

Natural Killer cells

Natural killer (NK) cells are effector lymphocytes of the innate immune system that control several types of tumors and microbial infections by limiting their spread and subsequent tissue damage. NK cells are present in the endometrium of non-pregnant women and help, in conjunction with the various hormonal stimuli, in the normal process of ovulation and reproduction. After ovulation the levels of endometrial NK cells are increased dramatically.

Many studies have shown that therapies designed to reduce the levels of NK cells are beneficial in patients with reproductive problems that are related to immunology. During pregnancy, NK cells in the endometrium have greater toxicity and produce large quantities of TNF, a protein which is able to kill the placental and fetal cells. When the growth or activation of NK cells is abnormal, this might lead to miscarriages and fail of implantation. Uterine NK cells (uNK cells) are present in large numbers in the wall of the womb at implantation, especially in the early months of a pregnancy.

The prevalence of raised uNK cells in women with implantation failure and recurrent miscarriage is 28%. Testing for NK cells activity involves a simple blood test to measure their number and activation. This test has a therapeutic approach. The treatment is given intravenously 4-7 days prior to the egg collection under medical supervision and repeated pregnancy tests (if IVF is performed). The administration can be applied again after the positive pregnancy test results and in some cases after the detection of embryonic heart beat by ultrasound. The treatment against NK cells might also be administered to gestation with natural conception if the doctor finds it necessary.