

Compression transvaginal elastography and ultrasound signs of miscarriage in the first trimester

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Objective

The aim of the study was to use transvaginal ultrasound scanning in combination with compression transvaginal elastography to diagnose and determine the most informative echographic markers of miscarriage in the first trimester in order to predict the outcome of pregnancy.

Methods

Materials and methods. 57 patients with symptoms of threatening spontaneous miscarriage at a period of 8-13 weeks who applied to the Women's Health department for examination in 2020-2022 were examined. Ultrasound scanning was performed on an expert-level LOGIQ E9 XDclear, GE (USA) and Elastography technology using a transvaginal sensor.

Results

The results of the study. For the first trimester of pregnancy, the following main echographic criteria of threatening spontaneous miscarriage were used, which were conditionally divided into three groups: 1. Echographic signs of pathology of extraembryonic structures: hypoplasia of the amnion, yolk sac and mismatch of the diameter of the fetal egg to the gestational term were detected in 6 (10.5%) pregnant women. Hypoplasia was considered to be the diameter of the amniotic cavity smaller by 8-10 mm from the initial gestation period on the 1st day of the last menstruation; chorionic hypoplasia was detected in 8 (14%) pregnant women. Normally, the maximum thickness of the chorion corresponds to the gestation period or is 2-4 mm behind it, fragmented chorion was detected in 2 (3.5%) pregnant women; low localization of the chorion was detected in 14 (24.6%) pregnant women. 2. Echographic signs of pathology of the embryo and fetal egg: deformed fetal egg, without a clear rounded configuration, was determined in 35 (61.4%) pregnant women; low location of the fetal egg occurred in 2 (3.5%) pregnant women. Retrochorial hematoma was detected in 12 (21%) pregnant women; fetal bradycardia (heart rate less than 90 beats per 1 min) was detected in 2 (3.5%) pregnant women; a lag in the growth rate of the coccygeal-parietal size (CT) was detected in 4 (7%) pregnant women. 3. Echographic signs of pathology of the cervix, myometrium and ovaries: local thickening of the myometrium (hypertonus) was detected in 20 (35%) pregnant women of the main group; fuzzy visualization in the ovaries of the corpus luteum was detected in 14 (24.6%) pregnant women; the size of the appendage, regarded as a cyst and exceeding 70 mm, was diagnosed in 5 (8.7%) pregnant women, shortening of the cervix less than 25 mm, expansion of the internal pharynx more than 10 mm and softening of the cervix according to the cervical elastography index (CEI) was detected in 7 (12.3%) pregnant women, which indicated the presence of isthmic-cervical insufficiency.

Conclusion

Our study allowed us to establish that if pregnant women had three or more ultrasound "markers" of miscarriage in the first trimester, miscarriage up to 12 weeks occurred in 15 (26%) cases, late spontaneous miscarriage from 13 to 22 weeks in 5 (8.8%) cases. Thus, for the diagnosis of miscarriage by transvaginal echography in combination with compression elastography, the most significant for predicting the outcome of pregnancy are echographic markers of pathology of the embryo, the fetal egg itself, extraembryonic structures and the state of the cervix. This will make it possible to further predict the course of pregnancy and monitor the effectiveness of conservation therapy.