

© Bulavenko O.V., Muntian O.A., Balabueva S.V., Bulavenko V.I.

UDK: 618.39/.2-07

Bulavenko O.V., Muntian O.A., Balabueva S.V., Bulavenko V.I.

Vinnitsa National Memorial Medical University of M.I. Pirogov, department of obstetrics and gynecology №2 (Pirogov St., 56, Vinnitsa, 21021, Ukraine)

FEATURES OF ULTRASOUND DIAGNOSTICS OF EARLY TERMINATION OF PREGNANCY IN WOMEN WITH RECURRENT MISSCARRIAGE

Summary. For today recurrent miscarriage is an actual problem of obstetrics. The frequency of abortion in early terms of pregnancy remains stable and fairly high. According to various authors, it ranges from 2% to 55%. The usual miscarriage of pregnancy is a polyethyologic symptom complex, the basis of which is often based on structural changes in the endometrium, infectious, endocrine, immunological and genetic factors in different combinations and ratios. But, despite the multifaceted diagnostic capabilities, the cause of recurrent miscarriage in almost 50% of cases is not found. Detection of the pathology of implantation and placenta in the early stages of pregnancy will enable timely treatment to preserve the pregnancy.

Key words: ultrasound examination, recurrent miscarriage, pulsation index, index of resistance, systole-diastolic ratio.

Introduction

Recently, the attention of doctors and researchers is drawn to the study of the features of the first trimester of pregnancy, as during this period there is a formation of the fetoplacental system, the laying of fetal organs and tissues, extra embryonic structures and prenatal organs, which greatly affects the further course of pregnancy. Pathology of these processes, namely implantation and placentation, leads to early termination of pregnancy and the development of later pregnancy complications. Nowadays recurrent miscarriage is an urgent problem of obstetrics. The frequency of abortion in early stages remains stable and fairly high. According to various authors, it ranges from 2 to 55% [1, 5]. In turn, the risk of termination of subsequent pregnancies increases with the increase of the number of spontaneous abortions [2, 3].

The absence of a decrease in the frequency of this pathology indicates the difficulties encountered in conducting of this category of women. According to J. Simpson (1997), in 25-57% of cases the etiology of abortion remains unclear. In this regard, in a significant number of women with recurrent miscarriage of pregnancy, the detection and treatment of violations occurs untimely, which has an adverse effect on the development of the fetus and the course of pregnancy.

The first trimester of pregnancy is often complicated by hemodynamic disorders, which leads to a violation of the processes of implantation of the fetal egg and the formation of placenta [1, 4]. The possibility of normal implantation of the fertilized egg and the development of pregnancy are largely depend on the functional state of the endometrium and the state of the circulatory system in the uterine arteries [5, 6]. We can determine pathology of the development of the placenta using Doppler examination of uterine arteries in the first trimester of pregnancy, which is characterized by abnormal blood flow and increased resistance in placental vessels [7].

In our time, despite the large number of works proving the high effectiveness of preconception training for women with recurrent miscarriage of pregnancy, most women in this category do not receive proper counseling, examination

and prophylactic treatment before the next pregnancy. That is why the main question remains the search of reliable methods of diagnostics of the state of developing placenta in the first trimester of pregnancy and introduction into the practical activity of the obstetrician-gynecologist.

The goal of the study was to evaluate the blood flow in the uterine blood vessels in the first trimester of pregnancy in women with recurrent miscarriages and to predict the risk of interruption or complications of the next pregnancy.

Materials and methods

The study was conducted on the basis of gynecological department VMKPB №2. The study included 88 women with a diagnosis of "recurrent miscarriage" which met the criteria for inclusion and exclusion. The control group included 50 women with a physiological course of pregnancy. Ultrasound studies were performed on 67 women in the main group (19 women had termination of pregnancy before ultrasound study). An ultrasound diagnostic system "MyLab", manufactured "Esaote", was used. Women in the main group were divided into three subgroups, depending on the age (<25 years; 25-35 years; >35 years).

Results. Discussion

In the main group, the age of pregnant women ranged from 23 to 41 years (mean = 30,6±2,2). Most of the patients were residents of the city. At the same time, 61% of them had an intellectual work (fig. 1).

We examined the blood flow in the right and left

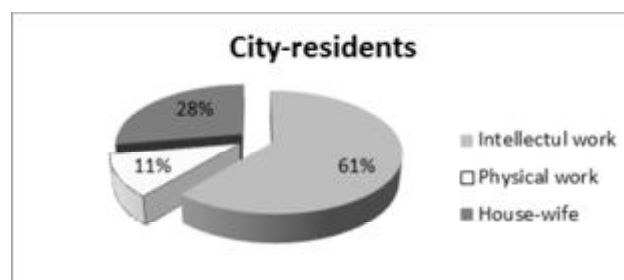


Fig. 1. The nature of the work of women city residents.

