

• 实验研究 •

思南县女性5,10-亚甲基四氢叶酸还原酶基因多态性调查及其与血清同型半胱氨酸水平相关性的研究

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【摘要】目的:研究叶酸代谢障碍关键酶基因5,10-亚甲基四氢叶酸还原酶(MTHFR)C677T、A1298C位点基因多态性与血清同型半胱氨酸(HCY)的相关性。方法:随机以贵州省思南县2188例女性为研究对象,检测其MTHFR C677T、A1298C基因位点多态性,采用统计学方法分析该地区基因的多态性分布特征,并与其他同等级区域人群既有数据比对分析;对其中276例孕期女性,测定血清HCY浓度,分析该指标与遗传因素的相关性。结果:本县的汉族、苗族、土家族女性MTHFR C677T、A1298C位点基因型及等位基因分布情况差异无统计学意义($P>0.05$)。本地区汉族女性MTHFR 677TT基因型频率(14.9%)显著低于尚志、三河、寿光、张家港等地人群($P<0.05$),显著高于陵水县人群($P<0.05$);与郫县人群数据差异无统计学意义($P>0.05$)。MTHFR 1298CC基因型频率(4.2%)与郫县人群无统计学差异($P>0.05$),与其他各地区人群均有统计学差异($P<0.05$)。血清HCY水平在C677T位点3种基因型间有统计学差异($P<0.05$),而A1298C位点3种基因型间无统计学差异($P>0.05$)。结论:本县汉族女性MTHFR基因C677T、A1298C位点多态性分布特征有其自身的特点;C677T位点的多态性变化对血清HCY水平有显著影响。

关键词: 同型半胱氨酸(HCY); 5,10-亚甲基四氢叶酸还原酶(MTHFR); 单核苷酸多态性

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• 实验研究 •

Relationship of homocysteine level and gene polymorphisms of methylenetetrahydrofolate reductase among women in Sinan County

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【ABSTRACT】 Objective: To investigate the relationship of the methylenetetrahydrofolate reductase (MTHFR) C677T, A1298C gene polymorphisms and Homocysteine (HCY) among Chinese women in Sinan County. **Methods:** A total of 2 188 women were recruited, whose oral epithelial cells were collected to extract genome DNA in order to polymorphisms of *MTHFR* using fluorescence quantitative PCR. Then the results were compared with those in other cities in China. **Results:** Among the Han women in Sinan county, the frequency of the *MTHFR* 677TT genotypes (14.9%) was lower than that in Shangzhi, Sanhe, Shouguang, Zhangjiagang ($P<0.05$), but higher than that in Lingshui ($P<0.05$). The frequency of the *MTHFR* 1298CC genotypes (4.2%) was not significantly different to Pi County. **Conclusion:** The gene polymorphism distributions of *MTHFR* among the Han women in Sinan County were found to be statistically different from other regions of China.

Key words: homocysteine (HCY); methylenetetrahydrofolate reductase (MTHFR); single nucleotide polymorphisms

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• 临床研究 •

卵泡期长效长方案在卵巢储备良好但前次黄体期短效长方案助孕失败患者中的应用: 一项自身对照研究

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【摘要】目的: 探讨卵泡期长效长方案对卵巢储备功能良好但前次黄体期短效长方案助孕失败患者的妊娠结局是否有所改善。方法: 回顾性分析106例前次黄体期短效长方案助孕失败后行卵泡期长效长方案再次助孕的卵巢储备功能良好(AFC>5)患者212个周期的临床资料, 按照促排卵方案分为黄体期短效长方案(A组)与卵泡期长效长方案(B组)。结果: Gn启动日E₂值、hCG注射日E₂值和子宫内膜厚度以及移植胚胎数组间比较均无统计学差异($P>0.05$)。B组Gn启动日、hCG注射日血LH值和早期流产率均显著低于A组($P<0.001$), 而Gn使用总剂量、Gn使用天数、获卵数、M_{II}卵数、M_{II}卵率、2PN数、可移植胚胎数、胚胎种植率、生化妊娠及临床妊娠率均显著高于A组($P<0.001$)。结论: 在卵巢储备功能良好但前次黄体期短效长方案助孕失败的女性中, 再次助孕采用卵泡期长效长方案可显著提高获卵数及卵子质量, 并显著提高妊娠率, 降低早期流产率, 是理想的治疗方案。

关键词: 卵泡期长效长方案; 黄体期短效长方案; 前次助孕失败; 卵巢储备功能良好

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• 临床研究 •

Clinical outcomes of modified long protocol in patients with good ovarian reserves and previous failure cycle with a conventional long protocol: a self-controlled study

