Fetal Absorption

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Fetal Absorption

Hypogonadism as a result of hypopituitarism in bitch

J. Brown White, B. S., '42*

A three-year-old wire haired terrier bitch was acquired with the history of never having had a normal estrum. Estrum had been manifested by a slight swelling of the vulva for three days at regular six month intervals, but no sex desire was manifested. There was no vaginal discharge, and all symptoms of estrum disappeared at the end of the third day. Coitus was refused.

It was thought that by putting the patient on a milk and raw meat diet, and by providing opportunity for exercise normal estrum might be induced. Ample exercise, whole milk, and raw unbled beef and horse meat were provided. On July 10, 1940, the vulva enlarged slightly but all symptoms of estrum disappeared in three days. Male dogs were able to detect estrogenic substances in the urine during the short estrum, but coitus was refused. A similar three day estrum occurred on Jan. 1, 1941. The same slight swelling was observed on May 13, 1941. The swelling again disappeared at the end of the third day and on the fourth day the bitch was given 500 units of gonadin intravenously. Symptoms of estrum were marked on the next day and she was bred on May 19, 21, and 23. Time of conception was arbitrarily placed on May 24, 1941.

On the fifteenth day of gestation an anorexia developed which persisted for three days. The day following the appearance of the anorexia, a pruritis developed which was followed by a weeping eczema over the back and in the axillary regions. The hair coat was removed and the eczema responded to treatment with tannic acid and boric acid in 70 per cent alcohol, followed by zinc oxide and zinc stearate in cottonseed oil. Recovery was complete by June 17.

A male pup was born July 20. Parturition was normal; the pup appeared to be full term but was weak and required hand feeding for two days.

Second Gestation

It had been hoped that one gestation might correct the condition and a normal estrum did occur on Dec. 14, 1941. Coitus took place on Dec. 28, 1941. Anorexia and pruritis developed on the twelfth day of gestation. On the fourteenth day the pruritis became marked, a weeping eczema developed on the neck, and photophobia and "beef steak" mucous membranes appeared.

An antipruritic containing 0.5 per cent of phenol was applied on the fifteenth day and signs of a toxemia with dullness and unsteady gait appeared, but temperature and pulse remained normal. The antipruritic was removed with soap and water and tannic acid and boric acid in alcohol was applied to the eczematous area. The dullness and anorexia were less evident on the sixteenth day and some beef broth was consumed. A marked dyspnea appeared on the seventeenth day with respirations at 130 per minute. Temperature and pulse rate were normal and remained so throughout the illness. A muco-purulent conjunctivitis developed and the visible mucous membranes became cyanotic.

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Pressure over the trachea stimulated a short dry cough. The ribs were elevated and the head and neck were extended. Loud harsh rales were heard over the entire lung but seemed to be loudest in the region of the thoracic inlet. Percussion revealed only slight dullness. 23.1 grains of sulfadiazine were given per orum, followed by 7.7 grains every eight hours. Steaming for one hour at 4 hour intervals did not seem to alleviate the dyspnea.

The condition was unchanged on the eighteenth day and death by cardiac and respiratory failure occurred on the nineteenth day of gestation.

**Necropsy**

A post mortem examination performed a few minutes after death revealed the following conditions to be present:

1. A weeping eczema on the neck and in the axillary regions.
2. A muco-purulent conjunctivitis.
3. A generalized serous lymphadenitis.
5. An acute pulmonary hyperemia and edema involving the entire lung.
6. A marked hyperemia of all parenchymatous organs.
7. Three feti, along with fetal membranes had been absorbed in the uterus at A, B and C of Fig. 1. A thick flaky exudate was present where the feti should have been.
8. A remnant of a fourth fetus with its fetal membranes was observed at D in Fig. 1.
9. Three corpora lutea were present in the right ovary and one corpus luteum in the left ovary.
10. A normal, well developed blood supply to the uterus.
11. A hyperemia of the meninges of the brain.

