CHAPTER 14

HORMONAL AND BLASTOCYST MEDIATED ENDOMETRIAL DIFFERENTIATION?

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What is endometrial receptivity?

Endometrial receptivity refers a term that includes all requirements for a successful embryo implantation. It only involves a limited period of time when the endometrium reaches a successful state for adhesion, attachment and invasion processes (1).

When endometrium becomes suitable for implantation?

This period is called window of implantation (WOI). WOI can be detected about 19-21th days of the menstrual period during an IVF cycle (2).

Which main factors affect endometrial receptivity?

There are a number of hormonal, paracrine and blastocyst mediated factors that are required for endometrial implantation (3).

Is there any morphologic change in receptive endometrium?

Decidualization can be defined as morphological and biochemical reorganization of the endometrium to achieve successful embryo implantation. Formation of pinopodes on the apical surface of endometrial cells is the most important morphological change during the generation of the receptive uterus. In literature it is claimed that patients who experience infertility due to recurrent pregnancy loss may have defects fail to produce pinopodes (4).

What is the effect of progesterone on endometrial receptivity?

High progesterone is associated with low implantation rate (5).

What is the accepted threshold value on the day of hCG administration for progesterone during an IVF cycle?

A cut-off value more than 1.5 ng/mL of progesterone on the day of hCG administration during an IVF cycle, reduces pregnancy rates (6).

223-3p in the endometrium. Moreover PP242 is a mTOR inhibitor which induces the expression of Muc1, miRNA200a, and miRNa223-3p on the contrary inhibits the expression of LIF. Additionally both dexamethasone and PP242 block the ERK1/2-mTOR pathway in the endometrial cells (19).

What is the effect of mineralocorticoids on endometrial receptivity?

WOI can be affected from mineralocorticoids. The use of fludrocortisones increases the expression of LIF, HB-EGF, Msx.1, miRNA Let-7a, ERK1/2, and mTOR in the epithelial endometrium. These diverse genes and proteins play important role uterine receptivity. In literature authors suggest that fludrocortisone have increased endometrial receptivity via generating the genes that are related with endometrial receptivity and switch on ERK1/2-mTOR pathway (20).

Is there any link between blastocyst and endometrium?

There is a dialogue between blastocyst and endometrium via human chorionic gonadotropin (hCG) and endometrial LH/hCG-R receptor. It is known that hCG converts and creates endometrium to the deciduas which is necessary for implantation and tolerance of the embryo. Today authors accepted that LH/hCG-R expression is a marker of endometrial receptivity (21).

Do blastocycts release factors that alter endometrial adhesion and gene expression?

Blastocysts those are capable of implanting (BCI) release factors which increase important mRNA levels for implantation more than 1.5 fold compared with inefficacious blastocysts those cannot be implanted to the endometrium. It is showed that SPARC and Jagged 1 levels decrease and SNAI 2 and TGF-B1 increase. It is certain that BCI have better adhesion property (22).

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