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【ABSTRACT】 Objective: To evaluate the clinical outcomes of modified long protocol in patients with good ovarian reserves and previous failure cycle with a conventional long protocol. **Methods:** A total of 106 patients of 212 cycles with good ovarian reserves [antral follicle count (AFC)>5] and previous failure cycle with a conventional long protocol who underwent the secondary IVF/ICSI cycle using modified long protocol within two years were retrospectively analyzed, and were divided into two groups: the previous cycles using conventional long protocol were treated as group A, while the secondary cycles using modified long protocol were treated as group B. **Results:** There was no difference in serum E₂ level on day 1 of Gn and hCG administration, endometrial thickness on day of hCG administration and number of embryos transferred between the two groups ($P>0.05$). In group B, serum LH levels on day 1 of Gn stimulation and day of hCG injection were significantly lower ($P<0.001$), early abortion rate was significantly lower ($P<0.01$), while the dosage and duration of Gn used, number of oocytes retrieved, M_{II} oocytes, 2PN oocytes and transferable embryos, embryo implantation rate, biochemical and clinical pregnancy rate were significantly higher than those in group A ($P<0.001$). **Conclusion:** Modified long protocol applied in patients with good ovarian reserves and previous failure cycle with a conventional long protocol significantly improve the clinical pregnancy outcomes, so it is recommendable.

Key words: modified long protocol; conventional long protocol; previous failure cycle; good ovarian reserves

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促排卵对不同病因宫腔内人工授精的结局分析

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【摘要】目的:探讨促排卵对不同病因不孕患者人工授精的影响。方法:回顾性分析因男性因素、输卵管盆腔因素、子宫内膜异位症(EMS)和不明原因进行人工授精患者的资料,根据患者进行自然周期或促排卵周期分组,比较不同周期组的临床妊娠率和活产率。采用多元回归分析模型校正患者年龄、不孕年限、不同因素构成比、基础FSH、LH、E₂、子宫内膜厚度、类型、宫腔内人工授精(IUI)日卵泡直径及男性前向运动精子总数。评估在男性因素、输卵管盆腔因素、EMS和不明原因中促排卵周期与临床妊娠率的关系。结果:①促排卵组患者平均年龄、不孕年限以及不孕因素构成比(男性因素、输卵管盆腔因素、EMS和不明原因)与自然周期比较,无统计学差异($P>0.05$),而临床妊娠率和活产率均高于自然周期,但无统计学差异($P=0.08$);②通过多元因素回归分析校正了年龄、基础内分泌水平、不孕因素、内膜厚度和类型及前向运动精子总数等混杂因素后,促排卵周期相对于自然周期依然有显著优势($OR=1.607$; 95%CI=1.115~2.316);③在不同因素不孕患者中,促排卵周期可提高输卵管盆腔因素患者的活产率($OR=4.56$; 95%CI=1.53~13.53)。结论:促排卵周期可提高输卵管盆腔因素患者宫腔内人工授精的临床妊娠和活产率。

关键词: 宫腔内人工授精 (IUI); 自然周期(NC); 促排卵周期(OIC); 临床妊娠率; 活产率

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A retrospective analysis of the outcome of ovulation induction in intrauterine insemination with different etiologies

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【ABSTRACT】 Objective: To evaluate the effects of ovulation induction in intrauterine insemination (IUI) with different etiologies on the clinical pregnancy rate and live-birth rate in women. **Methods:** A retrospective study was performed on patients underwent IUI treatment, patients with male factor, tubal pelvic factors, endometriosis and unexplained factor were included in this study. A total of 766 patients receiving ovulation induction cycles (OIC) and 1 172 patients receiving natural cycles (NC) were compared based on the clinical pregnancy rate and live-birth rate. Multivariate regression analysis was performed to determine the effect of ovulation induction on the clinical pregnancy rate of patients underwent IUI treatment for male factor, tubal pelvic factors, endometriosis and unexplained factor. **Results:** Clinical pregnancy and live-birth rates of patients in OIC were higher than those in NC, but there was no statistical significance ($P=0.08$). Through multiple regression analysis adjusted for age, basal hormone level, factors of infertility, endometrial thickness and types, the total number of sperm forward movement and other confounding factors, OIC had a significant advantage ($OR=1.607$; $95\%CI=1.115-2.316$) compared with NC in different patients with infertility, and OIC can improve pelvic and tubal factors patients' outcome ($OR=4.56$; $95\%CI=1.53-13.53$). **Conclusion:** OIC can improve the clinical pregnancy and live-birth rate of IUI in patients with pelvic and fallopian tube factors.

Key words: intrauterine insemination (IUI); natural cycle (NC); ovulation induction cycle (OIC); clinical pregnancy rate; live-birth rate

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复苏周期中单/双囊胚移植患者的 临床结局比较

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【摘要】目的: 探讨复苏周期单囊胚和双囊胚移植对患者妊娠结局的影响。方法: 回顾性分析行囊胚冷冻-复苏患者2 021例, 其中单囊胚复苏移植组(A组)326例, 双囊胚复苏移植组(B组)1 695例。比较单/双囊胚复苏移植对患者临床结局的影响及新生儿情况分析。结果: A组胚胎着床率、临床妊娠率、早产率、多胎率、低体质量儿率分别显著低于B组($P<0.05$); A组早期流产率、新生儿体质量、身长以及Apgar评分均显著高于B组($P<0.05$)。结论: 单囊胚移植能够明显降低多胎率及产科风险。

