Growth and differentiation factors during pregnancy associated with hysteromyoma

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Objective

Uterine fibroids (UF) is the most common disease of the female reproductive system, accompanied by a high percentage of various complications. Modern understanding of the pathogenetic factors of UF allows us to determine the significant role of growth factors and their receptors. In modern literature there is no data on the levels of expression of a change of growth factors and differentiation of MM in pregnancy. We aim to assess the growth and differentiation factors during pregnancy which are associated with hysteromyoma.

Methods

We studied the level of growth hormone (GH), placental growth factor (PLGF), differentiated growth factor (GDF15), insulin-like growth factor 1 (IGF1) and protein 1 binding insulin-like growth factor (IGFBP1), urea and uric acid in two groups of patients. Group 1 (study group) consisted of 101 patients for whom pregnancy was associated with multiple MM, with the largest node size greater than 5 cm. Group 2 (the control group) consisted of 64 patients without MM. Inclusion criteria were presence of multiple UF according to ultrasonography, with interstitial, interstitial-subserous and subserous localization, delivery at 38 weeks or more by caesarean section, singleton pregnancy and the patient's consent to participate in the study. Exclusion criteria included patients with specific infectious diseases (HIV, syphilis, hepatitis B and C, tuberculosis), single-node fibroids.

Results

The level of PLGF in Group 1 was 17.6% higher compared to Group 2 (3.06 ± 1.56 pg / ml, and- 2.52 ± 1.14 pg / ml respectively). The level of GDF15 in Group 1 was 19% lower compared to Group 2 (187.1 ± 125 pg / ml, and - 231.2 ± 213.8 pg / ml respectively). There were no significant differences in the levels of PLGF and GDF15 between the patients in the groups. The level of IGF1 was 249.1 ± 113.8 ng / ml in Group 1, and - 292.1 ± 134 ng / ml in Group 2. No significant differences were detected (p> 0,05). The level of IGFBP1 averaged 15.73 ± 13.57 ng / ml in Group 1, and - 10.56 ± 5.42 ng / ml in Group 2; p <0.05. There was a strong correlation between IGFBP1 levels and the growth of the myomatous node (parametrically: r = + 0.44, p = 0.003, nonparametrically: r = + 0.448, p = 0.001 - the criteria are consistent, N = 14). For women of both groups, there is a virtually identical negative relationship between IGF1 and IGFBP1. The correlation coefficients for Group 1 are r = -0.5 (nonparametric, p = 0.082 - close to the conditional boundary of statistical significance) and r = -0.47 (parametric; p = 0.1 - close to the conditional boundary of statistical significance; N = 32), and for Group 2 r = -0.35 (non-parametric, p = 0.006) and r = -0.22 (parametric, p = 0.087 - close to the conventional statistical significance boundary, N = 64). Thus, the inverse relationship between IGF1 and IGFBP1 with UF is preserved, but the IGFBP1 level is increased and IGF1 is not. Changes in the levels of uric acid were detected in women with UF in comparison to the control group; 6.67 (4.63-7.42) mg / dl and 4.81 (4.15-5.8) mg / dl respectively; p = 0.04 and normal in the study group (p = 0.2), but a nonparametric comparison criterion, the Mann-Whitney test, was used to reduce the risk of the first kind of error, the differences were statistically significant (p = 0.021). At the same time, the level of uric acid in the blood of women and newborns is positively correlated with a high degree: in the first group, r = + 0.76 (p = 0.007), and in the third group, r = + 0.79 (p <0.001). detected changes in correlation between the levels of uric acid in the first and IGF1 group. The level of uric acid in the blood of women correlated with IGF1 in both groups, but in completely different ways. In Group 2, it was weakly positive [r = + 0.24, p = 0.06 - the result at the border of conditional statistical significance; Parametric (the result of its application is given) and the nonparametric criteria were agreed. In Group 1 it is medium negative [r = -0.53, p = 0.06; parametric (shows the result of its use) and non-parametric criteria agreed]. These differences between the correlation coefficients were statistically significant (p <0,05). Consequently, for patients without UF, there is a close relationship between the levels of IGF1 and uric acid, which varies but does not disappear in the

control Group. In pregnant women with UF we detected a statistically significant increase in the levels of IGFBP1 and uric acid. Thus, a decrease in IGFBP1 and an increase in the level of uric acid in the blood of women can be a biochemical marker of UF growth during pregnancy. There were no statistically significant differences in the levels of IGF1, PLGF and GDF15 in maternal blood.

Conclusion

It was revealed that IGFBP1 and uric acid in maternal blood are significantly important biochemical markers of uterine fibroid growth during pregnancy. In contrast, the levels of hormone GH, PLGF, GDF15 and IGF1 have significant differences in women with multiple uterine fibroids.