



# The early behaviour of cow and calf in an individual calving pen

Margit Bak Jensen\*

Department of Animal Science, Faculty of Science and Technology, Aarhus University, Blichers Allé 20 P.O. Box 50, DK-8830 Tjele, Denmark

## ARTICLE INFO

### Article history:

Accepted 15 June 2011

Available online 14 July 2011

### Keywords:

Cattle  
Maternal behaviour  
Nursing behaviour  
Play behaviour  
Social behaviour

## ABSTRACT

The aim was to investigate the early behaviour in dairy cows and their calves. Thirty-eight multiparous Danish Holstein Frisian cows and their calves were housed in individual calving pens during the first twelve days post-partum and their behaviour was observed during 24 h on days 3, 7 and 11. Cows gradually reduced the time spent sniffing and licking their calves from 59 to 49 min over the days studied ( $P < 0.05$ ). On the other hand, they increased the time spent sniffing and licking the neighbouring cow from less than half a minute on days 3 and 7 to 1 min on day 11 ( $P < 0.05$ ). Calves increased the time spent sniffing and licking their dams' head from 2 to 8 min over the days studied ( $P < 0.001$ ). Furthermore, they increased the time spent performing locomotor play behaviour from 7 to 10 min ( $P < 0.05$ ) and the time spent performing social play behaviour from 1.4 to 4 min over the days studied ( $P < 0.01$ ). To test the effect of day after calving on cows' behavioural priorities, the cows were tested on either day 4, 8 or 12 after calving by removing them from their pens during 3 h and subsequently reintroducing them. Behavioural observations during 3 h after reintroduction showed that cows tested on day 4 spent more time sniffing and licking their calves than cows tested on days 8 and 12. The decrease in maternal grooming, and the concurrent increase in social behaviour of the calf towards the dam, may illustrate the beginning of a gradual shift from the dam being the initiator of cow–calf contact to the calf being the initiator, while the increase in social behaviour of the cows towards the neighbouring cow on day 11 suggests an increased motivation to associate more with other cows at this stage after calving.

© 2011 Elsevier B.V. All rights reserved.

## 1. Introduction

Cow and calf are usually separated just after parturition in modern dairy production; the cow is placed in a group of lactating cows, while the calf is typically placed in an individual pen. Reasons for early separation of cow and calf are production efficiency and control of infectious diseases (Nielsen, 2009), but animal welfare concerns about the early separation are adverse effects of thwarting maternal behaviour and of isolating the neonate (Flower and Weary, 2003).

Under natural or semi-natural conditions, cows tend to isolate from the herd to give birth in a sheltered place,

where the calf remains hiding during the first days. Starting immediately after parturition a social bond is formed between dam and calf; the dams' licking of the calf and her low-pitched vocalization are thought to be important part in forming this bond. The dams' licking also stimulates the calf to stand and to suckle, and the dam nurses her calf several times a day (Lidfors, 1994; Keyserlingk and Weary, 2007). After the hiding-phase the calf follows the dam to the herd, where the calf associates with the dam during nursing and with other calves when resting and playing (Reinhardt, 1980; Vitale et al., 1986).

Early contact with the dam has been found to affect calves' later social behaviour. Calves kept with the dam for the first 2 weeks expressed more social behaviour when they first encountered another calf during a behavioural test at 6 weeks of age than calves separated from the dam 24 h after birth (Flower and Weary, 2001), and heifers

\* Corresponding author. Tel.: +45 89991325; fax: +45 89991900.

E-mail address: [MargitBak.Jensen@agrsci.dk](mailto:MargitBak.Jensen@agrsci.dk)

reared by a foster-cow showed more agonistic behaviour than artificially reared heifers (Le Neindre and Sourd, 1984). Early contact with the dam has also been found to affect calves' later maternal behaviour, as dam-reared cows nursed their calves more frequently and spent more time licking them than artificially reared cows (Le Neindre, 1989).

Studies of maternal behaviour of dairy cows under commercial conditions have focussed on the day of calving (Edwards and Broom, 1982; Illmann and Spinka, 1993), while studies of the development of undisturbed behaviour of cow and calf during the first weeks after calving are few. However, such studies may help understand the positive effects of housing dam and calf together.

The present study investigates the development of cow and calf behaviour during the first 12 days after calving when the two are kept together in an individual calving pen.

## 2. Materials and methods

The study was conducted in 2009–2010 at Research Centre Foulum, Aarhus University, Denmark, and animals were cared for and treated according to a protocol approved by The Danish Animal Experiments Inspectorate, The Danish Ministry of Justice, Copenhagen, Denmark.

