of litter resorption, or still born or sickly neonates. The best rule to follow is that a kennel with an active show schedule, a stud dog which is being shown or trained, a boarding kennel, or a kennel where breedings are frequent, so that visiting bitches are frequently on the premises is likely to harbour infective particles.

Certainly fighting a uterine or vaginal infection may be stress a bitch sufficiently to produce an adverse affect on resistance to Herpes. Certainly any bitch low in thyroid would find it more difficult to resist an infection. The thyroid levels necessary for the life of a comfortable pet and those necessary for reproduction, especially in the bitch, are not the same. Nature wants our children (human) to have children as teen agers, not as 40 year olds. We, of course don't feel quite the same about children reproducing. Likewise, Nature wants dogs to whelp at 18 months, not 6 years of age. Thyroid normals represent all breeds, all ages, and all states of health. It has been said that all dogs over 5 years old show a decrease in their thyroid level - they're starting to age. To lump the thyroid samples of 6 to 12 year olds with those of 1 to 5 year olds throws the 'normal range' off considerably. Probably a good statement to make is that to ensure that thyroid doesn't contribute to infertility, it should be (T4) in the upper one third to one fourth of the normal range.

When looked at in a biologic perspective, when thyroid hormone decreases, naturally the first considerations of the body are to maintain health in the individual. Only in animals who are young and healthy enough to nurture puppies will Nature encourage reproduction, as a matter of course. On the other hand, since we have created most of our breeds in the last 100 to 200 years, it is somewhat unrealistic for us, with the kinds of remedies we have at hand, to worry overly much about what Nature wants of one of our dogs. If a bitch is in good health and over 5, and simply needs supplementation of l-thyroxin to continue to reproduce, it would be silly of us to worry about what Nature wants. Our dogs don't live in 'Nature' - except perhaps those running the Iditarod. A given animal's suitability for breeding should be determined on its thyroid as a young dog, not on its levels in when it's over 5 years of age.

Other sources of immune suppression are parvo disease, lyme disease, and vaccinations with your regular 'booster' vaccine which contains Distemper and Hepatitis (A2) virus, and which because of the combination of these two together causes about a 2 week immunosuppression. Parvo, like Herpes is endemic in our dog show population, and may be brought home from a show, and cycled by other dogs in the kennel subclinically, later affecting both the bred bitch and the young puppies in a way that it wouldn't affect the rest of the adults in the kennel. Drugs (corticosteroids, chemotherapy), emotional family situations, moving, and so on can all produce stress.

One of the chief uses of 'chilled' or 'fresh-extended' semen is to avoid the stresses of travel to breed a bitch. All of the common sense cautions we used to be aware of – don't take your pregnant bitch to shows, and don't ship her to be bred – are certainly largely explained by the conditions fostering a Herpes infection, resulting in early embryonic loss, resorption, still birth, weak puppies, and neonatal death.



Veterinary Information Sheet

Herpes is one of the very few things that any veterinarian can determine on a quick autopsy of a dead puppy. There is grossly visible mottling on the kidneys that is totally diagnostic for Herpes. If you have a puppy die, refrigerate the body (don't freeze it) and get your vet to look at it ASAP. Then ask the vet for directions for raising the body temperature of the remaining puppies in the litter.

