

# Embolec Pneumonia Associated with Udder Cleft Dermatitis in Dutch Dairy Cows

Udder cleft dermatitis (UCD; also bovine ulcerative mammary dermatitis or foul udder) is an inflammation of the udder skin and is most often located between the frontquarters and at the transition of the frontquarters and the abdominal wall. Cows with UCD may have increased risk of clinical mastitis, and associations between UCD and digital dermatitis have been suggested. The lesions can impair animal welfare, milk production, and milk quality and can lead to death and premature culling. Thus preventive measures are warranted, but in daily practice UCD is not always adequately detected by farmers and their cattle veterinarians.

## Objective

The objective of this study was to investigate the prevalence of cows with complicated UCD on postmortem examination, associated with embolic pneumonia as most likely cause of death.

## Material and Methods

Royal GD's registered veterinary pathologists diagnosed 39 dairy cows from different Dutch dairy herds with mild to severe UCD from 1 January 2019–31 December 2019 based on postmortem examination in the necropsy room.

Histological examination and microscopy, as well as additional bacteriology testing was carried out in the GD laboratory. The pathology department is part of the GD laboratory, which is ISO 17025 accredited for a large number of laboratory tests and based on these accredited procedures the postmortem examinations were performed. Photographs were taken from the relevant lesions.

## Results

From 20 of the 39 dairy cows (51%) with UCD on postmortem examination in 2019 it is most likely that a complicated UCD

was the fatal cause of death, due to the fact that no other causal factor for death was identified by the veterinary pathologists. Based on histology from the udder skin, a necrotic inflammation of the subcutaneous abdominal (milk) vein was observed with many bacteria involved, besides an ulcerative dermatitis of the skin. A comparable inflammation of the blood vessels in the lungs, with extension to the surrounding tissue, was observed, which is typical for embolic pneumonia. Bacteriological culture of the lung tissue revealed seven times *Helicococcus* spp., 12 times *Trueperella pyogenes*, and in two cases a mixed infection of these bacteria was isolated. In some cases *E. coli*, streptococci, and/or anaerobic bacteria were cultured from the diseased lung tissue. All the isolated bacteria can be considered as opportunistic bacteria.

Interestingly, in all of these 20 cases, the clinical signs during life of these cows (that were reported by the veterinarian on the accompanying submission form) were fever, respiratory distress, milk drop and death, despite antimicrobial treatment. In only one case the history taken by the veterinarian reported UCD.

From 19 of the 39 dairy cows (49%) with UCD on postmortem external examination in 2019 passed the necropsy room with uncomplicated UCD. In these cows ulcerative dermatitis was described, although there was no related embolic pneumonia observed, but other most likely causes that lead to death of these cows.

## Conclusions

- 51% of the postmortem examination of cows resulted in the diagnosis of embolic pneumonia associated with UCD;
- In these cases, UCD lesions, which were apparently not important enough for the farmers and the veterinarians



Multifocal embolic Necropurulent inflammation of the lung tissue (1a) in the context of a metastatic pneumonia as a result of Udder Cleft Dermatitis on the udder skin (1b) and on the cut surface of the lesion with vasculitis of the milk vein. (1c).



to report (or not even observed), are thought to have been the initiating source of infection;

- It is crucial that both farmers and veterinarians are made more aware of the possible severe consequences of udder cleft lesions and that they adopt strategies to allow early detection of UCD;
- More research is needed to find out which interventions can be initiated effectively in order to detect as early as possible.



### Christian Scherpenzeel

Christian Scherpenzeel studied veterinary medicine at Ghent University and the Faculty of Veterinary Medicine, Utrecht University. After graduation in Utrecht, he started working as dairy veterinarian in a large dairy practice with specific interests in udder health and veterinary communication. After several years in dairy practice he went back to the veterinary school in Utrecht, where he was employed as lecturer/researcher at the Department of Farm Animal Health, Faculty of Veterinary Medicine, Utrecht University. Since 2011 he works as a dairy specialist at GD in Deventer, the Netherlands. In this job, his challenge is to integrate state-of-the-art scientific udder health expertise with the implementation of practical expertise, working closely together with dairy farmers and associated veterinarians. His research activities focus on udder health, antimicrobial resistance and social aspects of modern herd health management. Dr. Scherpenzeel published a number of peer-reviewed publications in the Journal of Dairy Science. He received his Ph.D. in Veterinary Medicine from Utrecht University and his thesis was focused on the effects of selective dry cow treatment in dairy cows for udder health, antimicrobial use, economics and social influences. Together with his team, carrying out the 'Animal Health Approach', the combination of scientific and practical expertise on modern dairy health management triggers a lot of farm visits each year and resulted in major experience in dairy consultancy and veterinary communication skills.



### Klaas Peperkamp

In 1986 Klaas Peperkamp qualified as a veterinary surgeon at Utrecht University. After a few years in mixed practice he was employed as a veterinary laboratory diagnostician at the Animal Health Service (Royal GD) and specialized in pathology in collaboration with the Department of Veterinary Pathology, Utrecht University. In 1996 he was registered as a specialist by The Royal Netherlands Veterinary Association. Since that time he was engaged in large outbreaks of farm animal diseases like Classical Swine Fever, Blue Tongue virus disease, Q-fever and Schmallenberg virus disease. In the meantime his job comprised postmortem examination, histological and cytological examination of farm and companion animals and horses. He was also involved in the monitoring programme of animal diseases of Royal GD, which commenced in 2001. Klaas is (co-)author of various scientific articles with reference to his broad interest in veterinary pathology.