
Teat end callosity and clinical mastitis

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Mastitis is still one of the economically most important diseases in dairy farming. The incidence rate of clinical mastitis ranges, according to several researches, from 12.7 to 30% per cow-year at risk. Bacteria that cause clinical mastitis usually enter the udder through the teat canal. The first line of defence against clinical mastitis is therefore the teat canal, and changes in teat tissue around the teat canal may favour penetration of bacteria into the udder (O'Shea, 1987).

Mechanical forces during machine milking may induce changes in teat end tissue. Teat end callosity builds up until approximately 4 months of lactation and decreases thereafter (Neijenhuis *et al.*, 2000). Cow factors like teat end shape, teat position, teat length, milk yield, stage of lactation and parity are associated with the degree of teat end callosity (TEC) (Neijenhuis *et al.*, 2000; Sieber and Farnsworth, 1981).

The goal of this study was to examine the relationship between the occurrence of clinical mastitis and TEC in more detail.

Teat end callosity (TEC) was scored monthly for 1½ year at 15 farms according to the Dutch teat end callosity classification system (Neijenhuis *et al.*, 2000). The teat end callosity classification system consists of 5 callosity thickness classes and distinguishes between smooth and rough rings. The farmers diagnosed clinical mastitis. Teat length and teat end shape were recorded twice a year.

We determined differences in TEC between quarters within clinical mastitis cows, and the differences in TEC between clinical mastitis cows and paired herd mates without clinical mastitis, taking into account days in milk and the lactation month in which clinical mastitis occurred.

Introduction

Material and method

Results

Teat end callosity thickness (TECT) of clinical mastitis quarters was on average higher than of lateral quarters without clinical mastitis of the same cow. Clinical mastitis cows scored higher TECE and TECT than their paired healthy herd mate when the mastitis occurred after the first and before the sixth month in lactation (Figure 1).

The probability of clinical mastitis in the next lactation month is increased by more than 2 times when the callosity rings are rough and thick (Figure 2). Teat ends without any callosity ring also cause a higher probability of mastitis. A teat with a thin smooth callosity ring causes the least probability of clinical mastitis.

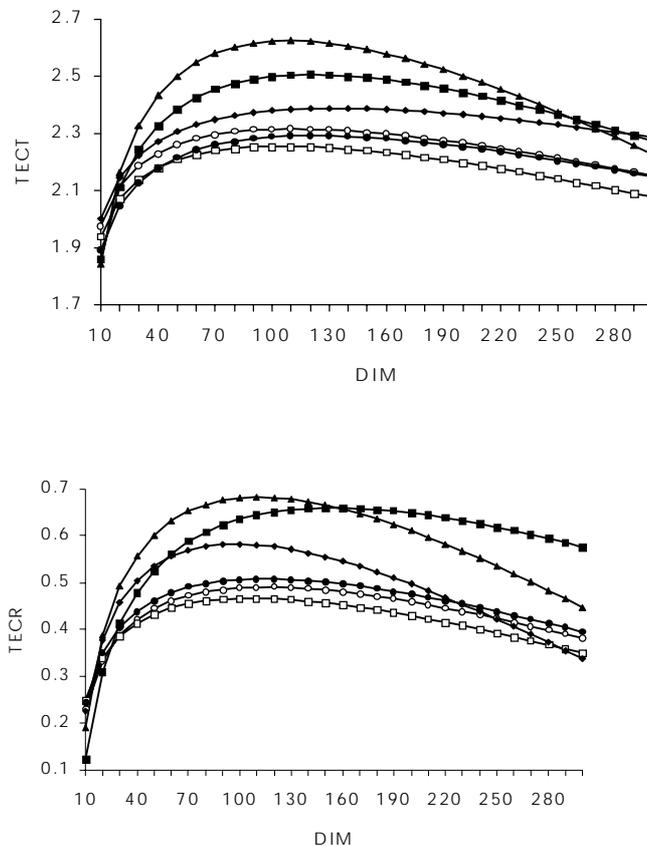


Figure 1. Teat end callosity thickness (TECT) and roughness (TECE) during lactation for cows without clinical mastitis (-○-), or with clinical mastitis in the first (-□-), second (-▲-), third (-■-), fourth and fifth (-◆-) and ≥6 (-●-) month of lactation, calculated from the final regression models.

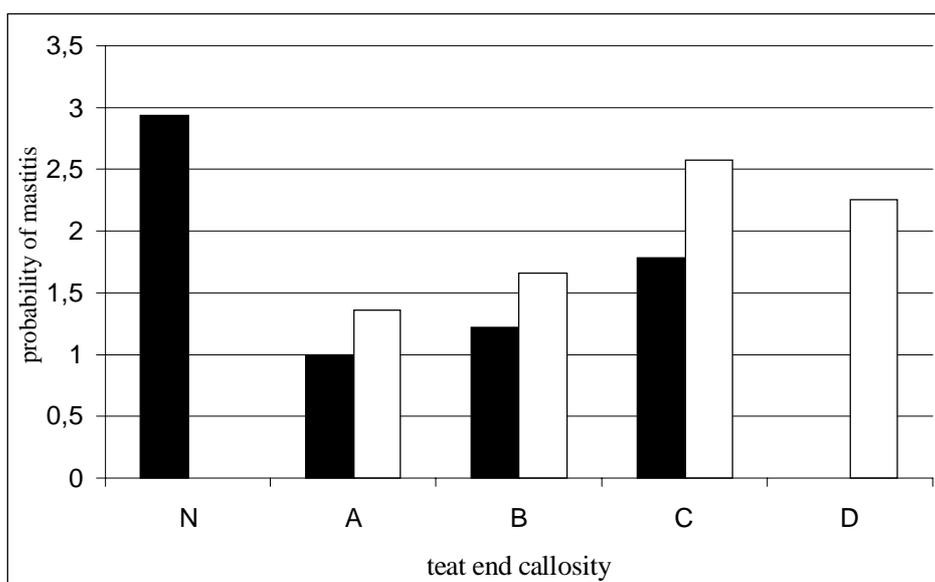


Figure 2. The probability of clinical mastitis in the next lactation month for teat ends with no (N), thin (A), moderate (B), thick (C) and extreme thick (D) smooth (■) and rough (□) callosity rings.

Pointed teat ends had higher TECT and TECR scores than flat or inverted teat ends. TECT and TECR increased by 0.11 score points and 9 %, respectively, per 10 kg higher daily milk yield at peak production.

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References
