Mycoplasma spp. Mastitis in Weaned Dairy Heifers

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Introduction

Mycoplasma spp. bacteria have been implicated in a variety of disease conditions in cattle including mastitis, bronchopneumonia and otitis media. The overall annual impact of this etiologic agent on U.S beef and dairy industries has been estimated to be as high as $100 million. Clinical disease in dairy calves by Mycoplasma spp. is well known, but the role of calves as asymptomatic carriers has not been as well described.

Materials and Methods

Around the time of routine brucellosis vaccination approximately 10 Holstein heifers were observed with signs consistent of intramammary infection in at least one glandular quarter. Animals (three to six months of age) were from multiple dairy farms and sampling occurred sporadically over several years. Aseptic secretions were obtained from infected glands and plated on sheep blood and Mycoplasma agar (NMC Lab Handbook 1999). Mycoplasma plates were incubated at 37° C with 10% CO2 and air and examined for growth at days 4 and 10 of culture. Two animals were donated to the University of Idaho for further evaluation. Animal A was 18 months old and pregnant. Animal B was 6 months old. Both had confirmed *Mycoplasma bovis* infection in one mammary quarter. Swabbing solutions of accessible mucosal surfaces (nares, oral pharynx, auditory canal, vestibule, quarter secretions) were collected at enrollment and swabbing solutions cultured for Mycoplasma spp. Blood was drawn for Mycoplasma bovis serology. Animal A was sampled from accessible body sites three times prior to parturition. Three weeks after parturition Animal A was slaughtered and sterile swabbing solutions were taken from: mammary quarters, eyes, nares, auditory canals, parotid tonsils, trachea, primary bronchi, secondary bronchi, Eustachian tubes, pericardial sac, pleural cavity, suburethral diverticulum, bladder, vagina, cervical mucus, uterine lumen, tarsi, and carpi. Tissue samples were collected from regional lymph nodes (mandibular, parotid, suprapharyngeal, supramammary, tracheal, bronchial) eye lids, lung parenchyma, liver, rectum, spleen, and mammary quarters. Tissue samples (5 X 5 mm) were homogenized and incubated in enrichment broth for 4 d prior to culture on agar. Animal B has been sampled from accessible body sites three times and remains in the program.

Results

Of the 10 original animals that were identified with Mycoplasma spp. intramammary infections, 5 were determined to be infected with *Mycoplasma bovis* while the other isolates were not speciated. Animals A and B were positive serologically to *Mycoplasma bovis*. Animal A freshened with three blind quarters and normal appearing milk in that was free of Mycoplasma spp. Milk from this quarter was sampled daily for three weeks postpartum but was deemed free of Mycoplasma spp. None of the swabbing solutions or tissue samples yielded Mycoplasma sp. Animal B will be bred and allowed to calve with sampling occurring at freshening.

Significance

These results confirm that young calves are at risk for intramammary infections with Mycoplasma spp. Contrary to previous findings, the infection in Animal A did not result in detectable colonization at other organ systems. Moreover, Mycoplasma mastitis was not observed at parturition, although agalactia was observed in three of the mammary quarters. In the future, more positive animals (Animal B) will be followed to calving in an attempt to understand the significance of calfhood infection on the udder development and Mycoplasma spp. shedding patterns.