Prognosis of threatened early pregnancy

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The main problems in threatened early pregnancy are diagnostic ones. Due to the prevalence of the serious chromosomal anomalies in the tissues of spontaneous abortions the primary measure in the prognostic evaluation is the reliable differentiation between viable and non-viable pregnancies as early as possible.

Biochemical methods

Blood progesterone (P) and estradiol (E_2) during the first few weeks of pregnancy are mainly produced by corpus luteum. After the sixth week of amenorrhea, however, the function of the corpus luteum is decreasing and the P and E_2 production is delivered more from the trophoblastic tissue. Thus from the 6th - 7th week onwards, the P and E_2 levels reflect the hormonal capacity of trophoblastic tissue in the placenta.

Progesterone

In our material of 188 cases with bleeding between weeks of 6th to 20th (4) the first serum P value below the normal range predicted abortion in 93 % of cases, whereas normal values signified delivery in only 73 %. This difference, is mainly due to the commonness (28 %) of normal P values in the group of blighted ovum.

Estradiol

Pathological E_2 values in our material (4) signified abortion in 77 % of cases and normal levels, correspondingly, delivery in 79 %. In the cases of missed abortion, ectopic pregnancy and incomplete abortion the first E_2 value was inside the normal range only in two of 34 cases.

Human chorionic gonadotropin (hCG)

This protein hormone is also secreted from the trophoblastic tissue. While a positive result in the urinary pregnancy test indicates an approximate level of 0.5 IU/ml of hCG in plasma, the sensitivity limits of the new radioimmunological or radioreceptorassays is 5 - 6 mIU/ml.

BRAUNSTEIN et al. (1) examined the prospective value of serial hCG determinations, and correctly predicted 88.9 % of the abortions, and all of the ectopic pregnancies, from normal material. Many authors, e.g. SAXENA and LANDESMAN (6) have emphasized the significance of plasma hCG in suspected ectopic pregnancy, where low levels are typical. However, abnormally low levels indicate an abnormal pregnancy of some type, but whether it is a missed abortion, blighted ovum or ectopic pregnancy cannot be exactly differentiated by these determinations. In our material pathological levels of serum hCG correctly predicted abortion in 93 % of cases (4), whereas normal levels were shown by 74 % of the normal delivery cases. The first value was inside the normal range in 34 % of the blighted ovum

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cases.

Pregnancy-specific beta$_1$-glycoprotein (SP_1)

This protein hormone is synthesized in the syncytiotrophoblast of the placenta.

SCHULZ-LARSEN and HERTZ (7) observed that the significance of a single low SP_1 value in prediction of abortion was 89 %, and normal values signified delivery in 94 %. In the material of JANDIAL and coworkers (2) the correct prediction of delivery could be made in 75 % and that of abortion in 87 % by the determination of plasma SP_1, whereas the corresponding frequencies in our material were 83 % and 85 %.

Combinative value of biochemical markers

The simultaneous presence of subnormal values of hCG and E_2 in our material of 188 cases (4) signified a later miscarriage in 97 % of cases, that of hCG and P in 98 % and that of E_2 and P in 100 %. Three simultaneous normal values, on the other hand, predicted delivery only in 81 % of the cases.

Ultrasonic methods

The first intrauterine structure which is possible to demonstrate by ultrasonic B-scanning, is the gestation sac, from the 6th week onwards. From the 7th week onwards the fetal echo pattern can be observed inside the sac in normal intrauterine pregnancy. At the same time the detection of fetal life signs is possible by demonstrating the action of the fetal heart or fetal movements by A-, Time motion-, Doppler or real time techniques. In different material, 100 % reliability has been obtained at the 8th - 10th weeks.

In the ultrasonic diagnosis of pathologic early pregnancies the main interest is concerned with the reliable diagnosis of blighted ovum. By using the criteria of ROBINSON (5) blighted ovum was defined as a pregnancy which had a gestation sac volume of 2.5 ml or over at any examination, and fetal echoes absent, or, the sac was less than 2.5 ml in volume, but it failed to increase by at least 75 % over a period of one week. By these criteria the diagnosis of blighted ovum was not observed to be mixed with normal pregnancy in any cases.

Although some results have been presented about the value of ultrasound in the diagnosis of ectopic pregnancy the position of ultrasound in this diagnostic field is mainly elimination of the possibility of intrauterine pregnancy. A positive diagnosis of ectopic pregnancy by ultrasound alone is still the exception rather than the rule.

Supplementary information with the basic structural findings in ultrasonic examinations is obtained by the use of "dynamic" criteria in the evaluation of the outcome of pregnancy. If the anamnestic duration of pregnancy is not in discrepancy with time obtained by ultrasonic measurements, (estimation of the gestation sac diameter, crown rump length, biparietal diameter) the positive detection of fetal life can be 100 % reliable by

at least the 10th week. Negative findings reveale some form of pregnancy failure (blighted ovum, missed or incomplete abortion, ectopic or molar pregnancy) with full reliability from this week onwards. On the other hand, the detection of fetal life signs by the ultrasonic methods signifies in 87 - 93 % of cases a successful outcome for pregnancies complicated by bleeding (3). Thus it seems that if the pregnancy has developed up to the 8th to 10th weeks, and fetal echo patterns and life signs are detectable by ultrasound, the outcome is successful in appr. 90 % of the cases, despite symptoms of threatened abortion.

Conclusions

Owing to the wide and immediate information obtained by ultrasound, this diagnostic method can be ascertained as the primary one in the evaluation of early pregnancy failure. The interpretation of central ultrasonic findings has been markedly facilitaded by the introduction of the new real time equipment, especially in the detection of fetal life signs. Development in the hormonal area has been led to the introduction of specific methods in the determination of biochemical markers of the placental units. It seems until now, however, that these new biochemical methods can markedly improve the diagnostic capacities of ultrasound only in the early differentiation between the gravid and non-gravid cases and in a complement to the structural ultrasonic criteria before the full reliability of "dynamic" ultrasonic findings until the 8th - 10th weeks.

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