



Effects of a treatment without antibiotics in anestrus cows suffering from a chronic endometritis on fertility

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Key words

dairy cows, endometritis, anestrus, hormones, antimicrobials, resistance, fertility

Aim of the study

This study was performed to: (i) compare the effects of a hormonal and an intrauterine antimicrobial treatment in anestrus cows with clinical endometritis; (ii) identify the major intra uterine pathogens associated with endometritis in Swiss dairy herds; and (iii) find means to identify cows that still need antimicrobial treatment in case the hormonal treatment protocol is not efficient enough.

Material and methods

The clinical examinations were performed from October 2014 till May 2016 in 200 cows of 33 dairy farms (min.: 7 cows; max.: 104 cows) served by the Ambulatory Service of the Vetsuisse Faculty of the University of Zurich. Each cow was screened for signs of endometritis between 21 to 45 d pp (= Day 0) by evaluation of the vaginal fluid collected by a Metrichheck® device. According to the relative amounts of pus in the mucus vaginal fluid was scored ranging from one to three (Williams et al. in 2005). In addition its odor was evaluated. All cows showing signs of pus in their vaginal fluid were additionally examined via transrectal palpation and ultrasound to evaluate size, symmetry, tonus and fluctuation of the uterus and ovarian activity. Only Cows with corpora lutea < 20 mm or a luteal cyst as well as cows without other clinical diseases or fever were included in the study. Bacteriological samples of the uterus were retrieved with a cytobrush device and examined after culturing at the Institute for Veterinary Bacteriology of the Vetsuisse Faculty of the University of Zurich. The 200 cows were randomly assigned to antibiotic (A) and hormonal (H) treatment immediately after the clinical examination. Cows of group A received one intrauterine application of 500 mg Cefapirin and of group H were given 0.5 mg Gonadorelin i.m. If only follicles < 10 mm or a cystic ovarian follicle were present they also received an intravaginal progesterone-releasing device and seven days later 0.5 mg Cloprostenol i.m.. At the same time the intravaginal progesterone-releasing device was removed. The cows were visited again 21 +/- 1 d after the first examination checking them again for vaginal discharge using the Metrichheck® device and for ovarian activity by performing transrectal ultrasound. From this time on all cows were inseminated as soon as they showed clinical signs of estrus without pathological changes. Non-cycling cows were visited every two to three weeks and treated according to the clinical findings. Five and eight weeks after the AI cows were checked for pregnancy by using ultrasound. Reproductive data was collected until 200 d postpartum.

Results and significance

The overall prevalence of endometritis on the farms tested was about 30% (score 1: 38%; score 2: 29%; score 3: 23%). The incidence of discharge with fetid odor was 22.5%. Cows with a higher endometritis score showed more often a fetid odor ($P < 0.001$). Those cows showed a lower fertility ($P < 0.001$). The choice of treatment (A or H) did not have a significant effect on vaginal discharge and reproductive performance (days to first service, first-service conception rate, services per conception days open, cumulative pregnancy rate at 200 DIM, culling rate because of infertility). In 98 out of 100 cows from treatment group H and in all cow 100 cows of treatment group A intratuterine bacteria could be detected. In the positive swabs one to five different types of bacteria could be found. *E. coli* was present in 38% of the samples, followed by *T. pyogenes* (29%), *Strep-tococcus* spp. (26%) plus five findings of *Streptococcus* (*S.*) *uberis* and one of *S. dysgalactiae*, coagulase-negative

staphylococci (25%), Serratia spp. (24%), Gram-negative anaerobes (18%), Enterococcus spp. (18%) and Klebsiella spp. (12%). There was a significant relationship between the occurrence of Trueperella pyogenes and fetid odor. T. pyogenes, Streptococci and Gram-negative anaerobes had a negative effect on fertility parameters ($P < 0.05$). These effects were independent ($P > 0.05$) from the type of treatment. In conclusion the results show that a vaginal discharge with a fetid odor is an indicator for subfertility in cows. Independent from the type of bacteria an antibiotic treatment of anestrus cows could be replaced by a hormonal treatment without a negative effect on reproductive performance.

Publications, posters and presentations

Oehl, H. et al. (2016) Two manuscripts for publication in international journals are in preparation

Oehl, H. et al. (2014) Seminar of the Farm Animal Department, Zurich; Presentation of the project plan

Oehl, H. et al. (2015) "Nutztierabend": presentation of the first results of the doctoral thesis

Oehl, H. et al. (2016) Workshop "Fertility of the Dairy cow" of the Bovine Health Service, presentation of the results of the doctoral thesis (evaluation, prognosis and therapy of bovine endometritis)

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Project duration June 2014 – September 2016