关键词: 单囊胚移植; 双囊胚移植; 玻璃化冷冻; 妊娠结局

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Comparison of single pregnancy outcomes in blastocyst transfer versus double blastocyst transfer for the frozen-thawed embryos

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【ABSTRACT】 Objective: To investigate the pregnancy outcome in single blastocyst transfer versus double blastocyst transfer for the frozen-thawed embryos. **Methods:** A total of 2 021 patients treated with frozen-thawed blastocyst transfer were analyzed retrospectively. They were divided into 2 groups, 326 patients received single blastocyst transfer were treated as group A, 1 695 patients received double blastocyst transfer were treated as group B. **Results:** The implantation rate, the pregnancy rate, the premature delivery rate, the multiple pregnancy rate and the low-birth-weight infant rate of group A were significantly lower than those of group B. The early abortion rate, weight and height of infant and Apgar score of group A were significantly higher than those of group B. The differences were statistically significant ($P<0.05$). **Conclusion:** Single blastocyst transfer can reduce the multiple pregnancy rate and obstetric risk of patients received assisted reproductive technology treatment.

Key words: single blastocyst transfer; double blastocyst transfer; vitrification; pregnancy outcome

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体外受精-胚胎移植周期中不同天数和发育阶段囊胚移植妊娠结局的比较

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【摘要】目的: 寻找体外受精-胚胎移植(IVF-ET)治疗中选择合适时期和高质量囊胚进行移植的依据。方法: 回顾性分析行囊胚移植的4 237例患者的临床资料, 其中新鲜单囊胚移植1 574例, 冻融单囊胚移植854例, 新鲜双囊胚移植135例, 冻融双囊胚移植1 674例。根据囊胚发育天数和发育阶段分为第5日(D5)早期组、D5扩张组、第6日(D6)早期组和D6扩张组。比较各组临床妊娠率、种植率、妊娠结局和新生儿情况等各项指标。结果: ①单囊胚移植: 新鲜周期D5扩张组临床妊娠率和种植率显著高于其它组, 其活产率显著高于D6早期组和D6扩张组, 流产率明显低于D6扩张组($P<0.05$); 冻融周期D5扩张组具有较高的复苏率、临床妊娠率和种植率显著高于D5早期组和D6早期组($P<0.05$); ②双囊胚移植: D5移植2枚扩张期囊胚的种植率显著高于D5移植2枚早期囊胚, 其他各组间差异无统计学意义($P>0.05$); 冻融周期D5扩张组移植2枚囊胚种植率最高, 且临床妊娠率显著高于D5早期组, 而流产率明显低于后者, 差异有统计学意义($P<0.05$)。结论: 对于单囊胚移植和双囊胚移植, 无论新鲜周期或冻融周期, D5扩张组囊胚妊娠结局最佳。

关键词: 囊胚移植; 第5日(D5)囊胚; 第6日(D6)囊胚; 囊胚扩张; 妊娠结局

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Comparison of pregnancy outcome of blastocysts transfer with different developmental days and stages in *in vitro* fertilization-embryo transfer cycles

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【ABSTRACT】 Objective: To compare the pregnancy outcome of transferred blastocysts with different developmental days and stages in fresh and frozen-thawed cycles of IVF-ET. **Methods:** A retrospective analysis of 4 237 cases of blastocyst transfer patients was performed, including 1 574 cases of fresh single blastocyst transfer, 854 cases of frozen-thawed single blastocyst transfer, 135 cases of fresh double blastocyst transfer and 1 674 cases of frozen-thawed double blastocyst transfer. According to the blastocyst stage of development and the number of days, following groups were divided: D5 early group, D5 expanded group, D6 early group and D6 expanded group, and indicators in each group, including clinical pregnancy, implantation rate, pregnancy outcomes and status of newborns were compared. **Results:** 1) Single blastocyst transfer: clinical pregnancy rate and implantation rate of D5 expanded group in fresh cycle were significantly higher than those in other groups, and its live-birth rate was significantly higher than that of D6 early group and D6 expanded group, abortion rate was significantly lower than that in D6 expanded group ($P<0.05$); D5 expanded group in frozen-thawed cycle has a higher survival rate, and clinical pregnancy rate and implantation rate were significantly higher than those in D5 early group and D6 early group ($P<0.05$). 2) Double blastocyst transfer: the implantation rate of transplanting two D5 expanded blastocysts was significantly higher than that in transplanting two D5 early blastocysts, but there was no significant difference among the other groups in fresh cycle ($P>0.05$); the implantation rate of transplanting two D5 expanded blastocyst was the highest of all groups, and the clinical pregnancy rate was significantly higher than that in D5 transplanting two early blastocysts in frozen-thawed cycle, the difference was statistically significant, while the abortion rate was significantly lower than the latter ($P<0.05$). **Conclusion:** D5 expanded blastocyst can obtain the best pregnancy outcome for single and double blastocyst transfer in fresh or frozen-thawed cycles.

