URINARY EXCRETION OF OESTROGENS
IN MENSTRUAL DISORDERS

By

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The urinary excretion of oestriol, oestrone and oestradiol-17β has been determined in women suffering from amenorrhoea and dysfunctional uterine haemorrhage. Estimations were made by the method of Brown (1955 a) on consecutive 24 or 48 hour urine specimens and each case was investigated for periods of from two to three months. Endometrial biopsies and urinary pregnanediol determinations\(^1\) were done at crucial times to determine the state of the endometrium and whether ovulation had occurred. Seven anovular cycles were observed in 4 women who had suffered from dysfunctional uterine haemorrhage although no excessive bleeding occurred during the period of investigation. In all of these anovular cycles the pattern of oestrogen excretion was the same. The total oestrogen\(^2\) excretion remained more or less constant at approximately 18 μg. per day. This is considerably more than that excreted during periods of complete amenorrhoea, such as during lactation amenorrhoea (Brown, 1956) or after the menopause (Brown, 1955 b). The midcycle peak, luteal maximum and premenstrual fall in oestrogen levels characteristic of normal ovular menstrual cycles (Brown, 1955 c) were not found. It would seem that a urinary oestrogen excretion amounting to a total\(^2\) of 18 μg. per day corresponds to oestrogen levels in the body which are just sufficient to stimulate the endometrium but not to stabilise it. Periodic bleeding occurs from this unstable endometrium even though the oestrogen stimulus is not withdrawn. This is in agreement with the familiar concept that there is a critical oestrogen level at which both stimulation and bleeding of the endometrium can occur.

1. The pregnanediol measurements were kindly performed by Dr. A. Klopper using the method of Klopper, Michie & Brown (1955).
2. »Total oestrogen« implies the sum of oestriol, oestrone and oestradiol-17β which are the only oestrogens estimated by the method.
It also indicates that the maintenance of such critical levels is one of the causative factors in anovular menstruation. Three of the cases studied showed ovular as well as anovular cycles during the periods of investigation. In each case where the ovular cycle followed an anovular cycle the anovular bleeding ceased as the oestrogen levels rose to the ovulation peak. There is every reason to believe that the bleeding stopped because the oestrogens had risen above the critical level.

Urinary oestrogens were determined in a case suffering from metropathia haemorrhagica. Results were obtained during a period which included several phases of bleeding from an endometrium which was shown by biopsy to be of the metropathic type. The amounts excreted in the urine fluctuated from a total of less than 10 μg. per day to a total of nearly 100 μg. per day which is higher than any level yet observed during a normal menstrual cycle. Bouts of uterine bleeding occurred at times when the oestrogen levels were low. These findings would suggest periods of intense ovarian activity followed by periods of quiescence and are consistent with the presence of polycystic ovaries and hyperplastic endometrium characteristically associated with this disorder.

The substance of this paper will be published in more detail at a later date.

REFERENCES