

Association of the "Rat Tail" Syndrome with Bovine Papular Stomatitis in Feedlot Cattle

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A problem designated as the "rat tail" syndrome was widespread in high plains feedlots in the late summer of 1975 and in 1976 and has become a matter of economic importance to the cattle feeder.

The "rat tail" steer is one that has lost the switch in his tail, a warning that the animal should be culled from a pen of feedlot cattle as a potentially poor performer. "Rat tail" is an external sign of disturbed digestive function. Chronics that fail to recover from an acute infection such as bovine viral diarrhea may develop rat tails; however, such incidence seldom exceeds one percent of a pen. When five to ten percent of the cattle in a feedlot develop rat tails, the situation presents a different problem called the "rat tail syndrome."

The rat tail syndrome has been encountered in those feedlots with better-than-average health care programs for prevention of respiratory diseases, surfacing with greatest severity in warmer months of the year and in areas with locally heavier rainfall. The rat tails appear in pens of cattle several weeks after they go on high-energy ration, typically 40 to 60 days after arrival. The pen-to-pen spread typical of highly infectious diseases cannot be traced, nor can any correlation with origin, breed, sex or weight of incoming cattle. No specific processing method or ration ingredient is consistently associated with the problem, and cattle previously treated for respiratory disease have no higher incidence than non-treated pen-mates. Widely dispersed and unassociated feedlots are affected.

In various tests, no febrile response or abnormal hemogram has been detected in cattle destined to develop rat tails. Careful scrutiny of affected pens does suggest that some individuals may have mild transitory anorexia, increased drooling of saliva, an "uneasy appearance" and some evidence of soreness of the tongue. These individuals are apt to develop rat tails.

Accompanying the appearance of the rat tail there may be a moderately fluid stool relatively high in mucous content. Loss of condition is gradual but progressive. If left in the pen, cattle with rat tails may lag as much as 200 pounds behind pen-mates at market time. Death loss is nil, and other clinical signs such as lameness or respiratory problems are notably absent.

Lesions are characteristically confined to the anterior alimentary tract. In early stages, the dorsal

surface of the tongue may have circumscribed superficial erosions. In later stages, roughened, raised, hyperkeratotic lesions can be observed, reminiscent of "X-disease" associated with chlorinated naphthalene toxicity. A majority of rat tail animals culled for early slaughter will have tongue lesions. Other lesions associated with the syndrome which are observed less regularly include: a) acute pharyngitis; b) linear proliferative esophagitis; c) ulcerative or necrotizing omasitis; d) catarrhal enteritis with accompanying submucosal edema. Lesions of the abomasum, rumen, and posterior digestive tract, as well as those of other organ systems, are notably absent.

The consistent findings in regard to the characteristic histopathological changes found in rat-tail cattle are a focal ballooning degeneration of the lingual epithelium with some cells containing pale eosinophilic intracytoplasmic inclusion bodies. In a few of the more chronically affected animals, microorganisms morphologically similar to *Dermatophilus spp.* have been observed. No inflammatory response is noted in the tail itself. Lesions resemble those of bovine papular stomatitis virus infection of cattle.

Researchers have recovered viral isolates similar in properties to bovine papular stomatitis virus in cell cultures from typical lingual or esophageal lesions. Other agents preliminarily identified by cytopathic effect, fluorescent antibody test, and electron microscopy as herpesviruses and myxoviruses have been isolated and partially characterized by researchers at the Texas Veterinary Medical Diagnostic Laboratory. Evidence of nematode parasitism, coccidiosis, BVD virus infections and/or salmonellosis has been absent or only inconsistently encountered in studies of rat tail cattle.

Specimens obtained from nine separate high plains feedlots during two seasons of peak incidence of the rat tail syndrome have been subjected to laboratory examination. Lesions characteristic of bovine papular stomatitis have been encountered consistently; however, reliable serological techniques are not available for current use in further epidemiological investigation of the problem. Therefore, any possible role of this virus infection as a primary cause of this syndrome has not been confirmed. Until such techniques become available, it seems advisable to interpret these observations with caution.

The occasional recovery of other viruses from papular-stomatitis-like lesions, and the reported recovery of bovine papular stomatitis virus from immunosuppressed cattle in non-feedlot environments, with clinical signs distinct from those of rat tail animals may be worthy of note. These latter observations may suggest that both the rat tail and the papular stomatitis lesions are results of primary nutritional or environmental stress on the feedlot animal.

References

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