

Survey of Rural Farm Cats for the Presence of the Parasite

Trichomonas foetus

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Introduction

Trichomonas foetus is a sexually transmitted protozoan parasite that has long been known to cause endometritis, abortion, and pyometria in cattle (BonDurant, 1997; Felleisen, 1999). These reproductive diseases cause significant profit decreases for the farmers and consequently many farmers have begun to practice artificial insemination to prevent *T. foetus*.

Pathology studies and molecular data have recently recognized *T. foetus* within the large intestines of felines, which can cause large bowel disease. The parasite has been extensively studied in cattle but its prevalence in felines throughout the United States is yet to be determined. Stockdale et al. (2009) observed 173 cats from several states, excluding Wisconsin, of which 10% were affected. Rural areas surrounding Eau Claire provide an opportunity to determine the prevalence of infection in felines, due to its abundance in farms which can provide shelter to numerous cats.

Feline fecal samples were collected from a variety of farms throughout the Chippewa Valley. The prevalence of *T. foetus* has never been surveyed in the Eau Claire area; therefore, a positive result would be significant.

Methods

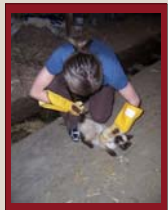


Fig. 1. Restraining cat to obtain fecal sample

A total of 40 fecal samples were collected from 12 farms by obtaining a direct fecal sample using a fecal loop (Figure 1 and Figure 2). After each collection the fecal loop was decontaminated using a bleach solution.

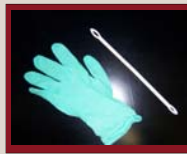


Fig. 2. Gloves and fecal loop are used during collection

Immediately following collection the fecal sample was inoculated into an InPouch Diagnostic testing kit (Figure 3). The InPouch kit was then observed under light microscopy for the presence of *T. foetus* which would appear as a transparent trophozoite (Figure 4). The pouches were observed every other day for 12 days following collection in accordance to procedure. (Figure 5).



Fig. 3. InPouch Diagnostic testing kit.

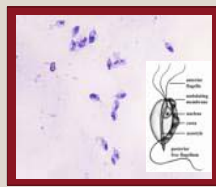


Fig. 4. Appearance of *T. foetus*.

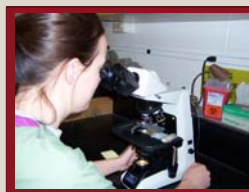


Fig. 5. Light Microscopy is used to determine *T. foetus* presence.

Results

The survey yielded negative results for all 40 fecal samples obtained. This finding offers important information for the Chippewa Valley farmers; in particular an understanding of parasite prevalence in the area which could potentially affect their livestock.

Discussion

It has been shown that cattle and felines act as interchanging hosts to *T. foetus* through daily interaction on shared farm settings (Figure 6). *T. foetus* is known to be sexually transmitted in cows, but its transmission in felines is still under study. Furthermore, the transmission between bovine and feline hosts is currently being reviewed, as evidence of a natural infection cycle involving both species has not yet been described.

Fig. 6. Cats and Cows together in the milking parlor



<http://russell-escaton.com/MIM%20barn%20daily.JPG>

The negative results of this study may be contributed to two factors: a small feline population size and a large age variation within the felines observed.

Past studies have shown that the majority of *T. foetus* cases were evident in felines 12 months of age or younger (Gookin, 2004). The ages observed in this study varied from kitten to adult.

In addition, *T. foetus* cases have been seen in larger animal populations (Gookin, 1994). The farms which participated in this survey presented with small feline populations, averaging from 3-5 cats. This suggests that the sample size may have been insufficient to draw a final conclusion from.

Further studies involving a greater sample size and focused primarily on those felines of 12 months or younger should be conducted in order to gain a better understanding of *T. foetus* transmission among bovine and feline species in the Chippewa Valley.

Conclusion

Although the study showed that the prevalence of *T. foetus* was nonexistent in the samples collected it is still an important area for further research. Additional research should be conducted to determine if cats could contribute *T. foetus* to the environment by providing a reservoir for cattle infection.

References

1. Biomed Diagnostics. *InPouch™ TF - Feline*. White City, OR: Biomed Diagnostics, 2006
2. BonDurant, R.H., 1997. Pathogenesis, diagnosis, and management of trichomoniasis in cattle. *Vet. Clin. North Am. Food Anim. Pract.* 13, 345-361.
3. Felleisen, R.S.J., 1999. Host-parasite interaction in bovine infection with *Trichomonas foetus*. *Microb. Infect.* 1, 807-816.
4. Dahlgren, S.S., B. Gjerde, and H.Y. Pettersen. 2007. First record of natural *Trichomonas foetus* infection of the feline uterus. *Journal of Small Animal Practice.* 48: 654-657.
5. Gookin, J.L., E.B. Breitschwerdt, M.G. Levy, R.B. Gager, and J.G. Benrud. 1999. Diarrhea associated with trichomoniasis in cats. *Journal of the American Veterinary Medical Association* 10: 1450-1454.
6. Gookin, J.L., Stebbins, M.E., Hunt, E., Burlone, K., Fulton, M., Hocheil, R., Talaat, M., Poore, M., Levy, M.G., 2004. Prevalence of and risk factors for feline *Trichomonas foetus* and *Giardia* infection. *Journal of Clinical Microbiology.* 42:2707-2710.
7. Stockdale, H.D., Rodning, S.P., Givens, M.D., Carpenter, D.M., Lenz, S.D., Spencer, J.A., Dykstra, C.C., Lindsay, D.S., Blagburn, B.L., 2007. Experimental infection of bovines with a feline isolate of *Trichomonas foetus*. *Journal of Parasitology.* 93: 1429-1434.