

Protection from ‘*Candidatus Mycoplasma turicensis*’ re-infection

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Introduction

Hemotropic mycoplasmas (aka hemoplasmas) are small cell-wall-free bacteria that attach to red blood cells and may cause fatal infectious anemia in a variety of mammalian species (1). In cats, three hemoplasma species have been recognized: *Mycoplasma haemofelis*, ‘*Candidatus M. haemominutum*’ and ‘*Candidatus M. turicensis*’ (CMt) (2, 3, 4).

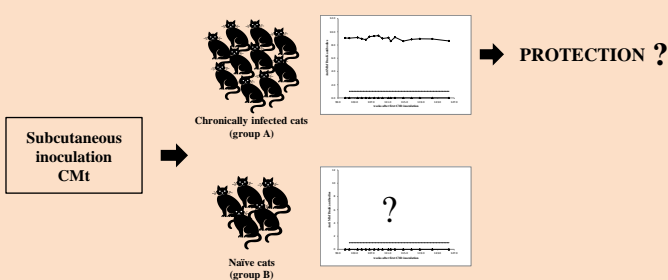
CMt was isolated in 2005 in a cat with hemolytic anemia and it was reported worldwide (4). The pathogenesis of CMt chronic infection is poorly understood. Recently, we documented the detection of CMt in different tissues of chronically infected cats and demonstrated the persistence of antibodies to CMt more than one year after the first CMt inoculation (5).

Aims of the study

- Ascertain a potential protection to a subsequent CMt challenge in chronic carrier cats
- Monitor the humoral immune response to CMt in acutely and chronically infected cats
- Confirm CMt localization in tissues at different stage of infection

Materials and Methods

Fifteen specified pathogen-free cats were used in this study. Ten cats (group A) were chronically infected with CMt and five naïve cats (group B) were used as control for CMt inoculation. All animals were subcutaneously inoculated with CMt.



CMt infection was monitored by Taqman PCR (4) and the humoral immune response to CMt was followed by newly developed Mhf DnaK ELISA (6). Blood samples were drawn weekly and tissue samples (kidney, liver, salivary gland, bone marrow and saliva swabs) were collected under anesthesia 31 days post infection in both groups.

Results

Group A animals (chronically infected cats)

- No detectable bacteremia (Fig 1a)
- Cats remained serologically positive; no boost effect (Fig 1b)
- All the analyzed tissues were PCR-negative for CMt

Group B animals (naïve cats)

- Infection was successful; cats became PCR-positive in blood (Fig 1c)
- Cats developed antibodies to CMt infection (Fig 1d)
- With one exception, all analyzed tissue were PCR-positive for CMt

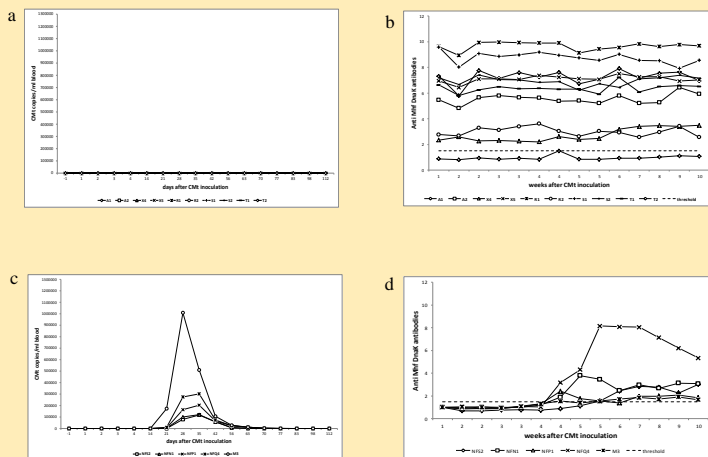


Fig 1: Results of CMt inoculation

Summary and Conclusion

The present study demonstrated for the first time protection of chronically infected cats from a subsequent CMt challenge. The cats remained serologically positive but PCR-negative for CMt and they were thus no source of infection for other cats at this stage. The fact that cats can be protected against hemoplasma infections has important implications for the development of a potential vaccine. In addition, this study shed light on the pathogenesis of chronic CMt infection and it is of clinical relevance for feline medicine.

Acknowledgements

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