PROGESTERONE PATTERN DURING TWO MONTHS POST-LAMBING IN MERINO EWES

By

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ABSTRACT

Ten Merino ewes lambed during February, 1985 were used to determine the incidence of postpartum ovarian activity by assessment of serum progesterone concentration. Ewes were bled two times a week during the first 60 days after lambing starting one week post delivery. Serum progesterone concentration was assessed by double antibody RIA technique.

Throughout the experimental period, 8 ewes out of the 10 showed sustained anoestrous (progesterone level ranged between non-detectable value and 0.7 ng/ml). An increase in progesterone ($\geqslant$ 1.0 ng/ml) was observed in two ewes begining from the 56th day post-lambing. The delay in ovarian activity may be due to that ewes were allowed to nurse their lambs and were not exposed to the rams throughout the experimental period.

INTRODUCTION

Studying the postpartum ovarian activity in sheep is of great importance particularly for the practice of frequent lambing systems. The postpartum period needed for the resumption of ovarian activity was found to be influnced by nutrition (Shevah, et al.1975), season of lambing (Sefidbackht et al.1977), ram presence (Chesworth

and Tait 1974, and Oldham and Pearse 1983), and suckling (Hunter, 1968; Mallampati et al.1971; Gould and Whiteman, 1973, Kann and Martinet 1975, and Speedy and Owen, 1975).

In Egypt, the system of getting three lambings per two consecutive years has been now well established. Under the common managerial system in many farms in Egypt, ewes are allowed to nurse their lambs for a period of at least 10 weeks. The present work aimed to study the ovarian activity throughout the 60 days after lambing under the common lamb rearing system.

MATERIAL AND METHODS

This work was carried out in the experimental farm of faculty of Agriculture, Cairo University. Ten Merino ewes giving birth to their lambs during February 1985 were used for studying the ovarian activity during the first 60 days post-lambing. Animals were housed in a semi-open pen and were fed concentrate mixture, rice straw and Egyptian clover (Trifolium alexandrinum). The concentrate mixture contained 16% crude protein, 16.5 crude fiber and 2% fat. Ewes were allowed to nurse their lambs allover the experimental period. Ewes were not exposed to the rams till the next breeding season (May and June).

Starting from the 7th day post-lambing, ewes were bled two times a week from the jugular vein. Blood samples (3 ml) were collected without adding any anticoagulate. Samples were allowed to clot for ½ hr, then centrifuged for serum separation. Serum was stored at -18°C till the assay has been carried out.

Double antibody radioimmunoassay technique was used for progesterone determination. Assessment of progeste-

rone was performed according to Abdelaal and Dobson (1986) using ovine antiserum. Antiserum was a gift from Dr. Hilary Dobson (Mrs) University of Liverpool, United Kingdom. I^{125} progesterone tracer was produced by Farmos Diagnostica, Finland. The cross reaction of progesterone antiserum was 1% with 11 deoxy corticosterone and below 0.5% with all other steroids (at approximatly 50% binding). Intra and inter assay variation coefficients were 3.9% (n=10) and 9.3% (n=27), respectively. The standard curve of progesterone (prepared in male sheep serum) ranged between 0.0 and 28.0 ng/ml. Sensitivity value when assaying 25 ul of serum was 0.27 ng/ml. Ovulation was considered to occur when serum progesterone reached more than 1.0ng/ml.

RESULTS

Progesterone concentration during the 60 days post-lambing for each individual ewe is illustrated in figure(1). Eight ewes out of the ten showed sustained anoestrus during the whole experimental period. Progesterone concentration was almost at the basal level ranging between non-detectable value and 0.7 ng/ml with an average of 0.17 ± 0.02 ng/ml. Progesterone concentration of only two ewes (No. 6 and 7) continued at the basal level till the 56th and 60th day post-lambing where it increased to reach >1.0 ng/ml. So, ovulation was considered to occur in these two ewes.

The delay observed in resuming the ovarian activity for most of the ewes studied is in accordance, under similar conditions, with that reported by various authors.

Mallampati et al.(1971) found that ewes suckling their lambs for 42 days during January and February showed post-partum oestrus at 64 days after lambing, whereas removal of lambs one day after birth caused

the postpartum oestrus to occur after only 38 days. Kann and Martinet (1975) concluded that the postpartum oestrus interval occurred earlier in milked ewes than in those suckling their lambs (30-40 vs. 60-80 days).

DISCUSSION

In the present study, the delay of resuming ovarian activity is most probably due to the suckling effect since all ewes were suckling their lambs during the 60 day experimental period.

Suckling has an antigonadal action (Hunter, 1968), since it elevates the prolactin in the blood, particularly during and immediately after suckling (McNeilly et al.,1972). Fitzgerald and Cunningham (1981) suggested that when pulses levels of prolactin are low there is a greater liklehood of an earlier resumption of breeding activity in the ewes. Prolactin also has an inhibitory effect on FSH secretion (Lamming et al.,1974). It was found by Mallampati et al.(1971) that the pituitary FSH concentration is less in nursing than in non-nursing ewes. The authors concluded that the rate of FSH synthesis and release is much lower in nursing ewes.

