SCO's 1.5 times larger, SCA's 0.5 times, SA's was as same as normal's, MA's 1/3, and HA's and Hy's were same as postmenopausal's. E_2 production rate was cleary decreased in PCO group (less than 1/3 of normal ovaries's) per 1 cm^3 of ovarian mass. Positive correlation was noted in PCO group between LH but FSH level and ovarian volume.

LH/FSH was correlated to ovarian volume and E_2 level respectively, therefore, LH activity might has an role on enlargement of dysfunctional ovaries such as PCO. Pituitary response to LH-RH were varied because of their etiological factor. Two cases of HA- and Hy-ovary who showed no response to HMG test (150 IU for 3 days) hypogonadotropism and presence of primodial follicles ovulated by large amount of HMG (over 7500 IU) followed by HCG 10,000 IU. This indicated HMG stimulation test is not sufficiently enough to evaluate the ovarian failure and the importance of ovarian biopsy. Process of ovarian dysfunction was discussed and speculated.

86. Correlation between Gonadotropin Reserve Function and Ovarian Morphology in Patients with Primary Ovarian Failure

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In patients with twenty six ovarian failure determined by laparoscopic observation, LH-RH tests, measurements of plasma sex steroids and prolactin, clomiphene and hMG-hCG administration tests and peripheral blood karyotypings were performed in order to analyse the correlation between gonadotropin reserve function and ovarian morphology.

The definitions of primary ovarian failure are as follows: 1) primary or early secondary amenorrhea, 2) hypergonadotropic hypogonadism, 3) enough response to LH-RH, 4) Laparoscopy or exploratory laparotomy revealed atrophic or hypoplastic ovaries, 5) High incidence of sex chromosome anomaly.

Laparoscopies of all twenty six patients disclosed seven hypoplastic ovaries, eight atrophic ovaries, and eleven streak ovaries. Basal LH and FSH values and percent incease with LH-RH of three groups are,

	(MEAN±S.E.)	(MEAN±S.E.)
Hypoplastic	LH= 9.90±2.62 mIU/ml	% Increase: 379.42±119.91%
(n=7)	FSH= 11.86±2.17 〃	〃 : 143.53±13.15 〃
Atrophic	LH=119.74±15.80 〃	〃 : 213.90±33.63 〃
(n=8)	FSH= 98.91±14.17 〃	〃 : 81.01±13.89 〃
Streak	LH= 57.07±12.22 〃	〃 : 520.68±256.64 〃
(n=11)	FSH= 65.30±13.07 〃	〃 : 83.78±16.80 〃

According to these LH-RH data, it is probably possible to make diagnosis of hypoplastic ovary that is occasionally able to ovulate assorting from those of atrophic or streak anovulatory ovaries. Four patients, three in the hypoplastic group, one in the streak group, of Turner or Turneroid's syndromes were found. One of two ovulated patients in the hypoplastic group was administered totally about 3,000-4,000 in hMG (Humegon®) until ovulated with success. This case is thought to be so-called gonadotropin resistant ovary syndrome.

87. Studies of Ovarian Hormonal Pattern in Patients with PCO

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In order to investigate ovarian steroidogenesis in patients with PCO, peripheral and ovarian steroid hormones were compared. Ovarian bloods were obtained at operations from women with normal menstrual cycle and PCO patients.

There were no significant differences between normal and PCO in LH and FSH, estrone and estradiol levels, while the latter ovarian levels were higher than peripheral. Ovarian testosterone and 17α-hydroxyprogesterone were significantly higher than peripheral, especially in PCO. Ovarian testosterone in PCO were as high as 6 times in normal. In normal cases 4Δ-androstenedione levels were no differences between peripheral and ovarian. This suggests that circulating 4Δ-androstenedione are almost originated from adrenal cortex. In PCO, peripheral 4Δ-androstenedione levels were similar to those in normal, but ovarian 4Δ-androstenedione were very higher than in normal. This is caused by increasing 4Δ-androstenedione secretion from ovary of PCO.

From this study, the increase of both androgens and estrogens were observed in PCO, especially the former.

Whether the increase of androgens in PCO may be due to the changes of producing process of androgens or producing rate of androgens is remained to be classified.

88. Effects of Some Steroids on Estradiol Receptor Level on the Endometrium in Polycystic Ovary Sndrome

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In order to elucidate the endocrinological characteristics at the level of uterus of polycystic ovary syndrome (PCOS), the correlation between estrogen in blood and its receptor in the endometrium was investigated in the previous report. In most cases with PCOS estradiol levels were low, but there was no significant difference in estradiol receptor between PCOS and normal menstruating women. In some cases we noticed high level of serum estradiol had low level of estrogen receptor. Therefore we studied the effect of progesterone and testosterone on estradiol receptor.

Method: Estradiol receptor was measured by modified Mester's radioreceptor assay. Three fractions of estrogen, progesterone and testosterone were determined by radioimmunoassy (RIA).

Results: In PCOS the average estradiol level tended to be lower, comparing with the estrone level. Progesterone level was low, just similar to that in the normal follicular phase. Testosterone level showed over two times as high as the control.

In PCOS there is not significant correlation between estradiol and its receptor, while there seems to be the highur testosterone level, the lower estrogen level. Also we noticed the same tendency of progesterone to estrogen receptor. Thus testosterone and progesterone might suppress estrogen receptor in the endometrium.

89. Development of Rapid Radioimmunoassay for Total Serum Estrogen and Monitoring of Ovarian Response during HMG-HCG Therapy

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Ovarian response to HMG-HCG therapy was monitored by rapid RIA of serum estrogen (E) in order to improve the rate of ovulation with minimum incidence of adverse effects.

Twenty five patients with hypogonadotropic hypogonadism were treated with HMG-HCG or clomiphene-HMG-HCG.

Apparent ovulation, documented by basal body temperatures, occured in 70 of 90 treated cycles. In 32 cycles, of which serum E level just prior to HCG injection were less than 400 pg/ml, the rates of ovulation and pregnancy were 46.9 and 6.3%, respectively. In 30 cycles with serum E level between 400 and 800 pg/ml, the rates of ovulation and pregnancy were 90 and 13.3%. In 28 cycles with serum E level more than 800 pg/ml, the rates of ovulation and pregnancy were 100 and 14.3%, but hyperstimulation syndrome was observed in 10.7%. Ten pregnancies with tow triplets and one quadruplets occured in 10 of 25 patients, and the serum E concentrations just prior to HCG injection in 3 multiple pregnancies were 264, 680 and 1160 pg/ml.

Present data indicate that administration of HCG is recommended when the serum E concentrations reached 400 to 800 pg/ml. Monitoring of serum E levels can promise to reduce hyperstimulation, but cannot prevent multiple pregnancy.

90. Studies on the PGF as a Regulators of the Luteal Function

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There is considerable evidence to implicate $PGF_{2\alpha}$ as the uterine luteolytic hormone in several mammalian species but not in human.

The mechanism whereby $PGF_{2\alpha}$ causes regression of the corpus luteum is still under investigation. I have made details studies of the $PGF_{2\alpha}$ con-