

COLONIZATION OF NEONATAL PUPPIES BY *STAPHYLOCOCCUS INTERMEDIUS*

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Introduction

In dogs, *Staphylococcus (S.) intermedius* has been considered as one of the major coagulase-positive species of *Staphylococcus*. Besides its role as commensals on mucosal surfaces and the skin, *S. intermedius* is also involved in several diseases of dogs like pyoderma and septicaemia in new borne puppies (e.g. Münnich et al., 2002). For effective disease control information about the source and the route of infection are important.

In the present study we investigated the colonization of neonatal puppies by *S. intermedius*. Further potential sources of *S. intermedius* and the survival of this germ in the environment were assessed.

Material and Methods

Fourteen bitches and their litters, 55 puppies in all, were included in the study. The animals were sampled at a number of sites (buccal mucosa, anal mucosa, vulva) using swabs, moistened in sterile PBS. The bitches were sampled 1 week prepartum and then, together with their puppies within 24 h postpartum and also 2, 4, 6 and 8 weeks after the whelping day. Furthermore milk samples of the bitches were investigated.

Swab samples were also taken from the floor and the walls in the kennels. The survival of *S. intermedius* on surfaces common in kennels (wood, steel, tiles) was studied.

From one bitch and their puppies *S. intermedius* strains isolated at two weeks after whelping were differentiated by RAPD technique. Furthermore *S. intermedius* strains isolated from a 2nd litter of the same bitch were included in this investigation. The DNA for these investigations were isolated by using the "GenomicPrep Cells and Tissue DNA Isolation Kit" (Amersham Pharmacia Biotech). RAPD analysis was done by using the "Ready To Go RAPD Analysis Kit" (Amersham Pharmacia Biotech) as recommended by the manufacture.

Results

- Bitches

Seven days before whelping *S. intermedius* was isolated from 5 of the 14 bitches. One day postpartum 12, two weeks postpartum 13, four weeks postpartum 12, six weeks postpartum 10 and eight weeks post partum 5 of the 14 bitches were positive for *S. intermedius* (Figure 1).

- Puppies

Within 24 h after birth *S. intermedius* was isolated from 42 of the 55 puppies. *S. intermedius* was isolated from 54 of the 55 puppies two weeks after whelping. Four weeks postpartum 33, six weeks postpartum 33 and eight weeks postpartum 32 puppies were tested positive for *S. intermedius* (Figure 1).

- RAPD-Analysis

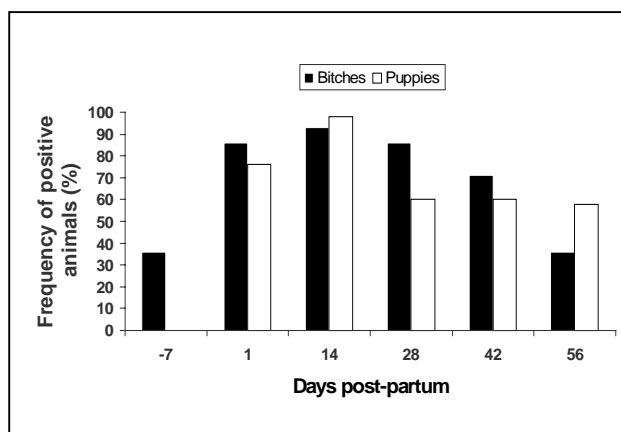
Three isolates from the bitch and two isolates from the puppies expressed identical fingerprinting profiles. Further a second litter of the same bitch was investigated

8 month later. Here, we found also strains with identical fingerprinting profile between both litters.

- Survival in the environment

For all tested materials half-life periods up to several weeks were found.

Figure 1: Frequency of *S. intermedius* positive animals



Discussion

This study indicated that the process of birth is related to a higher frequency of colonisation of bitches with *S. intermedius*. Furthermore our results demonstrated that colonization of puppies by *S. intermedius* is a gradual process that starts almost immediately after birth and is increasing until the second week after whelping. Similar findings were reported by Matsumoto et al. (1976) and Allaker et al. (1992).

Main source for the colonisation of the puppies is the bitch. Furthermore surfaces in kennels contaminated by *S. intermedius* can serve as source, due to the considerable survival of this germ in the environment.

Acknowledgements

The authors would like to thank Mrs. Gnädig and Fiedler for technical help in the laboratory.

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