BRIEF COMMUNICATION

THE INCIDENCE OF SPONTANEOUS DECIDUOMATA IN PSEUDOPROPREGNANT RATS

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In the pseudopregnant rat, deciduomata have been generally produced by surgical or chemical trauma of the uterus. The optimal administration time for these stimuli was found to be Day 4 of pseudopregnancy, and maximal decidual responses were obtained 5 days later (De Feo, 1963a). However, we have observed that deciduomata developed spontaneously in the absence of uterine trauma, and attempted to determine its frequency.

Table 1

<table>
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<tr>
<th>Pseudopregnancy inducing stimulus</th>
<th>No. of rats tested</th>
<th>No. of rats with deciduomata*</th>
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<tr>
<td>Glass rod</td>
<td>35</td>
<td>6</td>
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<tr>
<td>Sterile mating</td>
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* The uteri were examined on Day 9 of pseudopregnancy.

Wistar-strain, female rats obtained from the Royal Hart colony, and weighing approximately 250 g, were used. They were housed in a controlled illumination environment of 14 hr light and 10 hr darkness, and were maintained on unlimited Purina Chow and water. During oestrus, the animals were made pseudopregnant by cervical stimulation with a glass rod or matings with vasectomized males. Day 1 of pseudopregnancy was established when the vaginal smears primarily exhibited leucocytes. The uteri were removed on Day 9, and were grossly examined for the presence of deciduomata. For microscopic study, the uteri were either cleared in benzyl benzoate (Orsini, 1962) or fixed in Bouin’s solution and subsequently stained with alum haematoxylin and eosin.

The frequency of spontaneous deciduomata was apparently independent of the method by which pseudopregnancy was induced, approximately 17% of the animals made pseudopregnant by either of the procedures had deciduomata (Table 1). In general, the uteri of these rats contained one to three randomly distributed but discrete zones of decidualization; however, on one
occasion, ten were observed. The interdecidual uterine area revealed an endometrium typical of pseudopregnancy (Pl. 1, Fig. 1), whereas the size and area occupied by the decidual swellings (Pl. 1, Fig. 3) were almost comparable to that of foetal implantation sites on Day 7 or 8 of pregnancy. Characteristic decidual cells as described by De Feo (1963b) were found in the mesometrial and antimesometrial regions of the uterine swellings (Pl. 1, Figs. 4 and 5). Moreover, cleared preparations of these uteri (Pl. 1, Fig. 2) disclosed the antimesometrial opacity peculiar to decidual tissue as reported by Orsini (1963). Therefore this morphological evidence attested to the identity of these uterine growths as being decidual tissue. As judged by daily vaginal smears and the condition of the ovaries at autopsy, it would appear that none of these animals had ovulated during the course of pseudopregnancy. These findings precluded the possibility that the presence of ova in utero induced decidualization.

Investigations of placentation and function have utilized the deciduoma as an experimental model (Shelesnyak, 1957). In fact, the deciduoma has been considered to be very similar, if not homologous, to the maternal placenta (Boyd & Hamilton, 1958). The causative stimulus of placentation has been assumed to be a localized endometrial invasion by the embryo (Hafez, 1963). Consequently, this natural ‘trauma’ has been simulated in numerous ways to produce deciduomata (De Feo, 1963a). However, the present study demonstrated that, in some cases, uterine trauma was not a necessary prerequisite. No explanation can be advanced for this phenomenon; however, these spontaneous deciduomata may have been a peculiarity of the rat strain used.

REFERENCES

De Feo, V. J. (1963a) Determination of the sensitive period for the induction of deciduomata in the rat by different inducing procedures. Endocrinology, 75, 488.
De Feo, V. J. (1963b) Temporal aspect of uterine sensitivity in the pseudopregnant or pregnant rat. Endocrinology, 72, 305.

EXPLANATION OF PLATE I

In Figs. 1 to 5, inclusive, the uterus was removed on Day 9 of pseudopregnancy.

Fig. 1. Cross-section of uterus in a nondecidualized area. × 15.

Fig. 2. Part of cleared uterus showing spontaneous deciduoma. × 3

Fig. 3. Cross-section of spontaneous deciduoma. × 15.

Fig. 4. Mesometrial decidual cells. × 625.

Fig. 5. Antimesometrial decidual cells. × 625.