4 out of 7 cases, the both maximum values in the follicular diameter and urinary LH were obtained on a same day. The change of mean follicular diameter was well correlated to the change of plasma estradiol. Progesterone level came to increase after the ovarian follicle eliminated.

The follicular growth in bilateral ovaries did not always occur alternatedly.

Furthermore we observed 8 amenorrheic women during HMG-HCG therapy. In 6 women of those who presumed as hypothalamic and pituitary insufficiency by LH-RH test the diameter was measured at 25.0 ± 7.6 mm, where as in 2 women who presumed ovarian insufficiency the follicular growth were unable to be observed by ultrasound technique.

303. The Study on Measurement of PO_2 and PCO_2 Values in the Uterine Muscles, Uterine Cavities and Uterine Tumors by Medical Mass Spectrometer

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The values of PO_2 and PCO_2 in the uterus were continuously in vivo determined by medical mass spectrometer (MEDSPECT MS 80), and they were recorded in 45 cases of myoma uteries, 26 carcinoma colli uteries, 6 malignant endometrial uteries and 20 normal uteries as a control.

The short type teflon-catheters were inserted into the uterine muscles, tumor of uteruses, uterine cavities and cervical canals.

Standard-gas bubling method was utilized in the caribration of measurring system. Mean values of PO_2 and PCO_2 in 45 cases of myoma uterie, were respectively 22.53 ± 5.32, 53.47 ± 5.13 mmHg. On the other hand, mean values of them in cases of cervical cancer were respectively 23.62 ± 5.61, 60.73 ± 7.6 mmHg, that of endometrial malignancy were 20.83 ± 0.98, 54.5 ± 3.67 mmHg and control was 28.5 ± 13.42, 52.11 ± 8.73 mmHg respectively. In the cases of abnormal uterus, the values of PCO_2 were higher than that of control. Particulary, in the case of cervical cancer, the values of PCO_2 was higher than that of control stigficantly.

A medical mass spectrometer was useful continuous in vivo measuarment of tissue gasses.

The tension of O_2 and CO_2 in uterine tissues could be estimated by PO_2 and PCO_2 in the uterine cavity or cervical canal.

This method was simple and non-invasive.

304. Availability of Contrast Enhancement in Gynecological Pelvic Computed Tomography

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The results of 260 computed tomography examinations with contrast enhancement are reviewed. Compared post-enhance CT findings with pre-enhance findings, the availability of contrast enhancement for reading findings is obtained at various gynecological disease. Moreover, in 58 cases, meglumine iothalamate concentration of serum was determined with an ultraviolet absorption spectrophotometric technique during contrast enhancement.

Contrast enhancement provides valuable information for differential diagnosis and clarifies relationship between ovarian tumor and uterus. It may also be beneficial in distinguishing endometrial adenocarcinoma from normal uterus as well as distinguishing ovarian adenocarcinoma from uterus.

It is recongnized correlation between serum concentration of meglumine iothalamate and an increase in attenuation values (EMI units) in normal corpus uteri ($Y=2.80X + 3.74$, $R=0.813$) and Myoma uteri ($Y=2.11X + 3.74$, $R=0.879$), respectively.

Intravenous contrast enhancement has been shown to be a useful adjunct in gynecological pelvic computed tomography.

305. The Monitoring of Fetal Breathing Movements Using Maternal Abdominal Skin Impedance Method

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Intra-uterine human fetal breathing movements by the usage of ultrasonic technique have been postulated and reported previously. Impedance method, which was more simpler than the ultrasonic method and not invasive, was utilized for recording of fetal breathing movements. Using the Impedance Plethysmograph (IMP 26 NIHON KODEN) and Beckmans skin electrodes, skin-impedance variations of third trimester pregnant women were monitored between the two points at intervals of 5 cm on the maternal abdomen, where rhythmic fetal thorax movements were visible. The small fetal respiratory impedance waves on the large maternal ones were clearly recorded. The frequence of maternal respiratory impedance waves were approximately 0.3 Hz. and that of fetal ones 1 Hz. When the maternal respiration stopped, only the fetal respiratory impedance waves were obviously recorded. In addition, the fetal breathing impedance waves from the maternal respiratory impedance waves by the invention of the impedance measurement and the specific management of impedance waves were separately obtained. By using this impedance method, it was concluded that this method was simple for investigators and non invasive for patients. Moreover fetal breathing movements could be monitored for a long time and the more detail on the pattern and frequency concerning fetal breathing movements would be elucidated.

306. Placental Aging Monitored by Ultrasonography

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Placental images were scanned and photographed by Octoson every 1 cm interval transversely or longitudinally, in the 134 cases from the first trimester to full term pregnancy. Placental maturation has been identified based on changes which occur in three separate zones (ie. fetal and maternal surface and internal substance) and segmentation. Using these four factores, placental configuration could be classified into 5 types, which were summerized on placental aging. In the early stage of pregnancy, type I is dominant, and type II or type III are usually dominant in the middle stage of pregnancy. In the final stage, type IV is dominant and type V is found in the most cases after the estimated due day. It is concluded that this typing method presents the change of placental aging in vivo. Histopathologically, it is suspected that the echogenic substance in the maternal surface is fibrin deposites and carcification on the chorionic villi.

307. Factors Associated with Pre-term Birth/Low Birth Weight Infant Birth and their Antenatal Predictions

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A perinatal morbidity prediction system, "perinatal Abnormality Screening Score (PASS)" which was developed by Takemura was evaluated. Factors associated with pre-term birth and low birth weight infant birth were compared with those present in term birth and non low birth weight infant birth respectively. These factors were included in this PASS. And multivariable discriminant analysis between preterm and term birth as well as low birth weight infant and non low birth weight infant birth was made with the use of PASS.

Pre-term birth and low birth weight infant birth were related to ante-gravidal abnormalities, intra-gravidal abnormalities and especially feto-placental abnormalities. When these abnormalities correlate with each other, it leads to preterm birth/low birth weight infant birth. Discrimination between preterm birth with the use of ante-gravidal abnormalities was not so efficient (true positive: 58.3%, discrimination efficiency: 0.16). In low birth weight infant birth the values were 56.4% and 0.25. But added with intra-gravidal abnormalities and feto-placental abnormalities true positive ratios were improved to 79.0% and 83.9% respectively. With these discriminant functions external cheks were undertaken. The results were favourable.

These multivariable discriminant analyses were valuable to predict pre-term birth/low birth weight infant birth antenatally.

308. Determination of Fetal Sexes by Ultrasonic Tomography