THE INVESTIGATION OF STERILITY

Report of a Case

E. PERRY MCCULLAGH, M. D.

The following case is reported in order to call attention to some of the methods which are commonly employed in the investigation of childlessness:

REPORT OF CASE

A young woman, 22 years of age, presented herself for examination in March, 1938. She had been married for four years, during which time contraceptives had not been used and pregnancy had not occurred. She wished to have children. The history revealed no suggestion of pituitary or hypothalamic disease except for extreme obesity. She weighed 242 pounds and her height was sixty-four and one-fourth inches. The history did not suggest the presence of hypothyroidism. The menarche had occurred at the age of 12 years and the menstrual periods had occurred regularly at about every twenty-eight days until the age of 20 when there had been amenorrhea for three months. Since that time, the menses had occurred every twenty-one to thirty-four days and lasted for six days. Molimina were not excessive.

The texture of the skin was fine and the complexion pink. The general appearance was suggestive of Fröhlich's syndrome. Although the obesity was rather generalized, the lower legs and forearms were relatively spared.

Physical examination revealed the following findings of consequence: The thyroid gland was very slightly enlarged diffusely. The breasts were large and obese. The pulse rate varied between 60 and 80. The blood pressure was 112 systolic, 78 diastolic. Examination of the pelvis revealed no abnormality.

Urinary estrogens were measured on March 23, which was two weeks following a menstrual period. This was done by modification of the Koch method and showed more than 40 rat units in a twenty-four hour specimen of urine which is well within the normal range.

A vaginal smear was made on April 29, the preceding menstrual period having occurred on the thirteenth of the month. The vaginal smear did not show an entirely clear smear of nucleated epithelial and cornified epithelial cells. There were many leukocytes and next in order of abundance were flat, clear epithelial cells with pyknotic nuclei. This is the type of smear which is seen in castrates before a complete response to estrogenic hormone is reached and it is consistent with the pre-ovulation and the post-ovulation periods in normal women.[1]

Lipiodol was injected into the uterus and roentgenograms were taken immediately. These showed the oil to fill both fallopian tubes to the

fimbriated ends, but no oil was seen in the peritoneal cavity. A roentgenogram of the pelvis was repeated six days later and this showed clearly that lipiodol had entered the peritoneal cavity, proving that at least one of the tubes was patent.

Two estimations of the basal metabolic rate averaged minus 11 per cent. The level of blood sugar was normal. The blood Wassermann and Kahn tests gave negative reactions. Examination of the blood showed 4,700,000 red cells, 5,600 white cells, 71 per cent hemoglobin, 63 per cent neutrophils, 2 per cent eosinophils, and 35 per cent lymphocytes.

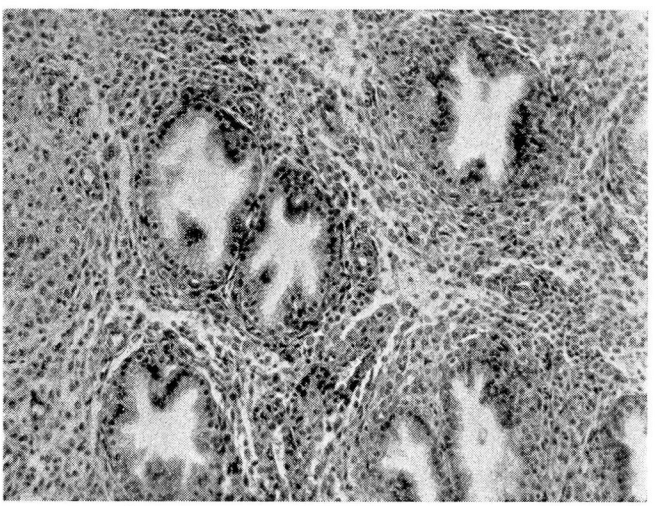

FIGURE 1: Photomicrograph of endometrial biopsy. Note the enlarged glands, their irregular infolded margins, the secretion in their lumina, and the cellularity of the stroma. (x 125).

On May 9 an endometrial biopsy was done (Fig. 1). This usually is easily accomplished in the office by means of a Novak suction curette. The endometrium in this case showed a typical premenstrual endometrium with enlarged, irregular glands containing secretory material and lying in a fairly cellular interglandular stroma. From the tortuosity of the glands, their involuted margins seen on transverse section, and their secretion, it was judged that the progesterone effect had taken place normally. Such a picture is considered good presumptive evidence that ovulation has occurred.

The patient was examined one hour after coitus and in the cervical mucus a moderate number of active sperms were found.

The husband's physical examination showed no relevant findings.

A specimen of semen was collected in a glass container. The volume was 2.5 cc. and the motility 2 plus (normal 3 to 4 plus). The count of killed sperms was 186,000,000 per cubic centimeter, a total of 465,000,-

000. A study of stained smears of the sperms showed about 62 per cent to be morphologically abnormal. The upper limit of abnormal forms without diminution of fertility is probably about 20 per cent.

The treatment prescribed for the wife on April 29, 1938, was a diet of 800 calories per day containing 70 grams of protein; crystalline vitamin B, 5 mg. per day; calcium gluconate 1 gram daily; and ferrous sulphate for the anemia.

For the husband, wheat germ oil was prescribed in doses of 20 minims per day. A subsequent examination of the semen was done in September. The volume was 3.2 cc. and number of sperms per cubic centimeter was 49,500,000, a total of 158,400,000. The most interesting finding was the reduction of morphologically abnormal forms to 19 per cent.

On July 27, the patient's weight was 228 pounds, a loss of 14 pounds. She reported that the menstrual period due on June 6 had not occurred. Symptoms and signs of early pregnancy were present and a Friedman test gave a strongly positive reaction. On September 15, the pregnancy was still advancing normally.

Comment

In the investigation of childlessness both partners should be examined to determine their general health, special attention being given to endocrine or metabolic disorders. By these methods, one may gain information regarding the occurrence of ovulation, the patency of the tubes, and the health of the endometrium. It can be shown that the sperms reach the cervical canal and live there. In the female additional information of value may be gained by studying the amount of gonadotropic and estrogenic hormones excreted in the urine and the vaginal response to estrogens in the body. Diseases of the vagina or cervix may require treatment. In the male, in addition to evidence of the state of the general health, disease of the pituitary, thyroid, or gonads must be considered. A careful study of the semen is essential. In this may be included a measure of the pH, the total volume, a careful and accurate count of killed sperms, and examination of stained smears for morphology, as well as a calculation of the degree of motility. In addition, the viability of the sperms is usually measured by repeated examinations, keeping the semen at room temperature. The epithelial debris and the number of leukocytes are also studied, and in some instances culture of the semen may be of value.

It is usually difficult to state that treatment has produced fertility, but when pregnancy occurs promptly, it is highly suggestive that some of the parts of investigation, such as tubal injection or the treatment, have been effective.

Reference

1. Papanicolaou, G. N. and Shorr, E.: Action of ovarian follicular hormone in menopause, as indicated by vaginal smears, Am. J. Obst. & Gynec., 31:806-831, (May) 1936.