Endometrial Receptivity Analysis – nástroj ke zvýšení podílu implantovaných embryí v programu asistované reprodukce

Endometrial Receptivity Analysis – a tool to increase an implantation rate in assisted reproduction

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ABSTRACT

Introduction: A successful embryo implantation is crucial for a positive outcome of in vitro fertilization. But there is only a short period during which the endometrium is receptive for embryo, this so called implantation window can be detected by a molecular diagnostic method endometrial receptivity analysis (ERA).
Objective: To find out the percentage of patients with a non-receptive endometrium in the time of ERA and to learn what part of them got pregnant after the identification of their personalized implantation window.
Design: A retrospective study.
Setting: REPROMEDA Biology Park, Centre of Reproductive Medicine and Preimplantation Genetic Diagnosis, Brno.
Methods: A cohort of 85 patients undergoing ERA from August 2015 to October 2018 was studied. 74 patients experienced a previous implantation failure, the average number of preceding unsuccessful frozen embryo transfers was 2,5 in this group, 11 women went through ERA due to the preventive reason before the first FET. In all women one euploid embryo was transferred. 48 patients were prepared either for ERA or FET in a natural menstrual cycle, 37 women in HRT cycle. We were interested in a percentage of non-receptive patients in the time of ERA and wanted to discover what part of non-receptive women got pregnant after the identification of their personal implantation window. The average number of frozen embryo transfers needed to achieve the pregnancy was also calculated.
Results: 31 of 85 patients (36.5%) were found to have a non-receptive endometrium. In the natural cycle 13 of 48 (27.1%) were non-receptive: five were pre-receptive, three early receptive, two late receptive and three post-receptive. In the HRT cycle 18 of 37 patients (48.6%) were non-receptive: 12 were pre-receptive, four early receptive, one late receptive, one post-receptive. Personalized FET was done in 26 of total 31 initially non-receptive patients, 18 of them got pregnant (69.2%). In the natural cycle 6 of 11 (54.5%) achieved the pregnancy, in the HRT cycle 12 of 15 women (80.0%) got pregnant. To achieve the clinical pregnancy 1.5 frozen embryo transfer in average was needed.
Conclusion: A displaced implantation window was found in more than 1/3 of patients undergoing an assisted reproductive treatment. After the personalized FET the clinical pregnancy was noticed in 69.2% of them. This result supports an individual approach to patients in IVF programme besides other at the timing of embryo transfer after the identification of pWOI.

KEYWORDS

ERA, natural cycle, HRT cycle, non-receptive endometrium, personalized FET, pregnancy, implantation window

SOUHRN

Úvod: Pro pozitivní výsledek in vitro fertilizace je klíčová úspěšná implantace embrya. Endometrium je však pro embryo receptivní jen v krátkém časovém úseku, toto tzv. implantační okno detekuje molekulárně diagnostická metoda ERA (Endometrial Receptivity Analysis).
Cíl studie: Zjistit, u jakého podílu pacientek bylo v době provedení ERA jejich endometrium nereceptivní a u jakého podílu z nich jsme následně po identifikaci implantačního okna zaznamenali klinické těhotenství.
Typ studie: Retrospektivní studie.
Název a sídlo pracoviště: REPROMEDA Biology Park, Klinika reprodukční medicíny a preimplantační genetické diagnostiky, Brno.
Metodika: Studovali jsme soubor 85 pacientek, které v období od srpna 2015 do října 2018 podstoupily

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Endometrial analysis request form

All fields marked with * are mandatory

***ANALYSIS REQUESTED** ☐ ERA ☐ EMMA ☐ ALICE ☐ EndomeTRIO

CLINICIAN INFORMATION

Date: _____

*Clinic: _____ *Doctor: _____

Address: _____

City: _____ Province: _____ Postcode: _____

Telephone: _____ Email: _____

PATIENT INFORMATION

*Name and surnames/initials/identification code: _____

*Date of birth: _____ MRN/Unique patient ID: _____ *Ethnicity[1]: _____

Weight: _____kg Height: _____cm Results report language: ☐ Spanish ☐ English ☐ Italian ☐ Portuguese

1- This field is only required if you have selected the ALICE or EMMA tests.

SAMPLE DETAILS

Type of sample: Endometrial biopsy. Biopsy method: ☐ Pipelle ☐ Hysteroscopy ☐ Other: _____

Type of cycle:

☐ **HRT: P+** _____ (e.g. P+5) *First day of progesterone[2]: _____ Time: _____ (00:01-23:59)AM/PM
Endogenous progesterone P+0:_____ ng/ml or _____ nMol/l Date measured: _____

☐ **Natural cycle: LH+** _____ (e.g. LH+7) – *Day of LH[2] surge: _____ Time: _____ (00:01-23:59) AM/PM

☐ **hCG+** ____ (e.g. hCG+7) – *Day of hCG[2] injection: _____ Time: _____ (00:01-23:59) AM/PM

☐ **Natural cycle between days 15 and 25** (for 26 to 32 day cycles), **only for EMMA/ALICE *Day of cycle:**_____

2- The first day with progesterone is considered P+0. The LH surge day is considered LH+0. The day of the hCG injection is considered hCG+0.

Biopsy details:

*Date of biopsy: _____ Time: _____ AM/PM

Endometrial thickness: _____mm Date: _____ Has an ERA/EMMA/ALICE test been performed before? NO ☐ YES ☐

* ERA Biopsy No. _____ *EMMA Biopsy No. _____ *ALICE Biopsy No. _____ ☐ Two biopsies in the same cycle[3]

3- The 2nd sample will be analysed if the result of the 1st is Non-Receptive with a recommendation to perform a new biopsy.

INDICATION OF TEST

☐ Endometrial analysis ☐ Implantation failure – Number of failed attempts: _____

☐ Chronic endometritis ☐ Endometriosis ☐ Recurrent miscarriage ☐ Hydrosalpinx ☐ Previous STIs[4]

Summary of clinical record or relevant medical history: _____

_____

*Has taken antibiotics in the last three months[5]: ☐ NO ☐ YES: *Active ingredient[5]: _____ *Dosage[5]:_____

*Duration of treatment[5]: _____ *Date on which it was administered[5]:_____

*Existing allergies to any antibiotic?[5] ☐ NO ☐ YES. Specify which[5]: ☐ β-lactams ☐ Macrolides ☐ Tetracyclines ☐ Lincosamides ☐ Nitroimidazoles ☐ Trimethoprim/Sulfonamides

4. Sexually transmitted infections

5- This field is only required if you have selected the ALICE or EMMA tests.

Doctor authorisation

I certify that the information on this requisition form is correct to the best of my knowledge and that I have requested the above test based on my professional judgement of clinical indication. I have explained the limitations of this test and I have answered any question with my medical judgement. I understand that Igenomix may need additional information and I agree to provide this information if necessary.

Doctor's signature_____ Date: ____/_____/_____

Patient consent

By signing this requisition form, I voluntarily request Igenomix to carry out the test indicated above. I have read and received a copy of the informed consent, included in the following pages. The risks, benefits and limitations of this test have been explained to me.

Patient's signature_____ Date: ____/_____/_____