

Canine Mycoplasma Its Role in Reproductive Disease

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Mycoplasma infections have been implicated as a cause of infertility in both bitches and stud dogs. As a result, mycoplasma continues to receive attention as a potential concern for purebred dog breeders. The following article discusses what is currently known about canine mycoplasma infections and outlines a management approach for breeding animals.

What is Mycoplasma?

Mycoplasmas are bacterial organisms that, because of their extremely small size, have been placed in a separate class. Also, unlike any other bacteria, mycoplasmas lack a rigid cell wall which makes them unaffected by antibiotics that act by invoking cell wall damage (for example, penicillin). Mycoplasmas are extremely fastidious organisms that are difficult to culture without special media, and even then may be difficult to recover. Ureaplasmas are a distinct type of mycoplasmas that have been subclassed and are identified by their own name.

Mycoplasma as Part of the Normal Flora

Several mycoplasma species have been found to be normal inhabitants of the upper respiratory and genital tracts of dogs and cats, and as a result they can be routinely isolated from oral, nasal, conjunctival and genital mucous membranes. Several studies have specifically looked at the frequency of mycoplasma recovery from the genital tracts of fertile versus infertile bitches and stud dogs, and no significant difference has been found.□,□ Therefore, recovery of mycoplasma from a vaginal or semen culture does not always correlate to reproductive disease, and likewise does not always need to be treated. Since these organisms exist in the respiratory tract as well as the reproductive tract, aerosol transmission from dog to dog (airborne, licking, sniffing, etc.) is probably more frequent than venereal transmission.

When to Worry About Mycoplasma?

While mycoplasmas may be normal inhabitants of the reproductive tract, they have been associated with infertility, lesions of the reproductive tract and sperm abnormalities.□'□'□ As with many opportunistic pathogens (organisms that may cause disease but frequently don't), clinical disease often results when an animal is under stress and/or exposed to high numbers of organisms. Close intensive housing conditions (as in a large kennel or at indoor dog shows) provide the opportunity for high numbers of organisms to develop. A healthy dog or bitch especially if housed individually, however, may not become diseased even after known exposure to the organism.

It has been found that the administration of broad spectrum antibiotics may suppress many other bacteria that make up normal flora and allow mycoplasmas to overgrow.□ Therefore, the prophylactic use of antibiotics prebreeding is not recommended as it may actually create a

pathogenic state, and may contribute to the development of antibiotic-resistant populations of organisms.

A mycoplasma culture should be performed if:

- 1) A dog has missed several bitches (i.e., no conception).
- 2) A semen evaluation shows morphologically abnormal sperm cells.
- 3) A bitch has not conceived having been bred to a fertile stud dog on appropriate days.
- 4) A dog or bitch produces conception but has a documented high rate of fetal resorption.

It is important to remember that there are many other causes of the above problems, and so a mycoplasma culture should be only one part of a thorough diagnostic investigation performed by a veterinarian experienced in canine reproduction.

Proper Mycoplasma Culture Technique

Due to their fastidious nature, mycoplasmas require special techniques for successful growth in cultures. As a result, mycoplasma cultures should only be sent to laboratories competent in the recovery of the organism. It is recommended that ureaplasma is cultured for at the same time, since it is a similar organism and has also been implicated in infections of the reproductive tract.

Proper technique in obtaining the sample to be cultured is also extremely important. In bitches, it is recommended that the vaginal area close to the cervix be sampled using a guarded swab. In stud dogs, it is important that a semen specimen be collected using sterile technique, avoiding urethral contaminants.

What to do about Normal Fertile Dogs and Bitches?

Since mycoplasma is frequently cultured from the vagina of normal fertile bitches, routine prebreeding cultures of bitches are not warranted. Since mycoplasma is frequently recovered from cultures of the prepuce and/or semen of normal fertile males, routine prebreeding cultures may show some growth of mycoplasma as part of the normal flora. However, some owners may choose to periodically have a dog's semen cultured for mycoplasma. While a negative result is definitive, the significance of a positive result must always be determined by correlation to semen evaluation and clinical condition. Unfortunately, a dog's fertility status cannot be determined on the basis of mycoplasma recovery.

Summary

Mycoplasma infection is only one of many factors that may impact canine fertility. Working with an experienced veterinarian with a thorough, systematic approach to investigating fertility problems will pay dividends to your breeding program.

A guarded swab recommended for proper vaginal culturing in bitches is available through ICG. Veterinarians may order the Accu-CulShure® Specimen Collection/Transport System by calling ICG at 800-248-8099.

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REFERENCES

- Doig PA, Ruhnke, HL, Bosu WTK: The genital mycoplasma and ureaplasma flora of healthy and diseased dogs. *Can J Comp Med* 45:233-238, 1981.
- Bjurstrom L, Linde-Forsberg C: Long-term study of aerobic bacteria of the genital tract in stud dogs, *Am J Vet Res* 53:670-673, 1992.
- Lein DH: Mycoplasma infertility in the dog: diagnosis and treatment. *Proc SFT*, Sept 1989, p. 307-313.
- Holzmann A, Lager G: Experimentally induced mycoplasmal infection in the genital tract of the male dog. *Therio* 7(4): 167-188, 1977.
- Lingwood CA et al: Common sulfoglycolipid receptor for mycoplasmas involved in animal and human infertility. *Biol of Reprod* 43:694-697, 1990.
- Strom B, Linde-Forsbert C: Effects of ampicillin and trimethoprim-sulfamethoxazole on the vaginal bacterial flora of bitches. *Am J Vet Res* 54(6):891-896, 1993.