

LAMB DESERTION IN PRIMIPAROUS AND MULTIPAROUS MERINO EWES
INDUCED TO LAMB WITH DEXAMETHASONE

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SUMMARY

Desertion of lambs by their mother at parturition was studied in primiparous and multiparous Merino ewes given either 16 mg of dexamethasone on day 147 of pregnancy to induce lambing, or 8 ml saline as a control. Animals were observed between 0600 h and 1830 h. Twenty per cent of primiparous ewes deserted their lamb ($n = 51$) versus 2 per cent in multiparous ewes ($n = 84$; $P < 0.001$). Neither in primiparous nor in multiparous ewes did dexamethasone influence the incidence of desertion. (Key words: Maternal behaviour, desertion, dexamethasone, sheep).

INTRODUCTION

Lamb mortality is usually higher in ewes lambing for their first time (primiparous) than in ewes with prior experience of lambing (multiparous). Studies by Alexander (1960) suggest that desertion soon after parturition can be a cause of lamb mortality in maiden ewes in the field. Similar results have been reported in studies carried out indoors on three different breeds of ewes (Poindron et al. 1984). Despite these studies little remains known about the importance of lamb desertion as a cause of lamb mortality in Merino ewes. This is largely due to the difficulty of carrying out night observations, and to the amount of labour involved in studies of lambing behaviour. This could be overcome by using hormonal treatments such as the administration of dexamethasone, the administration of which can be timed so that most lambings take place during daylight hours (Bosc 1972). However the possible effects of inducing parturition on the incidence of desertion have never been investigated. For example, the high proportion of primiparous ewes failing to display maternal behaviour in the study of Poindron et al. (1984), could be partly due to a differential effect of the treatment on primiparous females, since no ewes lambing spontaneously were included in their study.

The present experiment was designed to study the effects of inducing parturition with dexamethasone on the incidence of desertion in primiparous and multiparous ewes.

MATERIALS AND METHODS

The experiment was carried out on a commercial flock of Merino ewes at York, Western Australia, during April 1984. The animals were 86 four-tooth maiden ewes and 111 older ewes which had lambed the year before. These ewes were part of a flock of 250 pregnant females kept in a 12 ha paddock of wheat stubble. Supplementary feed consisted of ad libitum oaten hay, and lupins mixed with lime.

Date of insemination was known. Daily at 1730h the ewes which had not lambed were brought into a set of yards adjacent to the paddock. Ewes which had reached day 147 of pregnancy then received either 8 ml of saline (46 primiparous and 80 multiparous ewes) or 16 mg dexamethasone (2 mg/ml, Dexadreson-Intervet; 40 primiparous and 31 multiparous).

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Observations were carried out from 0600h to 1830h, starting on the day following the first injection of dexamethasone. Two observers were continuously in the paddock, using binoculars to observe the animals. A third observer watched from a 4 m high tower situated in the middle of the paddock. Presence or absence of licking, acceptance or **rejection** at the udder, backing or circling, aggressive behaviour, and desertion were recorded as well as day and time of birth. Each morning ewes having lambled overnight were recorded.

The behaviour of ewes was categorized into three classes:

(i) Desertion Lamb totally abandoned; the ewe did not return to her neonate within three hours following birth.

(ii) Temporary disturbances Temporary backing, circling, or aggressive behaviour by the ewe; rejection at the udder; or delay of more than 5 minutes in the onset of licking.

(iii) Proper maternal behaviour Immediate onset of licking and absence of behaviour delaying access of the lamb to the udder.

Comparison of proportions were carried out using the test of Fisher for exact probabilities or a chi-square with 1 degree of freedom where the total number of animals exceeded 100 (Freeman and Halton 1951).

RESULTS

Four out of 51 primiparous ewes, and 17 out of 84 multiparous ewes had twin lambs. There was no difference in the behaviour of ewes with one lamb compared with those with two lambs, so the results for all ewes were pooled in the analysis. There is no indication that dexamethasone had any effect on the incidence of disturbances of maternal behaviour (Table 1; $P > 0.10$ in all cases), even when pooling temporary disturbances and permanent desertion. In the same way the pooling of primiparous and multiparous ewes does not enable us to suggest any effect of the treatment. On the other hand, there is a very clear difference in the incidence of desertion in primiparous and multiparous ewes (20% vs 2%, $P < 0.001$).

Table 1 Proportions of ewes showing disturbances of maternal behaviour following dexamethasone treatment

Ewe group	Treatment	N	No disturbance	Temporary disturbance	Permanent desertion
Primiparous	Control	21	14 (67%)	3 (14%)	4 (19%)
	Treated	30	19 (63%)	5 (17%)	6 (20%)
Multiparous	Control	61	55 (90%)	5 (8%)	1 (2%)
	Treated	23	22 (96%)	0 (0%)	1 (4%)

Dexamethasone had a significant effect on the duration of pregnancy. In maiden ewes the treatment reduced the duration of pregnancy by a mean of 19 hours. In older ewes the effect was even more marked, pregnancy being shortened by 27 hours in treated animals (Table 2).

Table 2 Latencies between injection of dexamethasone and parturition in ewes

Ewe group	Treatment	N [†]	Interval between
			injection and parturition (mean \pm SEM in hours)
Primiparous	Control	9	65 h 50 min \pm 10 h 22 min
	Treated	22	46 h 53 min \pm 2 h 03 min
Multiparous	Control	29	79 h 31 min \pm 5 h 44 min
	Treated	14	42 h 30 min \pm 2 h 21 min

[†] Only the data for ewes lambing during the hours of observation were used in the analysis.

When considering the distribution of lambings over the 24 hour period we can only compare the proportion of lambings occurring during the night or the day since no recordings were made at night (Table 3).

Table 3 Influence of dexamethasone treatment on the time of lambing during a period of 24 hours

Ewe group	Treatment	N	Time of lambing	
			0600 to 1830 h	1830 to 0600 h
Primiparous	Control	21	10 (48%)	11 (52%)
	Treated	32	22 (69%)	10 (31%)
Multiparous	Control	57	29 (51%)	28 (49%)
	Treated	23	13 (57%)	10 (43%)

Overall, 63.6 per cent of treated ewes lambled between 0630 h and 1830 h whereas this was true in only 50 per cent of cases in control ewes ($P < 0.05$).

DISCUSSION

Our results do not suggest that inducing parturition with dexamethasone affects the incidence of desertion of their lambs by merino ewes. Maternal experience and/or parity appear much more important in this respect. This agrees with the results of Alexander (1960) and Poindron et al. (1984). The difference observed between maiden ewes and older ewes of the same flock indicates that there is an overall improvement in maternal behaviour with the experience of a previous parturition. Therefore it appears suitable to study primiparous ewes rather than multiparous ewes when attempting to analyse the factors influencing the occurrence of desertion of the neonate in sheep.

Dexamethasone can be useful in such studies in that it allows for a reduction in variation in the duration of pregnancy within a flock. However, more studies are needed to determine to what extent dexamethasone can be used to obtain most lambings during daylight in field conditions. Also, possible effects of the treatment on other parameters of maternal behaviour important for lamb survival (e.g. time spent by the mother on the birth site; Stevens et al. 1982) need to be investigated.

In our study fewer ewes treated with dexamethasone lambled during daylight than observed by Bosc (1972). Several factors can account for this difference. It is possible that day 147 is not the appropriate time to administer dexamethasone to Merinos. Our study differed from Bosc (1972) in that he injects at 2000h and his sheep are kept permanently indoors with very rigid rhythms of feeding and general activity. It is not known whether such factors are without influence on the efficiency of dexamethasone treatments.

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