Histological sections were prepared of the parenchymatous organs, endocrine glands, ovaries, uterus and lymph nodes. Sections of corresponding tissues were prepared, for comparison, from a normal terrier bitch having five feti of nineteen days gestation. Sections of the case being studied revealed a serous infiltration of the lymph nodes, an acute pulmonary hyperemia and edema, and a marked hyperemia of the parenchymatous organs.

**The Endocrine Glands**

Sections of the thyroid revealed follicles with a low type epithelium and completely filled with colloid. A marked quantity of a substance thought to be colloid was outside the follicles in the interfollicular connective tissue.

The anterior hypophysis showed a marked decrease of basophiles when compared with the control.

The ovaries revealed a marked hyperemia of the ovarian tissue and of the corpora lutea. Two of the three corpora lutea in the right ovary and the one in the left ovary were very hyperemic, and the luteal cells were swollen as compared with the controls.

Sections taken through the uterus at A, B and C in Fig. 1 revealed that the fetal membranes were not present and that an eschar had formed over the surface of the maternal tissues. The fetus located at B had probably been absorbed first. A section taken through D of Fig. 1 showed a normal

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some time that vitamin D is necessary to regulate calcium and phosphorus metabolism, it has been found in recent years that manganese is also concerned in this process. The laying hen requires approximately 2.25 per cent of calcium and a minimum of 0.9 per cent of phosphorus in the laying ration; and, in addition, 50 parts per million of manganese are required for normal egg shell formation and for hatchability. When the diet is deficient in manganese, poor egg shell texture results and many of the embryos are deformed. This deformity is manifested as chondrodystrophy and in a wiry down condition. The amount of manganese required for either egg production or hatchability is usually supplied by the addition of 4 ounces of manganese sulphate per ton of total feed consumed.

The other minerals that are usually required are sodium and chlorine which are provided in common salt. Iodine is apparently necessary for normal hatchability, and in some cases it may be deficient. It may be supplied through the use of iodized salt or potassium iodide.

This is a very brief statement of some of the essential nutrient requirements for egg production and high hatchability. In times of high feed prices and in times of high egg prices these factors are of even greater importance to the poultrymen, and at present there is the added incentive of conserving food supplies for the defense program.

FETAL ABSORPTION

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attachment of the fetal membranes. The blood supply to A, B, C and D appeared normal.

Discussion

From the history, it would appear that there was a deficiency of estrogenic substances. There was possibly a shortage of the estrogenic principle having to do with the full development of sex desire. There is another possibility that had the bitch been artificially inseminated following one of the atypical estrual period, conception could have taken place. Ovulation may have been normal as evidenced by the fact that at least four ova ruptured during the last estrum as revealed by the post mortem findings.

There is the possibility, too, that the dermatitis of both gestation periods was due to a deficiency of estrogenic substances. Sexual maturity in the human often puts an end to an adolescent dermatitis. A hypothyroidism could also cause a dermatitis and an edema of the feti. There was no evidence that a long-standing hypothyroidism existed in this case because the thyroid was normal in size and weight. However, the low epithelium of the follicles and the abundant colloid might indicate a recent hypothyroidism.

The direct cause for the absorption of the feti is not known. Possibly the decreased number of basophiles in the anterior hypophysis could account for a diminished supply of luteinizer to the corpora and as a result the corpora were unable to maintain their normal function. Consequently, the feti were absorbed.

Whatever the cause of the absorption of the feti, the most logical conclusion is that the bitch was absorbing a histamine-like substance from the destruction of the feti and their membranes in the uterus. This caused a capillary dilatation over the entire body. This capillary dilatation in the skin resulted in the pruritis and eczema. It also caused the photophobia, the conjunctivitis, the acute pulmonary hypere mia and edema, the generalized serous lymphadenitis and the hyperemia of all parenchymatous organs. No infectious process was long standing enough to cause a rise in temperature or increased heart rate. It is probable that the pruritis, eczema and anorexia of the first gestation period was due to a similar condition because only one fetus reached maturity. There was no other apparent cause for an eczema and the history of the animal indicated the possibility of fetal absorption during the first gestation as well as during the second.

Death was due to the severe congestion of the lungs brought on by absorption of a histamine-like substance from a gravid uterus.