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TNF-α and TNF-R-1 LEVEL IN PREGNANCY WITH ECOTOPIC PREGNANCY

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Abstract

The aim of our work was to study the relationship of tumor necrotic factor and receptor 1 to tumor necrotic factor in physiological uterine pregnancy in the first trimester and in pregnant women with ectopic pregnancy who received different doses of cytostatic methotrexate for its treatment.

Methods and materials

We analyzed the results of special research methods and examined 30 pregnant women with advanced uterine pregnancy in the first trimester and 40 pregnant women with advanced ectopic pregnancy treated with methotrexate, depending on the dose of methotrexate patients were divided into 2 groups of 20 women. The first group (M1) received 75-100 mg (based on kg of weight) of methotrexate intramuscularly, and the second group (M2) received methotrexate at a dose of 75-100 mg twice after 7 days.

Research results

In healthy pregnant women with physiological pregnancy for 3-4 weeks, the level of TNF-α in blood neutrophils was within 2.02 ± 0.16 ng / ml and in pregnant women with ectopic pregnancy - 2.64 ± 0.19 ng / ml. In the M1 group, TNF-α level was slightly higher (5.49 ± 0.24 ng / ml, $p < 0.01$) than in the group of women with ectopic pregnancy before treatment (2.64 ± 0.19) ng / ml, whereas in the methotrexate (M2) reintroduction group this

indicator increased almost 4 times (10.30 ± 0.26 ng / ml) and in the M1 group almost 2.3 times (5.49 ± 0.24) ng / ml). The number of activated TNF-R1 neutrophils in the M1 group was (11.16 ± 0.30) ng / ml, versus (16.26 ± 0.43) ng / ml in the M2 group ($p < 0.05$).

Conclusions

Neutrophil blood cells are sensitive cells of the body to study the assessment of the depth of action of cytostatic at the body level as a whole.

Indicators of tumor necrotic factor and receptor 1 tumor necrotic factor can be used as a marker of activity of cytotoxic action of different doses of methotrexate for the treatment of progressing ectopic pregnancy.

Key words: ectopic pregnancy; methotrexate; tumor necrotic factor and tumor necrotic factor receptor 1

Introduction. As a result of surgical treatment of ectopic pregnancy, 50-80% of patients have impaired reproductive function, and the frequency of recurrent ectopic pregnancies is 7 -17%. [3, 5, 6]. According to the literature, conservative treatment of progressive PV with methotrexate under the control of the level of chorionic gonadotropin leads to complete destruction of the fertile egg [1, 2, 4].

The nature and severity of pathomorphological changes in the structure of liver cells, endometrium, trophoblast, blood cells are universal and depend on the intensity and nature of the damaging effect on them. The first, most vulnerable link is neutrophil blood cells, which are one of the most sensitive cells in the body and available for in vivo study of cytostatics [7, 8, 9]. Given that neutrophils are constantly circulating between the blood and tissues, it can be assumed that the state of blood neutrophils reflects the totality of cytostatic effects at the body level, which allows us to assess the depth of cell damage as a whole. That is why neutrophils became the object of our study.

Priority functional properties of neutrophils led us to determine their role in the activation of tumor necrotic factor and receptor 1 to tumor necrotic factor, as a marker of the process of cytotoxic action of different doses of methotrexate for the treatment of progressing ectopic pregnancy.

The aim of our work was to study the relationship of tumor necrotic factor and receptor 1 to tumor necrotic factor in physiological uterine pregnancy in the first trimester and in pregnant women with ectopic pregnancy who received different doses of cytostatic methotrexate for its treatment.

Methods and materials

We analyzed the results of special research methods and examined 30 pregnant women with advanced uterine pregnancy in the first trimester and 40 pregnant women with advanced ectopic pregnancy treated with methotrexate, depending on the dose of methotrexate patients were divided into 2 groups of 20 women. The first group (M1) received 75-100 mg (based on kg of weight) of methotrexate intramuscularly, and the second group (M2) received methotrexate at a dose of 75-100 mg twice after 7 days. The criteria for the use of methotrexate were: the diameter of the fruiting egg is not more than 3.5 cm in the uterine appendages according to ultrasound and the level of β-HCG is not more than 3000 IU/l.

Hormonal studies of serum for the content of placental protein (chorionic gonadotropin (HCG) and individual cytokines (tumor necrotic alpha factor (TNF-α), receptor R1 to tumor necrotic factor alpha (R1-TNF-α)) were carried out using commercial test systems "Hema" (Czech Republic), "Human GmbH" (Wiefbaden, Germany) according to the attached instructions on the enzyme analyzer "Stat Fax 303 Plus" (USA).

Results

In healthy pregnant women with physiological pregnancy for 3-4 weeks the level of TNF-α in blood neutrophils was in the range of 2.02 ± 0.16 ng / ml and in pregnant women with ectopic pregnancy - 2.64 ± 0.19 ng / ml. At the same time, the indicators in the subjects with uterine pregnancy and ectopic pregnancy practically did not differ (P> 0.05).

A similar trend was accompanied by changes in the blood levels of pregnant women TNF and TNF-R1 .

Analyzing the levels of TNF-α and TNF-R1 in these patient groups, we found similar changes. Thus, in the M1 group, TNF-α level was slightly higher (5.49 ± 0.24 ng / ml, p <0.01) than in the group of women with ectopic pregnancy before treatment (2.64 ± 0.19) ng / ml, whereas in the methotrexate (M2) re-introduction group this indicator increased almost 4 times (10.30 ± 0.26 ng / ml) and in the M1 group almost 2.3 times (5.49 ± 0,24 ng / ml).

For a deeper study of the role of the TNF-α system by cytofluorometric method, the number of neutrophils carrying membrane receptors of the first type (TNF-R1) was determined. Today, the activation of first-type receptors on neutrophil membranes is a universal method of controlling cellular homeostasis. The sequence of cytotoxic reactions induced by various pathogenic factors on the cell is realized by the activation of TNF receptors of the first type. [7].

According to the resalts, the number of activated TNF-R1 neutrophils in the M1 group was (11.16 ± 0.30) ng / ml, versus (16.26 ± 0.43) ng / ml in the M2 group (p <0, 05). High

levels of activated receptors for cervical neutrophil tumor necrotic factor can be regarded as an adaptive response to TNF-α activation, which is indirectly linked to receptor programmed cell death. Therefore, it can be assumed that the activation of degenerative factors occurring by neutrophils corresponds to the severity of changes in the structures of the ectopic placental bed trophoblast when using different doses of methotrexate.

The results obtained indicate that early apoptosis of neutrophils does not depend on the localization of pregnancy. It can be assumed that neutrophils, which by their nature play a key role in maintaining local immunity and are the first to respond to antigens, are not capable of diagnosing ectopic pregnancy as alien when the trophoblast ectopic pregnancy is donated to the uterine wall. The body does not perceive this pregnancy as pathological, so it does not work one of the main mechanisms of protection - the activation of tumor necrotic factor.

The sequence of cytotoxic reactions induced by methotrexate as a cytotoxic pathogenic factor per cell is realized by the activation of TNF receptors of the first type. The pathological permeability of the membrane triggers the cytokine complex cascade, activates a high level of apoptosis processes.

Conclusions

Neutrophil blood cells are sensitive cells of the body to study the assessment of the depth of action of cytostatic at the body level as a whole.

Indicators of tumor necrotic factor and receptor 1 tumor necrotic factor can be used as a marker of activity of cytotoxic action of different doses of methotrexate for the treatment of progressing ectopic pregnancy.

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