

Poster

## Study of the endometrial immune status : a key factor in women infertility



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### ABSTRACT

**Motivation:** The concept of unexplained infertility arises when all known causes of male and female infertility have been discarded. This reproductive disorder affects 40% of all infertile couples and represents 30% of the total cases of female infertility. Currently, several studies approach the problem from an immunological point of view, focusing on cases in which assisted reproduction techniques have failed recurrently. In this immunological aspect, the endometrial tissue takes great relevance, since it can detect as a natural sensor when the organism of a woman is going through a high inflammation or pathologic process. For this reason, studying the immune status of the endometrium becomes an indispensable strategy to determine if the absence of pregnancy in these women can result from a previous health problem detected by this tissue.

**Methods:** Peripheral blood and endometrial biopsy samples from 15 women with unexplained infertility are taken to determine, by flow cytometry, the count of NK cells, macrophages, and LB1 cells. In addition, the endometrial biopsy is used to analyze the gene expression profile of 192 genes associated with endometrial receptivity and immune response. This analysis is performed, after RNA extraction from the biopsies, using quantitative PCR in the microfluidics technique (Fluidigm technology), a dynamic matrix where the samples and the primers of the genes are combined in a real-time PCR.

**Results:** If the patients have an immune disorder, it is expected that the levels of immune cells will be altered, detecting whether they present an inflammatory, autoimmune, or immunosenescent profile. In case there is an immunological alteration, the patient would be given a personalized immunomodulatory treatment to regulate this immunological imbalance and thus, increase the chances of pregnancy. To check the effectiveness of this treatment, another immunological study will be performed accompanied by gene expression analysis to check whether aspects such as endometrial receptivity have changed and if the infertility problem has been solved.

**Conclusions:** When the origin of infertility problems remains unknown, 8 out of 10 reproductive failures are associated with an imbalance of the immune system. Specifically, the immune reaction that occurs in the endometrium is key to a successful pregnancy, so it becomes necessary to develop a diagnostic tool that evaluates the endometrial immune status to solve unexplained infertility problems.

### REFERENCES

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