OVARIAN REJUVENATION

A technique in which growth factor-bearing platelets is introducing directly into the ovaries and might trigger a resurgence in oocyte production.

About Ovarian rejuvenation

An ovarian rejuvenation is a new technique used to transform stem cells into healthy eggs by introducing growth factor-bearing platelets into the ovaries.

For many years, ovarian biology has been based on the dogma that oocytes reserve in female mammals included a finite number, established before or at birth and it is determined by the number and quality of primordial follicles (an ovarian follicle consisting of an ovum enclosed by a single layer of cells, a step in an egg development) developed during the neonatal period. The restricted supply of oocytes in adult female mammals has been disputed in recent years by supporters of neo-oogenesis (the production of an egg) after birth.

Recent experimental data showed that ovarian surface epithelium and cortical tissue from and human were proved to contain very low proportion of cells able to propagate themselves, but also to generate immature oocytes in vitro or in vivo.

Ovarian rejuvenation itself has two steps. First it is neccessary to isolate platelet-rich plasma (PRP) by subjecting a tube of blood to centrifugation in order to separate white cells and platelets. Procedure of blood separating last less than an hour.

Than PRP is injected into a patient's ovaries specifically into the cortical tissue. PRP is supplied with proteins rich in growth factors and stem-cell chemotactants (induces an organism or a cell to migrate toward it). Woman is under anesthesia, not longer than 10 minutes. Injection is performed nonsurgically and it is controlled by transvaginal ultrasound.

After one hour of rest, woman can be discharged to return home accompanied by a family member or friend.

Success or failure factors

The ovarian rejuvenation can be performed anytime on women with or without periods.

Procedure is ideal for menopausal or perimenopausal women, which has low reserve of eggs, with low levels of Anti-Mullerian hormone (AMH) or for women with premature ovarian failure (the loss of function of the ovaries before age 40).

The succes of therapy is controlled with measurement of AMH level progress, follicle stimulating hormone (FSH), luteinizing hormone (LH) and estradiol levels during 1-3 moths. The rise of these hormones is a good sign that the ovarian rejuvenation is working. Every person's situation may be different and it has to be considered, that the effect of growth factors could take 3-6 monts of observation.

Follicular renewal is also dependent on support of circulating blood mononuclear cells (a type of white blood cells). They induce intermediary stages of meiosis (a specialized type of reproductive cell division) in newly
emerging ovarian germ cells and stimulate follicular growth and development.

A pretreatment of ovarian stem cells (OSC) cultur with mononuclear cells collected from blood of a young healthy fertile woman may cause differentiation (the process by which cells or tissues change from relatively generalized to specialized kinds, during development) of OSCs into developing germ cells.

Complications

Complications of this procedure are similar to egg retrieval during procedure of in vitro fertilization (IVF): post-procedure pain, fever, and in rare situations internal bleeding, which may require hospitalization.

Prognosis

There are evidences, that this procedure leads to improvement in hormone levels and successful pregnancies.

Sources

"Ovarian adult stem cells: hope or pitfall?" [https://ovarianresearch.biomedcentral.com/articles/10.1186/1757-2215-7-71] — by Gheorghisan-Galateanu et al. licensed under CC BY 4.0