Summary only

SPERM TRANSPORT IN THE FEMALE RABBIT

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A cine-radiographic film was presented showing the movements of radio-opaque fluids placed in the vagina, uteri or Fallopian tubes of oestrous does.

The movements of radio-opaque fluids in the vagina have already been described (Akester and Inkster, 1961), as has their passage cranially in the form of intermittent jets through the cervix into the uterus. It was pointed out that the technique would not detect the caudal passage of opaque material through the cervix should such a phenomenon be occurring.

When small volumes (0.2 ml) of opaque fluid were injected into the uterus *via* a catheter inserted through the cervix, the movements of fluid along the length of the uterus could be seen. Uterine contractions alternately produced compression of the fluid in a segment of the uterus, and then rapid dispersal along the lumen. Compression of the fluid at the cervical end seemed to occur as frequently as at the tubal end.

When radio-opaque fluid was injected into the Fallopian tube *via* a catheter inserted into the fimbria, it was observed that the material was distributed by local segmentations of the tube. Contractions of the tube did not appear to concentrate the fluid under pressure, nor was it transported rapidly as it was in the uterus.

A radiographic picture of the passage of tiny jets of radio-opaque fluid into the uterus from the vagina and vigorous movement in the uterus, was related to the results of experiments in which live or dead spermatozoa were injected into various parts of the genital tract. Dead spermatozoa placed in the vagina may pass into the uterus and occasionally into the Fallopian tube. Dead spermatozoa injected into the uterus regularly passed into the vagina and occasionally into the Fallopian tube. Living spermatozoa injected into one uterus appeared in the Fallopian tube on the injected side and in the uterus and Fallopian tube on the contralateral side. Possible reasons were discussed for the low percentage of experiments in which the passive transport of dead spermatozoa was observed.

It was suggested that these observations indicated that sperm transport does not occur only in a cranial direction. Although the net result is movement cranially, spermatozoa may both enter and leave the uterus through the cervix, and the spermatozoa in the uterus may be transported both cranially and caudally. Although passive transport of spermatozoa through the utero-tubal junction occurred, it appeared that sperm motility conferred an advantage. Once spermatozoa entered the Fallopian tube they could be distributed by local constrictions of the tubal walls. Some spermatozoa could pass through the fimbria into the peritoneal cavity.

REFERENCE

Akester, A. R., Inkster, I. J., 1961: *J. Reprod. Fertil.*, *2*: 507–8.

DISCUSSION

DR G. R. MOULE: Mattner has noted that stress imposed on experimental animals may initially delay transport, which later returns to normal. Uterine contractions are truly spectacular and Mattner has found that they are capable of transporting such inanimate material as bone char. Mattner is of the opinion that, in the ewe, sperm may pass through the Fallopian tubes and into the peritoneal cavity, and others may be removed by phagocytosis. Maintaining a reasonable number of sperm in the tube seems to be one of the problems related to ensuring fertilization.

Q: *When radio-opaque fluid is present in the uterus, is its movement enhanced by the mating stimulus. If so, what mechanisms do you think operate?*

I. J. INKSTER: The observations on uterine motility were made on anaesthetized animals so that mating was not possible.

Q: *How long is it after insemination before sperm reach the Fallopian tube?*

MR INKSTER: This series of observations did not contribute any information on the speed of sperm transport since the examinations were made three or more hours after insemination. Braden's work showed that abundant spermatozoa should be present at that time.