CORPUS LUTEUM MAINTENANCE IN A EWE WITH ONE CONGENITALLY ABSENT UTERINE HORN

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During the oestrous cycle of the sheep, normal regression of the corpus luteum (CL) on Day 15 is prevented by total hysterectomy and the cycle is extended to a length approximating the gestation period (Wiltbank & Casida, 1956; Moor & Rowson, 1964). Rowson & Moor (1964) also reported that the increased life-span of the CL in partially hysterectomized sheep was roughly proportional to the amount of uterus removed. Other experiments have demonstrated that the primary effect of the uterus on the ovary is local in nature since unilateral hysterectomy in ewes with CL in both ovaries results in the normal regression of the luteal tissue on the ovary next to the remaining uterine horn, while the CL on the ovary with no uterine connection are maintained for at least 35 days (Moor & Rowson, 1966; Caldwell, Rowson, Moor & Hay, 1969). Various ovarian and uterine transplantation experiments support the view that the uterus has a local 'luteolytic effect' while providing evidence that a systemic pathway may also exist by which the uterus may control luteal regression. Autotransplants of endometrial tissue to the flank of fourteen hysterectomized ewes resulted in cycle lengths of about 40 days duration in seven of the ewes (Caldwell et al., 1969), and the vascular autotransplantation of the left ovary to a skin loop in the neck of unilaterally ovarioctomized sheep resulted in prolonged cycles due to the presence of persistent CL (Goding, McCracken & Baird, 1967; Goding, Harrison, Heap & Linzell, 1967; McCracken & Baird, 1969). Goding, Harrison Heap & Linzell (1967) also transplanted a uterine horn to the neck, leaving an ovary in the abdomen and again showed that, where the ovary and uterus were physically separated, the CL persisted for longer than 40 days. A further significant finding was recently reported which showed that the transplantation of the ovary and uterine horn together to the neck of sheep in which the other ovary and uterine horn were removed, resulted in cycles of normal length (Harrison, Heap & Linzell, 1968; McCracken & Caldwell, 1969, personal communication).

Many investigators are, however, reluctant to accept the existence of a 'uterine luteolysin' since all evidence to date involves the use of surgical procedures such as hysterectomy or other 'Mullerian duct mutilations' to demonstrate this luteolytic effect (Nalbandov & Cook, 1968).

The present communication reports the finding of a ewe in which the left uterine horn was congenitally absent, leaving the left ovary without the normal direct connection to uterine tissue. An examination of the surgically excised reproductive tract (Pl. 1, Fig. 1) showed that one side of the tract was essen-
tially normal in gross appearance, while the abnormal side only lacked a uterine horn (the oedema evident on the left side occurred during the surgical removal of the specimen). The fimbria and oviducts on both sides were patent with a clear pathway through the lumen of the uterus on the right side to the cervix which was somewhat constricted but which did not prevent the passage of fluids. This animal had not exhibited oestrus for 58 days whereas the rest of the flock had cycled normally during the period from 15th November to 12th January, as judged from the continuous presence of vasectomized rams fitted with harness and marking crayons. Lindsay (1966) reported that this method provides a high reliability for the detection of oestrus in sheep.

A histological examination of the ovaries and uterus removed from the ewe on 12th January revealed a probable explanation for the absence of behavioural oestrus. The ovary on the side adjacent to the intact horn contained numerous small follicles and evidence of corpora albicantia, while the ovary on the side of the congenitally absent horn was dominated by a large CL (Pl. 1, Fig. 3) which was most likely responsible for the prolonged di-oestrous interval. This finding is in agreement with the experimental results obtained following unilateral hysterectomy in sheep and determination of the functional life-span of the CL present in such ewes (Inskeep & Butcher, 1966; Caldwell et al., 1969). These findings are compared with those of the present case of a ewe with one congenitally absent uterine horn in Text-fig. 1. In both instances, the ovary

![Diagrammatic comparison of CL maintenance in unilateral hysterectomy and congenital absence of one uterine horn](image)

Text-fig. 1. Diagrammatic comparison of this animal with experimental results using unilaterally hysterectomized ewes.

which did not have the normal uterine connection contained a corpus luteum which persisted for significantly longer than normal. It would, therefore, appear that the congenitally abnormal ewe would have had regular oestrous cycles provided that ovulation occurred only in the ovary adjoining the intact horn, but as soon as an ovulation took place in the contralateral ovary the animal would have exhibited a prolonged di-oestrous phase as a result of CL maintenance.

This case gives additional support to the view that the uterus is involved in the regulation of CL life-span, since surgical interference cannot be invoked to explain the prolonged luteal phase.

Zimbelman (1964 and personal communication) reported the case of a cow which had not exhibited behavioural oestrus for 90 days. At slaughter, a large CL was found in one ovary and histological examination of the uterus
Fig. 1. The excised reproductive tract showing: A, left ovary with large corpus luteum; B, right ovary with many small follicles; C, the single right uterine horn.

Fig. 2. A section of endometrium from the right uterine horn. × 160.

Fig. 3. A photomicrograph of a section of the large corpus luteum in left ovary. × 160.
revealed that there were no well-defined endometrial glands present. The author speculated in this instance that the lack of endometrial glands might have been responsible for the abnormal maintenance of the CL.

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REFERENCES


