Resistance of uterine radial artery blood flow is positively correlated with peripheral blood NK cell fraction in patients with unexplained recurrent spontaneous abortion

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목적: To evaluate whether increased peripheral blood inflammatory immune cell can induce decrease of uterine blood flow in patients with unexplained recurrent spontaneous abortion (RSA).

방법: Twenty-one pregnant women between 5 to 7 gestational weeks with a history of unexplained RSA included in this study. 21 normal pregnant women between 5 to 7 gestational weeks without history of infertility and/or RSA included as a control. Peripheral blood NK cell (CD3-/56+) fractions among peripheral blood monocyte (PBMC) were checked by flow cytometry. Uterine color-pulsed Doppler trans-vaginal ultrasound for evaluation of uterine radial artery resistance index (RI) was done at the same days of blood sampling for evaluation of pbNK cell fraction. Uterine radial artery resistance index (RI) compared between study and control group. After then, uterine radial artery RI was compared between high pbNK cell above 12% among PBMC and normal pbNK cells. Correlation between pbNK cell fraction to uterine radial artery RI was also evaluated.

결과: Uterine radial artery resistance index (RI) was not significantly different between study (0.6 ± 0.1) and control (0.5 ± 0.1) groups. Otherwise, pbNK cell fractions among PBMC displayed strong positive correlation to uterine radial artery RI (Pearson’s correlation coefficient r=0.747, p=0.000).

결론: Increased peripheral blood NK cells can evoke decreased uterine blood flow by their pro-inflammatory action on micro vascular structure such as uterine radial artery. This can be a one causative mechanism of inducing spontaneous by increased NK cells. But, larger scaled study is needed for clarify our results.

Efficacy of prednisolone and/or low molecular weight heparin treatment in patients with unexplained recurrent spontaneous abortion

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목적: To evaluate the efficacy of prednisolone (PDS) and/or low molecular weight heparin (LMWH) treatment in patients with unexplained recurrent spontaneous abortion.

방법: Forty-one pregnant women between 5 to 7 gestational weeks with a history of unexplained RSA were included in this study. 39 normal pregnant women between 5 to 7 gestational weeks without history of RSA were included as control. To evaluate the status of uterine blood flow, uterine color-pulsed Doppler trans-vaginal ultrasound for evaluation of uterine radial artery resistance index (RI) was performed. In RSA group, peripheral blood NK cell % among peripheral blood monocyte (PBMC) was analyzed to investigate the alloimmune cause of RSA. In RSA patients who elevated uterine radial artery RI above 0.5, low molecular weight heparin 40 to 80 mg was injected daily via subcutaneously by their body weight. In RSA patients with elevated pbNK above 12.1% among PBMC, prednisolone (PDS) 10mg/daily per oral route was administrated. One or two weeks after beginning of low molecular weight heparin and/ or PDS administration, uterine radial artery RI and pbNK cell % were rechecked in RSA group. Uterine radial artery RI and the ratio of pregnancy sustained to at least 12 gestational weeks were compared between RSA and normal control. In RSA patients who elevated uterine radial artery RI or pbNK cell %, the change of uterine radial artery RI and pbNK fraction before and after treatment were analyzed.

결과: The mean RI in RSA group (0.59 ± 0.16) was significantly higher than that of normal control (0.53 ± 0.11) (p=0.029). In RSA patients who elevated uterine radial artery, the RI the uterine radial artery before treatment (0.65 ± 0.13) was significantly decreased after 1-2 weeks treatment of low molecular heparin (0.52 ± 0.13) and the difference was statistically significant (paired t test, p=0.000). Also, the pbNK % before treatment (18.7 ± 7.3) was significantly decreased after 1-2 weeks treatment of PDS (14.7 ± 8.0) and the difference was statistically significant (paired t test, p=0.022) too. The pregnancy outcome which defined as ratio of successfully sustained pregnancy above 12 gestational weeks was 90% (27/30) in RSA groups and was not statistically different than that of normal control (89.7%, 35/39) (chi square, p<0.05)

결론: Treatment of LMWH and/or PDS seems to be effective in ensure favorable pregnancy outcome in patients with unexplained spontaneous abortion who elevated uterine radial artery RI and/or pbNK cell % by the manner of increase uterine blood flow and decrease pbNK cells. But, larger scaled study was needed to clarify our conclusion.