

ENDOMETRIAL PATTERN AND ITS GLYCOGEN CONTENT IN CASES OF STERILITY

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SUMMARY

Premenstrual endometrial biopsies of seventy five sterility cases were studied for their morphological pattern and glycogen content as assessed histochemically. The results were compared with twenty five controls.

The morphological pattern showed increased incidence of proliferative phase (12%) in cases of sterility. Irregular endometrium and tubercular endometritis were seen in 4% cases.

The significant finding was deficiency of glycogen in secretory phase which was seen in 73% cases. Besides disparity in the distribution of glycogen in glands and stroma was also observed.

Introduction

Infertility is a world wide problem and its frequency varies from area to area. According to Sophia J. Kleegman, 1966, approximately one in every ten marriages is barren. In another 15% there are fewer children than desired or the interval between pregnancies is appreciably larger than planned.

Human endometrium is important in nidation and in nutrition of the young fertilised ovum (Myaema, 1977). Endometrial glycogen is believed to be the direct source of nutriment for the early conceptus from the time it enters the uterine cavity to the time it is directly supported by the maternal blood (Payne and Latour, 1955).

In the sterile patients the glycogen content of the endometrium is greatly reduced. Zondek and Stein, 1940, termed this condition "Gycopenia Uteri". Estimation of glycogen in the uterine mucosa of the second generative phase may thus serve to determine the cause of sterility especially in patients with normal menstruation (Zondek and Shapino, 1942).

The present study was conducted to evaluate the role of glycogen as assessed histochemically in sterility.

Material and Methods

The present study was conducted on seventy five patients presenting as sterility at the OPD of D.M.C., Ludhiana. These patients were examined and investigated by taking detailed history, clinical examination and routine investigations related to sterility. Patients

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with organic pelvic or systemic disease were excluded. The cases where husband's semen analysis was found defective were also excluded from this study.

Endometrial biopsy was obtained in premenstrual period and the tissue fixed in 10% formalin, blocked in paraffin and five micron thick sections were stained with H & E and PAS. Dating of the endometrium was done according to the criteria of Noyes *et al* 1950, into early, mid and late proliferative and early, mid and late secretory phases.

The glycogen present was graded as (Arzac and Blanchet, 1948).

0	Negative reaction
+	Very small granules
++	Coarse granules
+++	Small masses
++++	Large masses

Observations

Morphologically the patterns of the endometrium observed are shown in Table I.

Proliferative endometrium was seen in 12% cases in comparison with 4% controls. Tubercular endometritis and irregular endometrium constituted 1.34% and 2.66% of the cases while none of the controls showed such like pattern. Secretory activity was seen in 84% of cases and 96% controls.

Endometrial content of the glycogen in proliferative and secretory phase of cases and controls is shown in Table II and Table III.

TABLE II
Glycogen Content in Proliferative Phase

PAS	Cases (9)	Controls (1)
0	2	Nil
+	4	Nil
++	3	1
+++	Nil	Nil
++++	Nil	Nil

As is evident in Table II glycogen was either absent (2 cases) or seen as faint granules (4 cases). Three cases showed

TABLE I

S. No.	Endometrial Pattern	Cases	Controls
1.	Early proliferative	Nil	Nil
2.	Mid proliferative	9 (12%)	1 (4%)
3.	Late proliferative	Nil	Nil
4.	Early secretory	7 (9.33%)	3 (12%)
5.	Mid secretory	31 (41.33%)	14 (56%)
6.	Late secretory	25 (33.34%)	7 (28%)
7.	Irregular endometrium	2 (2.66%)	Nil
8.	Tb. endometritis	1 (1.34%)	Nil

TABLE III
Glycogen Content in Secretory Phase

PAS Scoring	Cases (63)		Controls (24)	
	Glands	Stroma	Glands	Stroma
0	Nil	Nil	Nil	Nil
+	9 (14.3%)	10 (15.8%)	Nil	2 (8.34%)
++	37 (58.7%)	35 (55.6%)	12 (50%)	11 (45.83%)
+++	15 (23.8%)	16 (25.4%)	12 (50%)	10 (41.66%)
++++	2 (3.2%)	2 (3.2%)	Nil	1 (4.17%)

moderate amount of glycogen. The only control seen in the series showed moderate amounts of glycogen.

Table III shows the glycogen content of the endometrium in secretory phase. It was seen as faint granules in 9 cases where as 37 cases showed moderate amounts of glycogen. 17 cases exhibited good amounts of glycogen. In comparison 12 controls had glycogen in moderate and 12 in good amounts.

Table IV shows the distribution of glycogen in glands and stroma in secretory phase.

TABLE IV
Distribution of Glycogen in Glands and in Stroma
in Secretory Phase

PAS Scoring	Cases	
	Number	Percentage
More in glands		
Less in stroma	20	31.7
Equal in glands and stroma	23	36.6
More in stroma		
Less in glands	20	31.7

There is disparity in the distribution of glycogen in glands and stroma.

Discussion

Endometrial curettage is an essential diagnostic step in the examination of sterile women. Morphologically endometrium differed in both cases and controls. Compared to 4% controls, 12% cases showed endometria in proliferative phase. Such like observations were also made by Hughes *et al*, 1950 (15%); Shetty, 1959 (14%); Tyagi *et al*, 1977 (23.13%) Sareen *et al*, 1984 (19%). Glycogen content of the endometrium in control was moderate i.e. ++ in proliferative phase whereas 66.66% cases showed

either no glycogen or glycogen in faint granules. In secretory phase glycogen was seen as ++ or +++ in 50% controls while 14.3% cases showed +, 58.7% ++ and 27% +++ and ++++ glycogen. Thus 73% cases demonstrated deficiency of glycogen.

Review of literature reveals variable reports. Some authors like Zondek and Stein, 1950; Hughes *et al*, 1949; Shahani *et al*, 1959; Shetty, 1959; Baveja *et al*, 1972; Tyagi *et al*, 1977; Moyaema *et al*, 1977 have shown definite deficiency of glycogen in secretory phase of endometrium while other workers like Sareen *et al*, 1984 have not found any significant deficiency of glycogen.

In the present study a correlation between endometrial glycogen content of glands and stroma has also been made. There is disparity between the distribution of glycogen in glands and in stroma in the secretory phase.

Morphological abnormalities like irregular endometrium and tubercular endometritis were noticed in three cases (4%). In similar studies conducted by Tyagi *et al*, 1977 and Sareen *et al*, 1984, incidence of these abnormalities has been reported as 8.63% and 2% respectively.

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