STUDIES OF THE EPIDEMIOLOGY AND RISK FACTORS INVOLVED IN THE PATHOGENESIS OF CONGENITAL CHONDRODYSTROPHY OF UNKNOWN ORIGIN IN AUSTRALIAN BEEF HERDS

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Introduction: A congenital chondrodystrophy of unknown aetiology (CCUO) has been reported among cattle herds in southern Australia. The disorder is characterised by skeletal deformities resulting from inappropriate longitudinal growth (endochondral ossification) of bones causing disproportionate dwarfism. Similar disorders reported in other parts of the world have been contributed to maternal NUTRITIONal deficiency, but a cause has never been determined. In Australia, the disorder has occurred sporadically and appears to be associated with drought. Climatic conditions over the past 7 years have seen an increase in the reporting of affected calves with some producers experiencing significant losses with over 50% of calves affected.

Objective: The purpose of this study was to examine the spatio-temporal distribution of the disorder and conduct a risk factor study with the aim of developing recommendations to assist in reducing CCUO occurrence. The relationship between CCUO and climate was also examined.

Materials and methods: A national census based survey of veterinarians was undertaken in 2007 to estimate the spatiotemporal distribution of CCUO and to acquire case records for analysis of common characteristics. Using this information, a case-control study was designed to attempt to determine risk factors associated with CCUO. Beef cattle producers from south-eastern Australia with a recent history of CCUO were interviewed and soil samples collected for analysis. Generalised linear mixed models were produced for management and environment variables and for paddock variables including soil data. Time series analysis of rainfall was also conducted to determine the relationship between short periods of drought during gestation and the birth of CCUO calves.

Results and discussion: The birth of CCUO calves was associated with pregnant cows grazing hilly to steep paddocks and native pastures. Inadequate levels of pasture and supplemental feeding were also significantly associated with the birth of calves. Periods of drought four months prior to calving were also associated with the birth of CCUO calves. An unknown maternal NUTRITIONal deficiency is possible as a contributing factor in the pathogenesis of the disorder.

Conclusion: Farmers are advised to maintain gestating cows on a high plane of NUTRITION to reduce the risk of CCUO, especially during periods of drought.

Keywords: Congenital chondrodystrophy Australia cattle