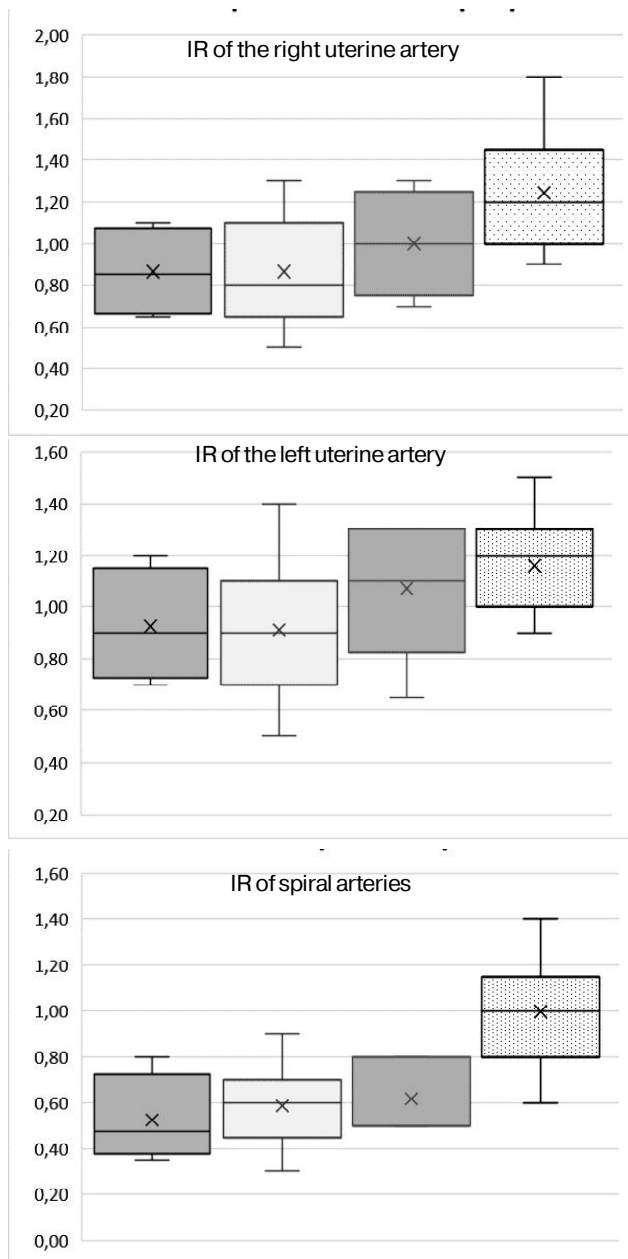


Fig. 2. Index of resistance in the right and left uterine arteries, and spiral arteries.

arteries and spiral arteries using ultrasound diagnostics. The following rates were calculated: pulsation index (PI), index of resistance (IR) and systole-diastolic ratio (SDR).

The results of our study indicate that the resistance index in the study group was lower than in women of the control group. IR in the right uterine artery in women <25 years old was 0.86 ± 0.24 ; in the group of women 25-35 years old - 0.86 ± 0.23 ; in the group of women >35 years old - 1.00 ± 0.3 ; in the control group - 1.25 ± 0.4 . IR in the left uterine artery in the group of women <25 years old was 0.9 ± 0.2 ; in the group of women 25-35 years old - 0.9 ± 0.22 ; in the group of women >35 years old - 1.1 ± 0.15 ; in the control group - 1.16 ± 0.2 . The IR in the spiral arteries in the group of women

<25 years was 0.53 ± 0.2 ; in the group of women 25-35 years - 0.59 ± 0.11 ; in the group of women >35 years - 0.62 ± 0.2 ; in the control group - 1.0 ± 0.15 (fig. 2). Blue rectangle - women <25 years; yellow one - 25-35 years; green rectangle >35 years, pink one - control group.

The pulsation index in women of the study group was significantly lower than in women of the control group. PI in the right uterine artery in the group of women <25 years was 2.05 ± 0.23 ; in the group of women 25-35 years old - 2.09 ± 0.16 ; in the group of women >35 years old - 2.05 ± 0.2 ; in the control group - 2.47 ± 0.17 . PI in the left uterine artery in the group of women <25 years was 2.1 ± 0.25 ; in the group of women 25-35 years old - 2.02 ± 0.12 ; in the group of women >35 years old - 1.92 ± 0.15 ; in the control group 2.17 ± 0.18 (fig. 3).

