Production of viable lambs following dexamethasone-induced preterm parturition in ewes

Original title / Originaltitel
Geburt lebensfähiger Lämmer nach dexamethasoninduzierter Frühgeburteinleitung bei Schafen

Summary / Zusammenfassung
The objective of the study was to evaluate the potential benefits of repeated administration of dexamethasone (DEXA) to final-stage pregnant ewes on subsequent lamb survival, as lambs born prematurely are often unable to breathe due to pulmonary immaturity and a lack of surfactant production. Previous studies have demonstrated that lambs delivered at 91 to 92% of full gestational age died from respiratory insufficiency. Attempts to deliver live moderately preterm lambs from critically ill ewes in late pregnancy are therefore often unsuccessful. Antenatal corticosteroid application has a beneficial effect on fetal lung maturation in man and cattle.

Two different treatment protocols with DEXA were used to induce parturition on day 137 to 138 of pregnancy (full term 149 days). In group A 7 ewes were given repeated small doses of DEXA before final induction of parturition by using a high dose of the same drug, as follows. From day 130 to 133 of gestation 2 mg DEXA were administered once daily by intravenous injection; the dose was increased to 4 mg on day 134 and then to 16 mg on day 135. From day 136, this dose was repeated every 12 hours until lambing. In group B 9 ewes received 16 mg DEXA on day 135, followed by similar doses repeated every 12 hours until lambing.

Lambs from both groups were born between day 137 and 139 of gestation, showing characteristics of immaturity such as a short hair coat, muscle weakness and partially closed eyes. The ten lambs from group A ewes were all able to breathe and survived without critical care (100%; 95% confidence interval (CI): 72.3-100 %); Thirteen lambs were born in group B; one was unable to breathe and died immediately after birth, whilst another two died or were euthanized on welfare grounds at the age of two days. Post-mortem examination revealed complete or partial pulmonary atelectasis in all three lambs, whilst pulmonary oedema or suppurative bronchopneumonia were also present in one lamb. The remaining ten lambs from group B survived without critical care (76.9 %; 95% CI: 49.8 – 91.8 %).

The results indicate that repeated exogenous administration of DEXA has a clear positive effect on survival rates of lambs born after induced parturition at around 92% of the full pregnancy term. Administration of repeated low doses of DEXA prior to induction of parturition leads to increased lamb survival. Hence, this method is recommended if the health status of the ewe allows for the delay associated with this protocol.

Publications / Publikationen
H. Zerbe, D. K. Zimmermann-Zoller, A. Bendix
Früh- und Spätasphyxie beim Kalb: Diagnostik, Therapie und Prophylaxe - Eine Übersicht
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