### 2.1. Animals, housing and management

Thirty-eight multiparous Danish Holstein Frisian cows were included in the study. Thirteen cows calved in May–June 2009, 12 cows calved in October–November 2009, and 13 calved in January–March 2010. Sixteen cows were about to enter their second parity, while 22 cows were about to enter later parities. Cows were moved to an individual calving pen five to seven days before the expected day of calving. When being moved to the calving pens cows weighted on average 727 (s.d. 64) kg. Their calves were 20 bull calves and 18 heifer calves, and they weighted 50 (s.d. 6.0) kg when weighed on day 4 after birth. One cow (entering fifth parity, block one) had to be excluded from the experiment due to lameness.

Each calving pen measured 4.0 m × 4.8 m (Fig. 1). The pens were arranged pair-wise and between each pair of pens there was a 1.0 m high and 0.8 m wide opening to the neighbouring pen 1.1 m over floor level. Otherwise, the pens had 1.9 m high solid sides made from plywood and the pens only allowed visual and tactile social contact to the cow in the neighbouring pen through the above mentioned opening (window). In each pen, opposite to the window, two adjacent feeding troughs (each 0.75 m wide) and a water bowl was placed. A 1.8 m high and 0.75 m wide barrier was placed next to the feeding troughs preventing the cow from visual contact with the neighbouring cow while feeding or drinking. Finally, a barrier (1.0 m high and 0.75 m wide) was placed 0.6 m from the pen side in the corner diagonal to the corner with the feeding troughs. Pens were straw-bedded.

A video-camera was placed above each calving pen, and cows that were about to calve could be frequently inspected via monitors. The calving was assisted if assessed

necessary and the ease of calving was scored on a 4 point scale: (1) easy, unassisted, (2) easy, assisted, (3) difficult, assisted, and (4) difficult, requiring veterinary assistance. Four easy deliveries and two difficult deliveries were assisted. The remaining 32 deliveries were easy and unassisted. The first 24 h after calving, cow and calf were left undisturbed except that nursing was assisted if the calf was not observed to suckle successfully upon inspection by the staff at 05.00, 11.00, 17.00, and 21.00 h. Thirteen calves were assisted and three of these were assisted more than once within the first 48 h after birth. Cows were machine milked by the staff once daily between 09.00 and 10.00 h. The first milking after calving was between 12 and 24 h after calving. The daily milk yield to the machine was recorded; cows yielded to the machine 12 (s.d. 5.2) kg milk on day 1 after calving, while the average yield to the machine was 16 (s.d. 6) kg to the machine on days 2–12.

Cows were fed a total mixed ration (TMR) ad libitum. The cows were allocated fresh feed and the pens were provided with straw once daily between 09.00 and 10.00 h.

### 2.2. Behavioural recordings

#### 2.2.1. Undisturbed behaviour during 24 h on days 3, 7 and 11

The undisturbed behaviour of cow and calf was video recorded during 24 h starting at midnight on days 3, 7 and 11 after calving. From these recordings the behavioural elements described in Table 1 were continuously recorded by one observer. Due to technical problems 3 cows (one entering second parity and 2 entering third parity, all block one) had to be excluded from this dataset.

#### 2.2.2. Response to reintroduction to calving pen on days 4, 8 or 12

To test the effect of day after calving on cows' behavioural priorities, the cows were removed from their pens for 3 h and then reintroduced on either day 4, 8 or 12 after calving. Within block, cows were allocated to test day, balanced according to age within block and expected day of calving. On the test day, the cow was haltered and lead from her calving pen to an adjacent room where she was alone, tethered, and prevented from lying down (by attaching a girth secured to the fixtures above her). She was removed from the calving pen at 09.30 h, and before she was allocated fresh feed. Her calf was left alone in the calving pen. At 12.20 h the calf was placed standing and facing the pen with its body behind the 1.0 m high and 0.75 m wide barrier (Fig. 1). The calf was haltered and the 0.3 m rope was attached to a spring lock that could be released from outside the pen. Subsequently the cow was haltered and lead back to the pen, placed centrally in the calving pen facing the corner diagonal to the entrance door and released from the halter. Behavioural recording started once the cow was released. Once the cow had sniffed the calf the spring lock was released and the calf was free to move around. The behaviour of the cow (Table 1) was recorded continuously during 3 h from a 1.8 m high stool placed just outside the pen by one of three observers on a hand-held computer (Workabout, Psion PLC, UK).

Download English Version:

<https://daneshyari.com/en/article/4523153>

Download Persian Version:

<https://daneshyari.com/article/4523153>

[Daneshyari.com](https://daneshyari.com)