

Economic Value of Early Cytogenetic Testing of Potential Cattle Breeding Stock

Alvin F. Weber, DVM, PhD; Lance Buoen, BS

Department of Veterinary Diagnostic Medicine

College of Veterinary Medicine, University of Minnesota, St. Paul, MN 55108

Summary

Structural and numerical flaws develop periodically in chromosomes in animals during the complicated meiotic and mitotic processes involved in sperm and egg formation. These result in lowered fertility as well as other body problems. In contrast to the United States, it has been a long-established custom in Europe and other foreign countries to test young stock early on for these cytogenetic flaws. In light of continued shrinkage of the cattle genetic pool and an increase in pre-sale cytogenetic certification requests, it is important for those engaged in the cattle industry to be aware of the need for selective early cytogenetic testing.

In over 35 years of cytogenetic testing of bovine samples, we have encountered numerous cases where

early cytogenetic testing would have saved owners considerable money and time. In our poster presentation, we will show color-enhanced diagrams of the main cytogenetic flaws that occur; many individual cases we diagnosed that resulted in avoidable economic losses to owners; and results of some of the national surveillance testing we engaged in following our diagnosis of genetic flaws in samples submitted from breeding stock. This will include primarily Simmental, Charolais, and Holstein-Friesian breeds.

Also included will be results of our study of vaginal length vs cytogenetic diagnosis in freemartinism, using a probe we developed for on-farm diagnosis of this condition.

Differential Diagnosis of Colic in Calves

H. Wendel; G. Rademacher; W. Klee

II. Medical Animal Clinic, University of Munich, Munich, Germany

Introduction

The objective of this prospective study was a quantification of the diagnostic validity of age, gender, selected clinical signs, intensity of colic, selected laboratory parameters, and duration of illness, with respect to different disease categories. The ultimate aim was to produce information that can help in the diagnostic work-up of colic in calves.

Materials and Methods

The study included 110 calves up to the age of six months that were referred to the clinic with a history of colic or which exhibited colic following admission. Confirmation of clinical diagnosis was by surgical intervention or postmortem examination.

Disease conditions involving the gastrointestinal tracts in 83 calves were grouped according to patho-

genesis: intestinal torsion (mesenteric torsion and intestinal volvulus; $n = 23$), torsion of a large viscus (abomasal torsion or cecal volvulus; $n = 13$), gastrointestinal distention (ruminal bloat, abomasal bloat, displaced abomasum, gaseous intestinal distention, cecal dilatation; $n = 13$), disturbance of intestinal passage (intussusception, ileal obstruction, bridle stricture; $n = 26$), and malformation (atresia coli, atresia ani; $n = 8$). Ten calves did not fit any of those categories (necrosis of the esophageal groove, perforated abomasal ulcer, abomasal rupture, abomasal incarceration, perforated duodenal ulcer). A subset of calves in which peritonitis had developed ($n = 23$) was additionally evaluated as a group, irrespective of the underlying disorder.

The diagnostic validity of the parameters listed on the introduction was quantified by dividing the respective predictive values by the group prevalences. Quotients > 1.5 and $< .5$ (*i.e.* increases, or decreases, of probability by 50 %) were considered relevant.

Results and Conclusions

Seven animals had false colic (convulsions due to hypoglycemia, itching due to heavy ectoparasitic infestation, tetanus), and 10 had colic due to extra-gastrointestinal conditions (umbilical diseases, urethral obstruction). In the remaining 93 calves, colic was due to gastrointestinal disorders.

Several conditions can be detected, or ruled out, by relatively simple clinical diagnostic procedures. In cases of gastrointestinal colic, the most relevant question from a practical point is the indication for surgical intervention. There are conditions in which conservative treatment may be sufficient (e.g. gaseous intestinal distension and ileal obstruction), and there are those in which surgical intervention will probably be unsuccessful (cases that have developed peritonitis).

Relevant quotients and a differential diagnostic flowchart will be presented.

Comparison of an Ovsynch Protocol with a $\text{PGF}_{2\alpha}$ - Treatment Based on Rectal Palpation

M. Wittke; M. Drillich; B.-A. Tenhagen; W. Heuwieser

Clinic for Reproduction, Section of Productive Medicine and Quality Management, Free University of Berlin, Germany www.bestandsbetreuung.de

Introduction

Systematic breeding programs are used to induce estrus, or may even allow timed artificial insemination (AI) in dairy cows. We conducted a trial in a commercial dairy herd to compare an Ovsynch protocol to a protocol using Prostaglandin $\text{F}_{2\alpha}$ ($\text{PGF}_{2\alpha}$) in cows with a corpus luteum (C.L.) diagnosed by rectal palpation. Further objectives of the study were to analyze the timing of ovulation in the Ovsynch group by ultrasound, and effect of the stage of estrus cycle at the start of an Ovsynch protocol on the conception rate using timed AI.

Material and Methods

Cows in the $\text{PGF}_{2\alpha}$ protocol ($n=349$) were administered $\text{PGF}_{2\alpha}$ after a C.L. had been diagnosed by rectal palpation. Cows were inseminated on observed estrus. Cows not inseminated within 14 days after treatment were re-examined and treated with $\text{PGF}_{2\alpha}$ if a C.L. was diagnosed.

Cows in the Ovsynch protocol ($n=363$) were treated with gonadotropin-releasing hormone (GnRH) (Day 0), $\text{PGF}_{2\alpha}$ (Day 7) and GnRH (Day 9) and bred on appointment 16 – 20 hrs later. Ovaries were scanned via ultra-