Raziskovalni prispevek/Research article

VPLIV IMPLANTACIJE ZARODKOV NA ENDOMETRIJ V LUTEALNI FAZI CIKLUSA

INFLUENCE OF EMBRYO IMPLANTATION ON ENDOMETRIUM IN LUTEAL PHASE OF MENSTRUAL CYCLE

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Izvleček

Izhodišča *Na temelju znanj s področja embriologije vemo, da je za lutealno fazo menstruacijskega ciklusa značilna hitra rast endometrija. Namen naše raziskave je bil ugotoviti, ali je možno s transvaginalnim ultrazvokom in hormonskimi testi ugotoviti normalno nosečnost, preden jo potrdimo ultrazvočno s prisotnostjo gestacijskega obročka. Osnovna hipoteza je bila, da je debelina in/ali prostornino endometrija v lutealni fazi menstruacijskega ciklusa pri preiskovankah, ki zanosijo, bistveno drugačna kot pri preiskovankah, ki ne zanosijo. Poleg tega smo predpostavili, da se debelina in/ali prostornine endometrija razlikuje pri preiskovankah z normalno nosečnostjo v primerjavi s preiskovankami, pri katerih gre za nepravilno nosečnost (biokemična nosečnost, zunajmaternična nosečnost in spontani splav). Poleg meritev prostornine endometrija smo opravili tudi merjenje endometrija v treh ravneh (debelina, dolžina in širina). Ugotavljali smo, ali je omenjena alternativna tehnika, ki je sicer uveljavljena v svetu, dovolj dober približek za določanje prostornine endometrija.*

Metode dela *Pri preiskovankah, vključenih v program zunajtelesne oploditve, smo opravili prospektivno opazovalno raziskavo. Preiskovanke smo hormonsko spodbujali po standardnih protokolih spodbujanja rasti foliklov. Folikle smo aspirirali 36 ur po dajanju hCG, prenos zarodkov pa čez 3 ali 5 dni. Preiskovanke smo naročili na kontrolo dvakrat: prvič med 20. in 24. dnem menstruacijskega ciklusa (dmc), in drugič med 27. in 30. dmc. Ob obeh obiskih smo preiskovankam vzeli kri za določitev hormonov in s 3-D transvaginalnim ultrazvokom izmerili endometrij. Po opravljenih obeh obiskih smo preiskovanke, ki so imele pozitiven beta hCG, v obdobju do 12. tedna nosečnosti poklicali po telefonu in jih povprašali o izidu nosečnosti.*

Rezultati *Osemdeset preiskovank je podpisalo privolitveno izjavo. Od teh smo pri 4 preiskovankah opravili intrauterino inseminacijo (IUI) v spodbujenem ciklusu, 1 preiskovanka je imela prenos zarodkov v spontanem ciklusu, pri 74 preiskovankah pa smo opravili postopek zunajtelesne oploditve v spodbujenem ciklusu. Od slednjih je 63 preiskovank sodelovalo do konca raziskave, zato smo jih vključili v statistično analizo. Od 63 preiskovank jih je 36 (57,1 %) zanosilo, a 27 (42,8 %) ni zanosilo. Med temi je bila pri 9 (25 %) preiskovankah ugotovljena nepravilna nosečnost, zato smo jih obravnavali ločeno. Pri preiskovankah, ki so zanosile, so se prostornina endometrija ter debelina, dolžina in širina endometrija, izmerjeni ob obisku 1 in ob obisku 2 statistično značilno razlikovali. Razlike v omenjenih parametrih med obiskoma 1 in 2 pri preiskovankah, ki niso zanosile, nismo mogli potrditi. Značilno razliko pa smo ugotovili pri primerjavi navedenih parametrov ob obisku 2 med preiskovankami, ki so zanosile, in tistimi, ki niso zanosile.*

Zaključki *Naša raziskava je pokazala, da lahko pri preiskovankah, ki so zanosile v postopku zunajtelesne oploditve, s 3-D ultrazvokom že nekaj dni po zanositvi zaznamo hitro in močno povečanje prostornine endometrija. Poleg tega smo pri preiskovankah, ki niso zanosile v tem ciklusu, opazili neznatno do zmerno zmanjšanje prostornine endometrija. Pokazali smo tudi, da lahko merjenje spremembe prostornine endometrija z zadovoljivo natančno-*

stjo nadomestimo z merjenjem debeline endometrija ter njegove dolžine in širine, kar je možno opraviti na vsaki ultrazvočni napravi. Kljub priporočljivim nadaljnjim raziskavam menimo, da je mogoče naše ugotovitve koristno uporabiti v vsakodnevni klinični praksi, predvsem pri tehtanju, ali je nosečnost normalna ali ne, ter pri ugotavljanju nosečnosti v zgodnjem obdobju po morebitni zanositvi, še preden je mogoče potrditi prisotnost gestacijskega obročka.

