

Brief Communication

ENDOCRINE STUDIES OF A PIG WITH OVOTESTES

Hermaphroditism occurs fairly commonly in pigs (*Pfeffer & Winter 1977*). True hermaphrodites have both testes and ovaries or ovotestes. They are seldom recognized alive because, apart from their gonads, their genitalia are female in character. Most hermaphrodites are sterile. However, some investigators have recorded cases in which ovulations had taken place from the ovarian tissue and some which even had become pregnant (e.g. *Cox 1968*). Due to difficulty of diagnosis in the living animal, no hormonal studies have so far been made in true hermaphrodites.

In an experiment in which daily oestrous detection was performed a "gilt" of Swedish Landrace breed showed no external symptoms of heat. After an observation period of 45 days a laparoscopic examination was performed. The inspection of the genital organs revealed that both gonads were ovotestes.

Blood samples were collected via a permanent silastic jugular vein catheter. Daily samples, for progesterone and oestradiol analysis, were collected at 9 a.m. for 5 days. Frequent blood collection at 15 min intervals for 6 h was done for analysis of LH and testosterone. On the following day the same sampling schedule was performed after the injection (i.v.) of 250 µg of LH-RH (NOVO Industry A/S, Copenhagen, Denmark). These samples were only analysed for content of plasma LH.

Macroscopic examination of the genital organs was performed after slaughter. Tissue pieces from the ovotestes and uterus were collected and microscopic examination was performed after conventional histological processing of the tissues.

The right gonad weighed 47.8 g and the left 41.1 g. The right gonad contained 2 cysts and 1 big follicle together with testicular- and epididymal-like structure. The left gonad contained 3 cysts and 10 big follicles together with testicular- and epididymal-like structure. No oviducts were found. No abnormality was found in the uterus, cervix, vagina, vulva or clitoris.

On histological examination the testicular-like structures consisted of seminiferous tubules surrounded by prominent, well developed Leydig cells. The seminiferous tubules were reduced

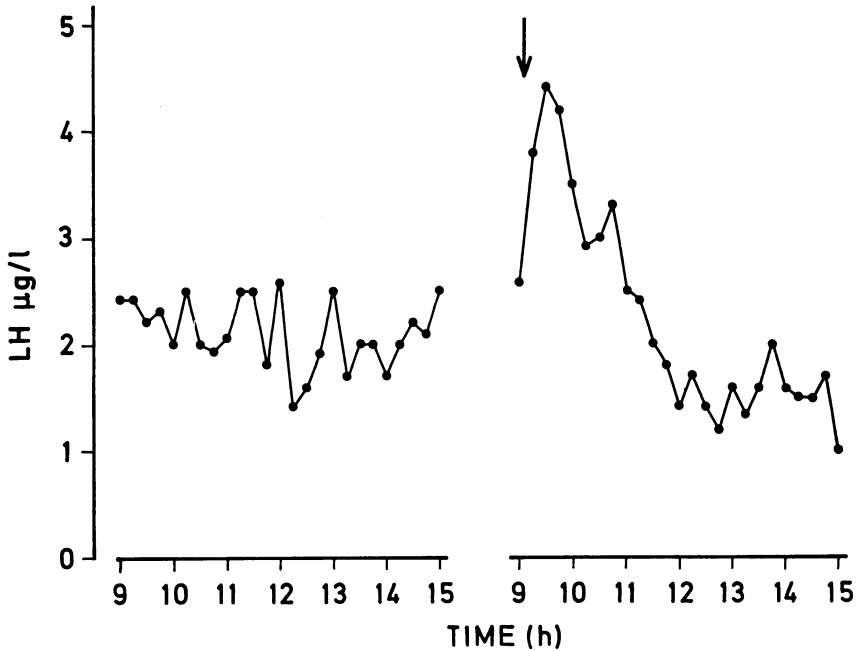


Figure 1. Plasma levels of luteinizing hormone (LH) on the day before and the day of injection (250 µg of LH-RH i.v.) in a true hermaphrodite pig. Arrow indicate the time of injection.

in diameter and lined only with Sertoli cells. The histological examination of the epididymal-like structures revealed a few cross-sections of ductus epididymis. The ovarian parts of the gonads contained cysts with heavily developed luteinization on the cystic walls. The uterine epithelium was normal.

Average values ($n = 5$) of plasma contents of progesterone and oestradiol in this pig were 3.5 nmol/l and 86.7 pmol/l, respectively. Average values ($n = 25$) of plasma contents of testosterone and LH from the control samples were 2.4 nmol/l (range 2.0—3.1 nmol/l) and 2.1 µg/l (range 1.4—2.6 µg/l), respectively. The responses to the i.v. injection of LH-RH are shown in Fig. 1. The highest level of LH (around 4.4 µg/l) was measured at 30 min after injection, thereafter decreasing gradually.

The macroscopical and histological findings are in agreement with earlier reports (e.g. *Basrur & Kanagawa 1971*). No oviducts were found, for which reason this pig was considered infertile. *Pfeffer & Winter (1977)* have reported that pigs with ovotestes often develop ovarian cysts. The finding of ovarian cysts in the

present case supports their results. The luteinization of the cystic walls accorded very well with the high level of progesterone. Also the oestradiol levels were high. This is in accordance with earlier findings in sows with luteinized ovarian cysts (*Kunavongkrit et al.* 1983). It is clear that the Leydig cells could produce testosterone as the plasma level of testosterone was similar to that from normal postpubertal boars (*Lapwood & Florcruz* 1978). The LH response to the exogenous gonadotrophin releasing hormone was also similar to the response of boars injected with GnRH (*Juniewicz & Johnson* 1983).

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