Key words: blastocyst transfer; D5 blastocyst; D6 blastocyst; blastocyst expansion; pregnancy outcome

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· 循证医学 ·

宫腔灌注粒细胞集落刺激因子对薄型子宫内膜 不孕疗效的 Meta 分析

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【摘要】目的: 系统评价宫腔灌注粒细胞集落刺激因子(G-CSF)对薄型子宫内膜不孕患者的治疗效果。方法: 计算机检索 PubMed、EMbase、the Cochrane Library、Web of Science、中国生物医学文献数据库、万方数据库和中国知网数据库, 筛选 G-CSF 治疗薄型子宫内膜不孕患者的随机对照试验(RCT), 检索时限截至 2016 年 1 月。由 2 位评价员独立进行文献筛选、资料提取并评价纳入研究的偏倚风险后, 采用 RevMan 5.2 软件进行 Meta 分析。结果: 共纳入 8 个 RCT, 包含 779 例行体外受精-胚胎移植(*in vitro* fertilization and embryo transfer, IVF-ET)或冷冻胚胎移植(frozen-thawed embryo transfer, FET)周期的不孕患者, 共计 840 个周期。Meta 分析结果显示: G-CSF 宫腔灌注治疗组与非 G-CSF 宫腔灌注治疗组的胚胎种植率($OR=2.24$, $95\%CI=1.43\sim3.51$, $P=0.0004$)、临床妊娠率($OR=2.13$, $95\%CI=1.48\sim3.06$, $P<0.0001$)的差异有统计学意义, 而排卵日子宫内膜厚度和早期流产率之间差异无统计学意义($P>0.05$)。结论: 宫腔灌注 G-CSF 的治疗对于行 IVF-ET 或 FET 的不孕患者, 可提高胚胎种植率及临床妊娠率, 且不会提高早期流产的风险, 但不能明显提高子宫内膜厚度。

关键词: 粒细胞集落刺激因子(G-CSF); 宫腔灌注; 薄型; 子宫内膜; 不孕症; 胚胎移植(ET); Meta 分析

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· 循证医学 ·

A Meta-analysis about the efficacy of G-CSF uterine infusion on infertile women with thin endometrium

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【ABSTRACT】 Objective: To systematic evaluate the efficacy about granulocyte colony stimulating factor (G-CSF) on infertile women with thin endometrium. **Methods:** We searched PubMed, EMBase, the Cochrane Library, Web of Science, CBM, WanFang Database and CNKI Database, to obtain randomized controlled trial (RCT) articles about the treatment of base G-CSF for infertile women with thin endometrium up to January 2016. After independently screened the literatures by two reviewers, we extracted data and evaluated the bias risk of the included studies then Meta analysis was conduced by using RevMan 5.2 software. **Results:** A total of 8 RCTs were included, comprising 779 cases undergoing *in vitro* fertilization-embryo transfer (IVF-ET) or frozen-thawed embryo transfer (FET) infertile patients, with 840 cycles. Meta-analysis showed: there was no significant difference between G-CSF intrauterine infusion therapy group and non-G-CSF perfusion intrauterine treatment group in-implantation rate ($OR=2.24$, $95\%CI=1.43-3.51$, $P=0.0004$) and the clinical pregnancy ($OR=2.13$, $95\%CI=1.48-3.06$, $P<0.0001$), there was not statistically significant difference in endometrial thickness on day of ovulation and early abortion rate between the two groups ($P>0.05$). **Conclusion:** Uterine perfusion of G-CSF for infertile women with thin endometrium who undergonging IVF-ET or FET can improve embryo implantation rate and clinical pregnancy rate, but not increase the risk of early abortion and not significantly improve endometrial thickness.

Key words: granulocyte colony stimulating factor (G-CSF); uterine infusion; thin; endometrium; infertility; embryo transfer; Meta-analysis

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· 综述 ·

脑源性神经营养因子在生殖领域的研究进展

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【摘要】脑源性神经营养因子(brain-derived neurotrophic factor, BDNF)是广泛分布于神经系统的一种神经营养因子。近年来研究发现, BDNF在生殖系统也有表达, 参与生殖系统各项生理功能的调节, 包括调节性激素的分泌、促进两性生殖细胞的形成等, 并与女性多囊卵巢综合征(polycystic ovary syndrome, PCOS)、卵巢储备功能减退(diminished ovary reserve, DOR)、子宫内膜异位症(endometriosis, EMS)及男性少、弱精子症等不孕症相关疾病密切相关。

关键词: 脑源性神经营养因子(BDNF); 酪氨酸蛋白激酶B; 生殖系统

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· 综述 ·

Research progress of brain-derived neurotrophic factor in the field of reproduction

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【ABSTRACT】 Brain-derived neurotrophic factor (BDNF) is an important nerve growth factor, which is widely expressed in several areas of the nervous system. Recently, it has been shown that BDNF is also expressed in a variety of nonneuronal tissues including reproductive system. BDNF plays crucial roles in regulation of various physiological functions of reproductive system, and is closely related to some diseases of reproductive system, including regulating the secretion of sex hormones and promoting the formation of reproductive cells between the sexes. It is closely related to some diseases of reproductive system like polycystic ovary syndrome, diminished ovary reserve, endometriosis, oligospermia and asthenospermia.