Pulsation index in uterine arteries reflects the degree of trophoblast invasion in the spiral arteries. This index can be used as a sign of the prediction of the pathological course of pregnancy.

Systole-diastolic ratios in the right uterine artery were not significantly different among women in the study and control groups. SDR in the right uterine artery in the group of women <25 years old was 7.5 ± 0.13 ; in the group of women 25-35 years - 7.18 ± 0.3 ; in the group of women >35 years old - 7.34 ± 0.25 ; in the control group - 7.22 ± 0.23 (Fig. 4). The SDR in the left uterine artery and the spiral arteries was also not significantly different among the women of the study group.

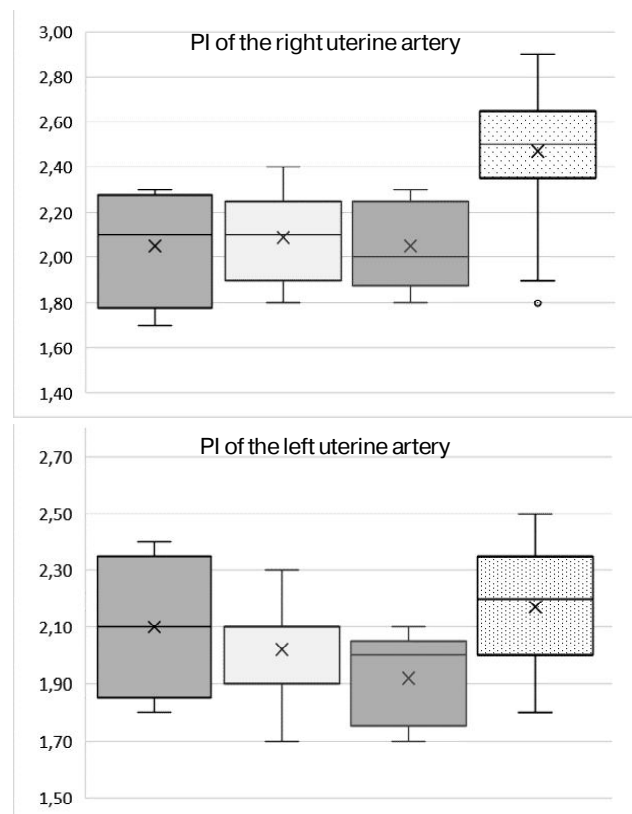


Fig. 3. Pulsation index in the right and left uterine arteries.

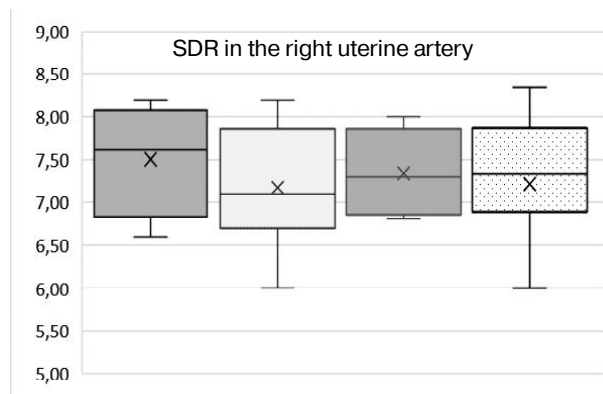


Fig. 4. Systole-diastolic ratio in the right uterine artery.

Conclusions and prospects for further research

Thus, according to the results of our study, a significant decrease in blood flow in the arteries of the uterus was found in women with a common miscarriage (in particular, the pulsation index and the index of resistance). Changes in pulsation indices in uterine and spiral arteries with the development of pregnancy reflect the degree of invasion of trophoblast and may serve as a prognostic sign for the development of primary placental dysfunction.

Prospects for further research are the comprehensive assessment of blood flow in the uterine vessels at the risk of miscarriage of pregnancy and placental dysfunction in early gestational periods.