Moreover, the absence of the ram effect might exert a role in delaying the resumption of ovarian activity in our study, since ewes were not exposed to the rams till the end of the experimental period.

Chesworth and Tait (1974) and Oldham and Pearse (1983) indicated that the introduction of rams to ewes in the postpartum period enhance the resumption of ovarian activity via increasing the frequency of LH pulses.

Under the Egyptian conditions, season of lambing may be involved in the rate of ovarian activity. Aboul-

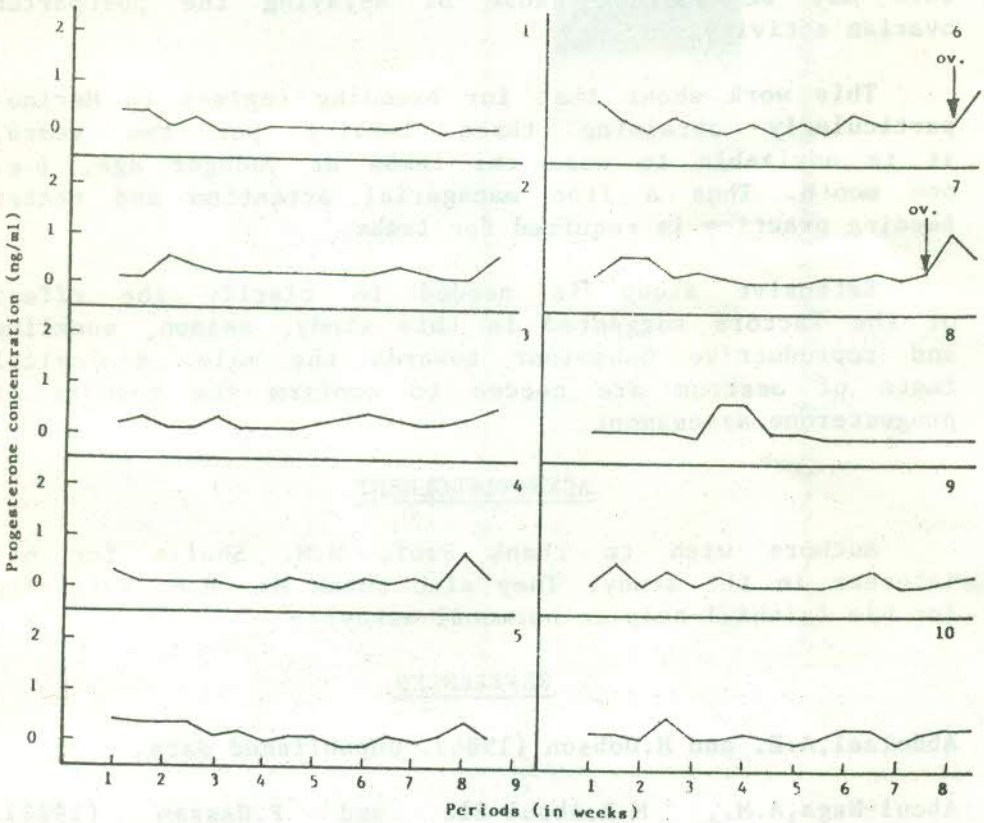

Fig.1 Progesterone level (ng/ml) during 60 days post-lambing in individual Merino ewes.

Naga et al.(1985) reported that Merino ewes had a lower activity during the period from March to May. As the Merino ewes in the present study lambed during February and the experiment extended during March and April, this may be another cause of delaying the postpartum ovarian activity.

This work shows that for breeding regimes in Merino, particularly obtaining three lambing per two years, it is advisable to wean the lambs at younger age, i.e. one month. Thus a fine managerial attention and better feeding practice is required for lambs.

Extensive study is needed to clarify the effect of the factors suggested in this study, season, suckling and reproductive behaviour towords the male. Biological tests of oestrus are needed to confirm the results of progesterone assessment.

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مستوى هرمون البروجسترون فى الأغنام المرينو خلال الشهرين التاليين للولادة

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الملخص

استخدم فى هذه الدراسة ١٠ نعاج مرينو وضعت حملانها خلال شهر فبراير ١٩٨٥ وذلك لتحديد بداية النشاط المبيضى بعد الولادة عن طريق تقدير هرمون البروجسترون فى سيرم الدم . وقد جمعت عينات الدم مرتين أسبوعيا بداية من الأسبوع الأول بعد الولادة ولمدة ٦٠ يوم . واستخدمت طريقة المناعة الاشعاعية لتقدير هرمون البروجسترون .

وخلال فترة التجربة ارتفع مستوى البروجسترون فى دم نعجتين فقط بداية من اليوم ٥٦ بعد الولادة الى أكثر من ١ر٠ نانوجرام / سم٣ من الدم بينما استمرت الثمان نعاج الأخرى فى حالة راحة جنسية حيث ظل مستوى الهرمون أقل من ٧ر٠ نانوجرام/سم٣ وقد يرجع تأخر بداية النشاط المبيضى فى هذه الدراسة الى أن النعاج تركت لترضع حملانها وأيضا لم تتعرض للكباش طوال فترة التجربة .