Key words: brain-derived neurotrophic factor (BDNF); tyrosine kinase receptor B; reproductive system

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mTOR通路参与多囊卵巢综合征胰岛素抵抗的病理生理改变

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【摘要】胰岛素抵抗(IR)是多囊卵巢综合征(PCOS)发病的重要病理生理基础, 雷帕霉素靶蛋白(mTOR)通路过度激活可导致IR, 为PCOS患者多种细胞IR的机制之一。PCOS患者体内高雄激素环境也通过mTOR通路加重细胞IR。高胰岛素血症促进卵巢雄激素的合成, 增多的雄激素加重全身细胞IR。卵巢细胞同样存在IR, mTOR通路在其中的作用有待进一步挖掘。

关键词: 多囊卵巢综合征(PCOS); 胰岛素(Ins); 雷帕霉素靶蛋白(mTOR)

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Mammalian target of rapamycin signaling is involved in the pathophysiological changing of insulin resistance in polycystic ovary syndrome

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【ABSTRACT】 Insulin resistance (IR) is an important pathophysiological basis of the pathogenesis of polycystic ovary syndrome (PCOS). Overactivation of mammalian target of rapamycin (mTOR) pathway leads to IR, which is one of the mechanisms contributing to IR in various cells of PCOS patients. The hyperandrogenic environment in PCOS patients increased cellular IR through mTOR pathway. The hyperinsulinemia in PCOS contributes to excessive secretion of androgen by ovary, and may exacerbate systemic IR. Ovarian cells also have IR, and whether mTOR pathway is involved in that needs further researches.

Key words: polycystic ovary syndrome (PCOS); insulin (Ins); mammalian target of rapamycin (mTOR)

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子宫内膜容受性影响因素的研究进展

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【摘要】在辅助生殖技术(ART)中,除胚胎质量外,良好的子宫内膜容受性(ER)成为成功妊娠的必要条件。近年来,ER的影响因素已经成为国内外的研究热点。本文主要从形态学、分子生物学、基因组学等方面综述ER影响因素的研究进展。

关键词:子宫内膜容受性(ER); 胚胎着床; 黄体支持

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Research progress of factors affecting the endometrial receptivity

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【ABSTRACT】 In assisted reproductive technology (ART), in addition to the embryo quality, the endometrial receptivity (ER) becomes an essential condition for successful pregnancy. In recent years, the influence factors of ER has become a research focus at home and abroad. This article reviewed the research progress of factors affecting the ER mainly from the aspects of morphology, molecular biology and genomics.

Key words: endometrial receptivity (ER); embryo implantation; luteal support

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复发性流产患者子宫内膜容受性相关影响因素的研究进展

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【摘要】子宫内膜容受性(ER)对囊胚植入有重要影响, 现有研究认为复发性流产(RSA)患者较正常育龄女性子宫内膜具有“超容受性”, 而这种“超容受性”可能导致子宫内膜对优质胚胎的选择能力降低, 从而对妊娠结局产生影响。临床上对ER的评价指标有多种, 目前应用较广泛的是超声、形态学、分子生物学指标、激素及子宫内膜端粒酶活性、基因标志。超声预测ER是一种简便有效的方式, 但目前存在较大争议; 胞饮突可以作为ER的评价指标, 但因其检测方式是有创的, 故在临床上并未得以应用。分子生物学指标、激素及子宫内膜端粒酶活性对于评价ER有其独特的临床价值, 然而对于基因学研究令ER进入一个全新的领域。

关键词: 复发性流产(RSA); 子宫内膜容受性(ER); 超声; 激素; 超容受性

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Research progress in influencing factors of endometrial receptivity in patients with recurrent spontaneous abortions

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【ABSTRACT】 Endometrial receptivity (ER) has important effects on blastocyst implantation. Existing study indicates that the endometrium of recurrent spontaneous abortions (RSA) has superfertile compared with normal women of childbearing age. And the superfertile maybe results in the decrease of endometrial's ability to select the superior embryo, then affect the pregnancy outcome. There are a variety of evaluation indexes for ER in clinic, the widely applied indexes nowadays are ultrasound, morphologic, molecular biological parameters, hormone traits, endometrial telomerase activity and gene markers. Ultrasound examination can make an easy and efficient forecast of ER, however, with the more controversy. Pinopode can be used as the evaluation index of ER, because the detection method is traumatic, therefore, it has not been applied in clinic. Molecular biological parameters, hormone traits and endometrial telomerase activity have unique clinical application values for the evaluation of ER. However, gene research introduces an eatiely new area for the ER research.