List of Links

1. Жук, С.И., Калинка, Я.В. & Сидельникова, В.М. (2007). Невынашивание беременности: новый взгляд на старую проблему. *Здоров'я України*, 5(1), 37-38.
2. Клінічний протокол з акушерської допомоги "Невиношування вагітності". Наказ МОЗ України №624 (2008). К.: МОЗ України.
3. Крюкова, Н.И., Кулавский, В.А. & Крюков, А.А. (2012). Особенности формирования фетоплацентарного комплекса у беременных позднего репродук-
4. Милованов, А.П. & Савельев, С.В. (2006). Внутриутробное развитие человека. Руководство для врачей. - М.: МДВ, 2006. - 384.
5. Сичинава, Л.Г. & Панина, О.Б. (2004). Ультразвуковое исследование в первом триместре беременности: современное состояние вопроса. *Вопросы гинекологии, акушерства и перинатологии*, 3(5), 89-93.
6. Kingdom, J., Huppertz, B., Seaward, G. & Kaufmann, P. (2000). Development of the placental villous tree and its consequences for fetal growth. *Eur. J. Obstetr. Gynecol. Reprod. Biol.*, 92, 35-43.
7. Gilmez, O., Martínez, J.M., Figueras, F., Del Río, M., Borobio, V., Puerto, B. ... Vanrell, J.A. (2005). Uterine artery Doppler at 11-14 weeks of pregnancy to detect hypertensive disorders and related complications in unselected populations. *Ultrasound in Obstetr. & Gynecol.*, 5 (26), 490-494.

Булавенко О.В., Мунтян О.А., Балабуева С.В., Булавенко В.И.

ОСОБЛИВОСТІ УЛЬТРАЗВУКОВОЇ ДІАГНОСТИКИ ПЕРЕРИВАННЯ ВАГІТНОСТІ НА РАННІХ ТЕРМІНАХ У ЖІНОК ЗІ ЗВИЧНИМ НЕВИНОШУВАННЯМ

Резюме. На сьогоднішній день звичне невиношування вагітності являється актуальною проблемою акушерства. Частота переривання вагітності на ранніх термінах залишається стабільною та досить високою. За даними різних авторів вона становить від 2% до 55%. Звичне невиношування вагітності - це поліетіологічний симптомокомплекс, в основі розвитку якого часто лежать структурні зміни ендометрію, інфекційні, ендокринні, імунологічні та генетичні фактори у різних поєднаннях та співвідношеннях. Але, незважаючи на багатогранність діагностичних можливостей, практично у 50% жінок причину звичного невиношування вагітності вияснити не вдається. Виявлення патології імплантації та плацентації на ранніх термінах вагітності дасть можливість своєчасно проводити відповідне лікування, спрямоване на збереження вагітності.

Ключові слова: ультразвукове дослідження, звичне невиношування вагітності, пульсаційний індекс, індекс резистентності, систоло-діастолічне співвідношення.

Булавенко О.В., Мунтян О.А., Балабуева С.В., Булавенко В.И.

ОСОБЕННОСТИ УЛЬТРАЗВУКОВОЙ ДИАГНОСТИКИ ПЕРЫВАНИЯ БЕРЕМЕННОСТИ НА РАННИХ СРОКАХ У ЖЕНЩИН С ПРИВЫЧНЫМ НЕВЫНАШИВАНИЕМ

Резюме. На сегодняшний день привычное невынашивание беременности является актуальной проблемой акушерства. Частота прерывания беременности на ранних сроках остается стабильной и достаточно высокой. По данным разных авторов, она составляет от 2% до 55%. Привычное невынашивание беременности представляет собой полиэтиологический симптомокомплекс, в основе развития которого часто лежат структурные изменения эндометрия, инфекционные, эндокринные, иммунологические и генетические факторы в разных сочетаниях и соотношениях. Но, несмотря на многогранность диагностических возможностей, практически у 50% женщин причину привычного невынашивания беременности выявить не удается. Выявление патологии имплантации и плацентации на ранних сроках беременности даст возможность своевременно проводить соответствующее лечение, направленное на сохранение беременности.

Ключевые слова: ультразвуковое исследование, привычное невынашивание беременности, пульсационный индекс, индекс резистентности, систоло-диастолическое соотношение.

Reviewer - MD PH, prof. Dzsis N.P.

The article came to the editorial office 5.06.2017

Bulavenko Olga Vasilivna - Doctor of medical sciences, Professor, Head of the department of obstetrics and gynecology №2 of Vinnitsa National Memorial Medical University of M.I.Pirogov; +38(067)6231671

Muntian Olga Anatolivna - assistant of the department of obstetrics and gynecology №2 of Vinnitsa National Memorial Medical University of M.I.Pirogov; olgamuntyan1987@gmail.com

Balabueva Serafima Volodymyrivna - Dr. Ph. of the department of obstetrics and gynecology №2 of Vinnitsa National Memorial Medical University of M.I. Pirogov, +38(097)4394754

Bulavenko Valeria Igorivna - student of Vinnitsa National Memorial Medical University of M.I. Pirogov; remedivin@gmail.com