Ključne besede *IVF; implantacija; endometrij; ultrazvok; 3D analiza*

Abstract

Background *Based on the facts known from embryology, rapid endometrial growth during late luteal phase of the cycle could be expected. In this research, we sought to establish if normal intrauterine pregnancy could be confirmed before gestational sac vizualization, by transvaginal ultrasound and hormonal tests. The primary hypothesis was that the endometrial thickness and/or volume in the luteal phase of the cycle, in cycles resulting in normal intrauterine pregnancy, is significantly different compared to non-conception cycles. We also hypothesized that endometrial thickness and/or volume are different in cycles resulting in normal intrauterine pregnancy compared to cycles resulting in abnormal pregnancy, namely biochemical and ectopic pregnancy, and spontaneous abortion. Additionally, next to endometrial volumes, we decided to measure the endometrium in three planes (thickness, length and width), to see if the hypothesized endometrial volume differences could be approximated by this simple surrogate technique, which is available in most parts of the world.*

Methods *This was a prospective observational study of women enrolled in an assisted reproduction program. Patients were stimulated with standard stimulation protocols. The oocyte retrieval was performed 36 hours after the hCG administration and the embryo was transferred 3 or 5 days later. Patients were first seen on day 20–24 of the cycle , and then on day 27–30 of the cycle. A blood sample was taken, and 3D transvaginal ultrasound was done. Following the completion of study visits, patients with a positive HCG test received phone call check-ups until week 12 of pregnancy, and were stratified according to pregnancy outcome.*

Results *80 subjects signed the informed consent form. 4 patients had the IUI in the stimulated cycle, one had ET in spontaneous cycle, and 74 patients had undergone IVF/ET in the stimulated cycle. 63 patients in the stimulated cycles completed the study and are included in the statistical analysis presented here. Of these 63 patients, 36 (57.1 %) patients were pregnant, and of these 36, nine (25 %) had abnormal pregnancies that were analyzed separately. 27 (42.8 %) patients were not pregnant in the stimulated cycle. A significant difference was observed between Visit 1 and Visit 2, for endometrial volume, thickness, length and width in the pregnant group, and for endometrial volume, thickness and width in the non-pregnant group. Also, a significant difference was observed when comparing parameters at Visit 2 between pregnant and non-pregnant patients.*

Conclusions *In this study we have shown that in normal intrauterine pregnancy after an IVF/ET, a rapid and prominent endometrial volume growth can be detected by a 3D ultrasound over the course of several days. Moreover, in patients who did not conceive in a particular cycle, a minimal to moderate decrease in endometrial volume can be seen in all patients. We have also shown that the changes in endometrial volume can be approximated by measuring the changes in endometrial thickness, length and width, which can be done on every ultrasound machine. Although it warrants further investigation, we believe these findings may prove useful in everyday practice and when there is uncertainty as to whether the pregnancy is normal or abnormal, and before gestational sac visualization.*

Key words *IVF; implantation; endometrium; ultrasound; 3D*

Literatura

1. Alcazar JL. Three-dimensional ultrasound assessment of endometrial receptivity: a review. Reprod Biol Endocrinol 2006; 4: 56.
2. Bassil S. Changes in endometrial thickness, width, length and pattern in predicting pregnancy outcome during ovarian stimulation in in vitro fertilization. Ultrasound in Obstetrics and Gynecology 2001; 18: 258–63.

3. Martins WD, Ferriani, RA, Nastri CO, Maria Dos Reis R, Filho FM. Measurement of endometrial volume increase during the first week after embryo transfer by three-dimensional ultrasound to detect pregnancy: a preliminary study. Fertil Steril 2007;
4. Vlaisavljevic V., Reljic M, Gavric-Lovrec V, Kovacic B. Subendometrial contractility is not predictive for in vitro fertilization (IVF) outcome. Ultrasound in Obstetrics and Gynecology 2001; 17(3): 239–44.
5. Zohav, E, Orvieto R, Anteby EY, Segal O, Meltcer S, Tur-Kaspa I. Low endometrial volume may predict early pregnancy loss in women undergoing in vitro fertilization. Journal of assisted reproduction and genetics 2007; 24: 259–61.

Prispelo 2009-09-03, sprejeto 2009-10-01