Key words: recurrent spontaneous abortions (RSA); endometrial receptivity (ER); ultrasound; hormone; superfertile

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• 临床报道 •

不同精子来源及授精方式对剩余胚胎继续 囊胚培养结局的影响

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【摘要】目的: 探讨不同精子来源及不同授精方式对胚胎继续发育能力的影响。方法: 分析499例患者499个取卵周期剩余胚胎继续培养形成囊胚的情况, 按精子来源不同分为供精IVF(D-IVF)组和夫精IVF(H-IVF)组, 按授精方式不同分为IVF组和ICSI组, ICSI组按精子来源分为新鲜精液组、附睾精子和睾丸精子组, 比较不同精子来源及授精方式获得剩余胚胎的囊胚形成率、胚胎利用率和无囊胚移植率。结果: ① D-IVF组和H-IVF组受精率、卵裂率、优质胚胎率、第3日和第5日胚胎种植率、临床妊娠率和流产率均无统计学差异($P>0.05$), 组间剩余胚胎囊胚形成率、胚胎利用率和无囊胚移植率亦无统计学差异($P>0.05$); ② ICSI组与IVF组比较, 其受精率较高($P<0.05$), 但优质胚胎率显著下降, 有统计学差异(55.11% vs 61.30%, $P<0.05$), 组间第3日卵裂期胚胎和剩余胚胎囊胚种植率、临床妊娠率无统计学差异($P>0.05$), 但ICSI组与IVF组比较, 其剩余胚胎囊胚形成率、胚胎利用率稍低, 无囊胚移植率较IVF组稍高, 差异有统计学意义(56.13% vs 65.32%, 48.18% vs 55.39%, 21.68% vs 13.20%, $P<0.05$)。③新鲜精液组的优质胚胎率、胚胎利用率显著低于附睾精子和睾丸精子组($P<0.05$), 各组囊胚移植的种植率和临床妊娠率无统计学差异($P>0.05$)。结论: D-IVF可获得H-IVF相似的结局, 其剩余胚胎都有较高的发育潜能, ICSI获得的剩余胚胎发育潜能低于IVF组。附睾精子和睾丸精子ICSI后获得的胚胎比新鲜精液精子ICSI后胚胎发育潜能高。针对不同的授精方式可能需要制定相应的剩余胚胎囊胚培养标准。

关键词: 剩余胚胎; 囊胚; 供精; 体外受精(IVF); 卵胞质内单精子注射(ICSI)

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• 临床报道 •

Blastocyst formation in *in vitro* fertilization versus intracytoplasmic sperm injection cycles of surplus embryo: influence of sperm sources and fertilization method

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【ABSTRACT】 Objective: To explore the effects of different sperm sources and different fertilization methods on the outcomes of blastocyst culture of surplus embryos. **Methods:** We retrospectively analyzed the outcomes of blastocyst culture of surplus embryo for 281 cycles of IVF by donor sperm (D-IVF) and 75 cycles of IVF by husband sperm (H-IVF) and 143 cycles of ICSI. According to sperm sources, ICSI groups were divided into ejaculated sperm group ($n=38$), epididymal sperm group ($n=63$) and testicular sperm group ($n=42$). **Results:** 1) The rates of fertilization, cleavage, good-quality embryo, implantation, pregnancy and abortion showed no significant differences between D-IVF and H-IVF ($P>0.05$), and blastocyst formation rate, utilization of embryo, no blastocyst for implantation rate had no difference between the two groups ($P>0.05$). 2) ICSI group had a higher fertilization rate, but lower good-quality embryo rate compared with IVF group, and the blastocyst formation rate, utilization rate of embryo were lower than those in IVF group as well (56.13% vs 65.32%, 48.18% vs 55.39%, $P<0.05$). In ICSI group the no blastocyst for implantation rate was significantly higher than those in IVF group (21.68% vs 13.20%, $P<0.05$), however, the rates of implantation and pregnancy had no significant difference in both D3 and D5. 3) In ICSI group, the good-quality embryo rate and the utilization rate of embryo in ejaculated sperm group were statistically lower than those in epididymal sperm group and testicular sperm group ($P<0.05$). The rate of implantation and pregnancy had no significant difference among three groups ($P>0.05$). **Conclusion:** The developmental potential of surplus embryos in D-IVF and H-IVF were similar, and in ICSI the developmental potential is lower than that in IVF. The embryos derived from ICSI using epididymal sperm or testicular sperm have a better developmental potential than that using ejaculated sperm. Our study suggested that appropriate inclusion criteria of blastocyst culture of surplus embryos should be laid down according to different fertilization methods.

Key words: surplus embryos; blastocyst; donor sperm; *in vitro* fertilization (IVF); intracytoplasmic sperm injection (ICSI)

