Percentages of CD$^{56+16-3-}$ cell in decidual and peripheral lymphocytes of recurrent abortion

Yamamoto T, Takahashi Y, Kuno S, Mori H
Dept. of Obstet & Gynecol, Teikyo Univ School of Medicine

Introduction
CD$^{56+16-3-}$, which is a special type of NK cells, is a main population of decidual lymphocytes. Recently, this NK cell is important for maintaining of normal pregnancy. In order to study the mechanism of unexplained recurrent abortion, maternal peripheral and decidual natural killer cells (CD$^{56+16-3-}$ cell) were evaluated in chromosomal-normal abortion.

Materials and Methods
Maternal peripheral blood, trophoblast and decidua were taken from 8 cases of missed abortion and 7 cases of recurrent abortion. Maternal peripheral lymphocytes were taken from peripheral blood using Ficoll gradient method. Decidual lymphocytes were separated from decidual tissues using Petrovic’ method (1994). Chromosomal analysis was performed using trophoblasts. Labeling of cells with monoclonal antibody was performed using standard technique.

Briefly, 1.0 x 10$^6$ cells were incubated with monoclonal antibodies for 30 min. at 4 °C, washed 3 times with PBS. Immunofluorescence reactivity was determined by flow cytometry (FACS Caliber, Becton Dickinson) analyzing 10$^4$ cells in each sample. CD$^{56+16-3-}$ cell were detected using fluorescent labeled antibodies such as CD56PE, CD16FITC and CD3PerCP.

Results
The percentages of CD$^{56+16-3-}$ cell of peripheral lymphocytes in first missed abortion and recurrent abortion were 1.7 ± 1.0% and 3.2 ± 3.7%, respectively. There was no statistical difference. In decidua, the percentages of CD$^{56+16-3-}$ cell of decidual lymphocytes
in in first missed abortion and recurrent abortion were $41.1 \pm 19.2\%$ and $17.5 \pm 8.1\%$, respectively. The percentages of $\text{CD}^{56+16-3}$ cell in decidua of recurrent abortion was lower than that of first missed abortion ($P=0.017$). Any positive correlation was not found between percentages of decidual and peripheral lymphocytes.

Discussion

Many causes of recurrent abortion have been known. There are the abortion cases which fetal growth is prevented from developmental disorder of the fetus itself and which the maternal responses are within normal. Therefore, when we study spontaneous abortion, it is important to think whether fetal abnormalities such as chromosome are present or not. In this study, we select the abortion cases without fetal chromosomal abnormality. The decidual $\text{CD}^{56+16-3}$ cell may play a role of maintenance of pregnancy. $\text{CD}^{56+16-}$ NK cells secrete various cytokine, including M-CSF and GM-CSF, which are thought to promote placental growth. Decreased percentages of decidual $\text{CD}^{56+16-3}$ cell in recurrent abortion with normal chromosome may depend on abnormal immune response at maternal side. Recently Lachapelle reported, at secretary phase of non-pregnant women, recurrent aborter had a lower percentage of $\text{CD}^{56+16-}$ cells of endometrial lymphocytes than normal fertile controls. The decrease in $\text{CD}^{56+16-}$ NK cell observed in recurrent aborters may therefore be associated with an altered cytokine expression profile, and with failure to provide the conceptus with the proper growth environment.

Reference
2. Saito S. Int. Immunol. 5:559, 1993