SHORT COMMUNICATION

FLUCTUATION IN SEX CHROMATIN DURING VARIOUS PHASES OF MENSTRUAL CYCLE

I. S. PAINTAL AND R. J. MININA

Department of Physiology, Seth G.S. Medical College, Parel, Bombay-400012

Summary: Aceto-orcin stained buccal smears were studied for incidence of sex chromatin bodies during the menstrual cycle in 25 females. In most cases, a definite fluctuation in the icidence of sex chromatin mass was observed. The highest incidence of sex chromatin pattern was on the 14th post menstrual day with a mean occurance of 33%. Two other peaks were observed, one on the 22nd day of the cycle when the mean was 28%, and the first day of the next menses when the mean was 26.2%.

Key words: sex chromatin menstrual cycle hormones

INTRODUCTION

In 1949, Barr and Bertram (1) noted sex chromatin in cat neurones. Nuclear sex is similar in the orders Primate and Carnivora in which nuclei of many tissues have a distinctive mass of sex chromatin in females but not in males. It is a product of the sex-chromosome complex. Studies in man (7) showed that during prophase, female cells showed heteropyknosis of one X chromosome whereas those of males showed no such phenomenon, and that this X chromosome produces the sex chromatin in interphase.

In 1965, Blanco de Del Campo and Ramirez (2) observed a fluctuation in the incidence of the sex chromatin during the menstrual cycle of the normal woman. However, Brainerd *et al.* (3) found no correlation between sex chromatin incidence and the menstrual cycle. Dokumov, *et al.*, however, noted a well defined fluctuation in the incidence of sex chromatin positive buccal cells (4).

In view of such conflicting observations, the present study was done, to further enlighten us on the incidence and fluctuations of sex chromatin during the menstrual cycle.

MATERIALS AND METHODS

Buccal smears were studied daily for one menstrual cycle from 25 apparently normal females ranging in age from 19-33 years. The mean age was 26± 7 years. The days scheduled for collection of smears were assigned, after securing the data of the usual length of the menstrual cycle.

The smears taken from lateral buccal mucosa were dried, stained with aceto-orcin technique (8) and examined. Two hundred consecutive cells were counted under oil immersion after first selecting a satisfactory scattering of cell population under low power. Only well preserved, vesicular nuclei were considered, and chromatin masses immediately adjacent to the inner nuclear membrance were scored as positive (Fig. 1).[1]

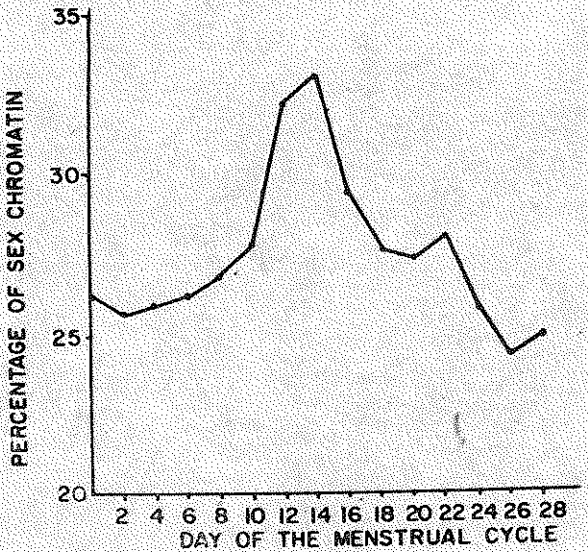

Fig. 1: Buccal smear — a cell showing the sex chromatin.

RESULTS AND DISCUSSION

The present study of sex chromatin on 25 healthy females with a normal menstrual cycle, shows that there is a well defined fluctuation in the incidence of sex chromatin in buccal cells as seen in the smears. In each set of consecutive daily smears, three peaks were observed coinciding with the first day of menses, when the average was 26.2%, the 14th post menstrual day when the average was 33% and the 22nd day of the cycle when the mean was 28% (Fig. 2). The highest incidence of sex chromatin was on the 14th post menstrual day the mean value was 33%. The mean length of the cycle was 29 days.

Our results tend to implicate hormones as an extra-genetic factor related to the incidence of sex chromatin. Further proof is required to evaluate the role of hormones. Another observation of importance is the proportion of cells in which the sex chromatin appears. There is a marked variation in the incidence of sex chromatin reported by various investigators in buccal smears of the female and male. The standard value accepted for female genetic sex is 20%. All our subjects had values higher than the standard. We believe that this was probably due to differences in the manner of taking smears, in the staining techniques and the standards employed for deciding what is a scorable cell.

Since, in our present study, we tend to implicate hormones as an extra-genetic factor related to the incidence of sex chromatin, it is hoped that the use of tissue culture methods and bio-assays may help reveal explanations for this relationship.

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