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流产后关爱对于生育妇女在术后落实 高效避孕措施的影响

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【摘要】目的: 探讨流产后关爱(post-abortion care, PAC)对生育妇女在流产术后即刻落实高效避孕措施的影响。方法: 将行人工流产术的811名已生育妇女, 分为PAC服务前的对照组385例和PAC服务后的观察组426例。对照组按常规人工流产程序进行, 观察组按PAC流程对流产妇女进行干预, 并对所有对象随访1年。比较观察组和对照组患者在术后即刻落实高效避孕措施的情况, 并比较两者的避孕措施续用率和重复流产率。结果: 与对照组相比, 观察组在术后采取高效避孕措施的人数明显增多, 两者差异具有统计学意义($P<0.05$)。观察组术后1个月的短效口服避孕药续用率为96.54%, 对照组续用率为92.39%, 其差异无统计学意义($P>0.05$)。而观察组术后3个月、6个月以及1年的短效复方口服避孕药(COC)的续用率分别为73.9%、47.8%和39.6%, 均高于对照组, 其差异具有统计学意义($P<0.05$)。观察组术后1个月和3个月的宫内节育器(IUD)续用率与对照组相比较, 差异无统计学意义($P>0.05$)。而观察组术后6个月以及1年的IUD续用率为98.94%和96.84%, 均高于对照组, 其差异具有统计学意义($P<0.05$)。术后1年, 观察组患者的重复流产率为0.23%, 低于对照组的1.37%, 其差异具有统计学意义($P<0.05$)。结论: PAC服务对于提高生育妇女流产术后选择高效可逆的避孕方法, 有着非常重要的影响, 同时提高了IUD和短效口服避孕药的续用率, 有效降低了重复流产率, 保障了女性生殖健康和身心健康。

关键词: 流产后关爱(PAC); 避孕; 复方口服避孕药(COC); 宫内节育器(IUD); 重复流产

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Influence of post-abortion care on the fertile women implementing effective contraception measures after induced abortion

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【ABSTRACT】 Objective: To study the effect of post-abortion care (PAC) on the fertile women using effective contraception measures right after induced abortion. **Methods:** A total of 811 women who received induced abortion were enrolled in this study. Among them, 385 patients without PAC service were allocated as control group, while 426 patients with PAC service were allocated as observation group. The patients in the control received the routine procedure of abortion, while the patients in observation group received abortions with the PAC intervention. Patients in both groups were monitored for one year for comparing the rate of immediate implementation of effective contraceptive measures, as well as the rates of continuous use and repeated abortion of two types of contraceptive measures. **Results:** The number of patients using effective contraception in observation group increased significantly compared with that in the control ($P<0.05$). There was no statistical significance of the rate of continuous use of combined oral contraceptive (COC) after 1 month of abortion between observation group (96.54%) and the control (92.39%). While the rate of continuous use of COC in observation group after 3, 6 and 12 months of abortion were 73.9%, 47.8% and 39.6%, respectively, which were higher than those in the control with a statistical significance ($P<0.05$). There was no statistical significance of the rate of continuous use of intrauterine device (IUD) between the two groups after 1 and 3 month(s) of abortion. The rate of continuous use of IUD after 6 and 12 months of abortion in observation group were 98.94% and 96.84%, respectively, which were higher than those in the control with a significant difference ($P<0.05$). One year after induced abortion, repeated abortion rate in observation group was lower than that in the control. The difference was statistically significant ($P<0.05$). **Conclusion:** PAC services can significantly improve the efficient and reversible contraceptive method, also increase the rate of continuous use of IUD, effectively reduce the rate of repeated abortion, and promote the female reproductive, physical and mental health.

Key words: post-abortion care (PAC); contraception; combined oral contraceptive (COC); intrauterine device (IUD); repeated abortion

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· 个案报道 ·

双侧输卵管同时妊娠1例及文献复习

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【摘要】目的: 探讨临床罕见病例——双侧输卵管妊娠的诊断及治疗方法。方法: 通过病例报道和相关文献复习, 对双侧输卵管妊娠的病因、诊断及治疗作一分析。结果: 双侧输卵管妊娠发生率较低, 容易漏诊, 对患者造成不良影响甚大, 早期诊断和治疗尤为重要。结论: 辅助生殖技术(ART)为不孕症患者带来福音的同时, 在一定程度上增加了异位妊娠(EP)的发生率, 尤其是某些特殊类型的EP。对于可疑患者, 超声和手术应仔细探查双侧附件的情况, 以便早期发现和治疗。

关键词: 辅助生殖技术(ART); 异位妊娠(EP); 双侧输卵管妊娠

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· 个案报道 ·

Bilateral tubal pregnancy: a case report and literature review

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【ABSTRACT】 Objective: To discuss the early diagnosis and current treatment methods of bilateral tubal pregnancy. **Methods:** An unusual case of bilateral tubal pregnancy and relevant literatures were reviewed, and the etiology, diagnosis as well as treatment of bilateral tubal pregnancy were discussed in the article. **Results:** Bilateral tubal pregnancy is a rare form of ectopic pregnancy which is difficult to be diagnosed at early stages. Because of the great harm to the patients, the early diagnosis and treatment are very important. **Conclusion:** While helping infertile patients, assisted reproductive techniques (ART) may increase the incidence of ectopic pregnancy (EP), especially some special types of EP. In order to get an early diagnosis and treatment, the clinician should pay more attention to ultrasonography and intra-operation inspection of both side fallopian tubes in any EP case.

Key words: assisted reproductive techniques (ART); ectopic pregnancy (EP); bilateral tubal pregnancy

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单卵双胎行选择性减胎术1例报道

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【摘要】目的: 评估自然妊娠单卵双胎的孕妇因宫颈机能不全无法持续妊娠, 在早孕期行选择性减胎术的临床效果。方法: 报道1例宫颈机能不全的孕妇自然受孕获单卵双胎妊娠, 早孕期(孕8⁺5周)采取机械性减胎法行选择性减胎, 减灭孕囊中的一胎。结果: 孕妇成功减胎, 并持续妊娠, 至孕37周阴道分娩1健康男婴。结论: 对于单卵双胎的宫颈机能不全孕妇, 早孕期行选择性减胎术是有效可行的办法。

关键词: 单卵双胎; 宫颈机能不全; 选择性减胎术

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Expression of selective embryo reduction in monozygotic twinning: a case report

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【ABSTRACT】 Objective: To evaluate the clinical effect of selective fetal reduction in the first trimester on the monozygotic twin of the pregnant woman who was cervical incompetency and cannot be sustainable pregnancy. **Methods:** A cervical incompetency pregnant woman was naturally conceived monozygotic twinning. At a gestational age of 8 weeks of pregnancy, a selective fetal reduction was performed by using transvaginal puncture of the fetal heart and physical hurt until the fetal heart beat disappear through transvaginal ultrasound-guided. **Results:** Selective fetal reduction was successfully performed and the pregnancy was going well. A healthy boy was delivered by vagina at 37 weeks of gestation. **Conclusion:** The selective fetal reduction in the first trimester is an effective and feasible method to that monozygotic twinning of the pregnancy woman with cervical incompetence.

Key words: monozygotic twinning; cervical incompetency; selective fetal reduction

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胚胎冷冻10年复苏并行囊胚培养后再次冷冻 并复苏移植后获妊娠1例报道

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【摘要】目的: 探讨在体外受精-胚胎移植(*in-vitro* fertilization-embryo transfer, IVF-ET)过程中, 卵裂期胚胎冷冻10年后解冻复苏再移植成功妊娠的可能性。方法: 1例患者卵裂期胚胎冷冻10年后解冻复苏并行囊胚培养, 获得囊胚后再次冷冻1年后复苏, 行囊胚移植。结果: 该患者移植后顺利获得临床妊娠, 并于孕38周剖宫产一健康男婴。结论: 长期保存的胚胎解冻后重新冷冻对最终获得妊娠依然有价值; 冷冻胚胎囊胚培养有助于提高卵裂期胚胎冷冻复苏后的利用价值及提高胚胎着床率。

关键词: 胚胎玻璃化冷冻; 冷冻胚胎复苏; 囊胚培养

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Successful clinical pregnancy from twice frozen-thawed embryos that had been cryopreserved for 10 years in cleavage stage and thawed and refrozen in blastocyst stage

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【ABSTRACT】 Objective: To investigate the possibility of achieving a pregnancy in frozen-thawed transfer using cleavage stage embryos frozen for 10 years in *in-vitro* fertilization-embryo transfer (IVF-ET). **Methods:** Cleavage stage embryos from one patient were frozen for 10 years and thawed for blastocyst culture. The resulting blastocysts were refrozen for 1 year and thawed for embryo transfer. **Results:** The patient achieved a clinical pregnancy following transfer and was delivered a healthy baby boy at 38th gestational week in uterine-incision. **Conclusion:** Refreezing the thawed embryos of long-term storage is still of value in achieving a pregnancy. Blastocyst culture following frozen-thawed process is helpful to improve the use value and implantation rates of thawed cleavage stage embryos.

Key words: cryopreservation of embryonic by vitrification; frozen embryos resuscitation; blastocyst culture

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· 标准化管理 ·

加拿大“辅助生殖组织”管理标准介绍(一)

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【摘要】中国辅助生殖技术(ART)在近30年里发展迅速,已接近国际先进水平。但是,我国ART标准化的工作尚处于初级阶段。加拿大标准协会(CSA)自2000年开始进行“辅助生殖组织”国家标准的制订。本文分3个单元介绍加拿大“辅助生殖组织”(CAN/CSA-Z900.2.1-12)国家标准的主要内容。该标准涵盖了辅助生殖组织管理的各个方面,包括公司与工作人员的要求,设备的要求,标准的操作程序、规范及质量控制,记录和随访的要求,感染的预防及控制,捐赠者和接受者的规范,不良事件的监控等。该标准的有关内容值得研究和借鉴,可为我国ART和相关医疗器械产品的科学监管,以及辅助生殖中心的规范管理提供参考,从而促进该领域的健康有序发展。

关键词: 辅助生殖技术(ART); 辅助生殖组织; 标准; 加拿大标准协会(CSA)

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• 标准化管理 •

**Introduction on Canadian Standard for tissues for assisted reproduction
(Part 1)**

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【ABSTRACT】 This article introduces Canadian Standard for tissues for assisted reproduction, CAN/CSA-Z900.2.1-12. The standard covers all aspects of assisted reproduction including donor selection and testing, processing and storage of gametes and embryos, the quality system requirements, risk control and prevention, and safety for donors and recipients, etc.

Key words: assisted reproductive technology (ART); tissues for assisted reproduction; standard; Canadian Standards Association (CSA)

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