

• 实验研究 •

肌动蛋白结合蛋白细丝蛋白 A 参与肿瘤坏死因子 α 诱导的支持细胞屏障功能降低的研究

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【摘要】目的: 探讨肌动蛋白结合蛋白细丝蛋白 A(filamin A, FLNa)在肿瘤坏死因子 α (tumor necrosis factor α , TNF α)调节支持(Sertoli)细胞屏障功能过程中发挥的作用。方法: 体外分离培养 20 日龄大鼠睾丸支持细胞, 用 10 μ g/L TNF α 处理后测定跨上皮电阻(trans-epithelial electrical resistance, TER), 反映屏障功能改变; Western blotting 分析 TNF α 处理后 FLNa 表达水平变化; 细胞免疫荧光或鬼笔环肽染色分别检测 FLNa 及微丝(F-actin)的定位改变; FLNa siRNA 干扰后检测支持细胞屏障功能。结果: TNF α 处理后 TER 值较对照组显著降低($P<0.01$); Western blotting 结果显示 TNF α 处理组 FLNa 水平明显下降($P<0.01$); 细胞形态学检测亦表明 TNF α 处理后 FLNa 及 F-actin 在支持细胞的分布有显著改变; TER 测定结果表明 FLNa 经 siRNA 沉默后可降低血睾屏障(BTB)功能($P<0.01$)。结论: FLNa 可通过调节 F-actin 在支持细胞中的排布参与 TNF α 引起的 BTB 功能降低。

关键词: 支持细胞(Sertoli cells); 血睾屏障(BTB); 细丝蛋白 A(FLNa); 肿瘤坏死因子 α (TNF α)

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• 实验研究 •

Study on participation of filamin A in tumor necrosis factor α -induced Sertoli cell barrier function decrease

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【ABSTRACT】 Objective: To investigate the role of actin-binding protein filamin A (FLNa) in tumor necrosis factor α (TNF α)-regulated Sertoli cell barrier function change. **Methods:** Sertoli cells were isolated from 20-day-old rat testis and cultured *in vitro*. Trans-epithelial electrical resistance (TER) was measured after TNF α treatment to reflect barrier function change. Western blotting was applied to analyze FLNa level after TNF α treatment. Immunofluorescence and phalloidin staining were used to detect the localization of FLNa and F-actin, respectively. siRNAs targeting FLNa was transfected into cultured Sertoli cells to silence FLNa, followed by TER measurement to detect the effect of FLNa knockdown on blood-testis barrier (BTB) function *in vitro*. **Results:** The TER value of Sertoli cell barrier decreased significantly after TNF α treatment ($P < 0.01$), accompanied by an obvious decline in FLNa level revealed by Western blotting. Immunofluorescence and phalloidin staining also showed discriminate distribution of FLNa and F-actin between TNF α group and control group. TER measurement also showed a compromised Sertoli cell barrier function after FLNa was silenced as compared with the control. **Conclusion:** FLNa participated in TNF α -induced BTB function decrease by regulating F-actin arrangement in Sertoli cells.

Key words: Sertoli cell; blood-testis barrier (BTB); filamin A (FLNa); tumor necrosis factor α (TNF α)

多次退火环状循环扩增技术在单细胞水平诊断 脊髓性肌萎缩症的应用评估

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【摘要】目的: 应用并评价多次退火环状循环扩增(multiple annealing and looping-based amplification cycles, MALBAC)技术在单细胞水平诊断脊髓性肌萎缩症(spinal muscular atrophy, SMA)基因变异的效率。方法: 收集SMN1基因7号外显子纯合缺失、正常皮肤成纤维细胞以及废弃胚胎单个卵裂球细胞, 分别使用MALBAC和多重链置换扩增(multiple displacement amplification, MDA)方法进行全基因组扩增(WGA)。Sanger测序检测SMN1及SMN2序列, 并对3个微卫星位点进行连锁分析。结果: 2种扩增技术的总扩增成功率、等位基因脱扣(ADO)率无统计学差异($P > 0.05$); MALBAC组诊断准确率为91.7%(67/73), 低于MDA组的96.1%(73/76)($P < 0.05$)。结论: 针对SMA疾病开展单细胞水平遗传学诊断, 传统MDA方法略优于MALBAC全基因组扩增技术。

关键词: 多次退火环状循环扩增(MALBAC); 多重链置换扩增(MDA); 脊髓性肌萎缩症(SMA); 胚胎植入前诊断(PGD); Sanger测序

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Multiple annealing and looping-based amplification cycles (MALBAC) technology at the single cell level diagnosis of spinal muscular atrophy application evaluation

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【ABSTRACT】 Objective: To evaluate diagnosis of gene mutation efficiency of spinal muscular atrophy (spinal muscular atrophy, SMA) by using multiple annealing and looping based amplification cycle technologies (MALBAC) at the single cell level. **Methods:** Genome DNA of single cell of SMA fibroblasts (homozygous deletion of exon 7 of survival motor neuron gene 1, *SMN1*) and normal fibroblasts, discarded embryos of single blastomere cells respectively using MALBAC and multiple displacement amplification (MDA) to be amplified first. Then, Sanger sequencing was used to detect *SMN1* and *SMN2* gene sequences. Three microsatellite loci were used for linkage analysis. **Results:** Between the two whole genome amplification (WGA) methods, there was no statistical difference in the total success rate of amplification or total allele dropout (ADO) rate. The accuracy rate in MALBAC group [91.7%(67/73)] was lower than that in MDA group [96.0%(73/76)]($P<0.05$). **Conclusion:** In view of the SMA disease to carry out the single cell level genetic diagnosis, traditional MDA method is slightly better than MALBAC.

Key words: multiple annealing and looping-based amplification cycles (MALBAC); multiple displacement amplification (MDA); spinal muscular atrophy (SMA); preimplantation genetic diagnosis (PGD); Sanger sequencing

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• 临床研究 •

麒麟丸联合芬吗通对薄型子宫内膜厚度、 血流和妊娠率的影响

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【摘要】目的: 观察麒麟丸联合芬吗通对薄型子宫内膜厚度及类型、血流和妊娠率的临床疗效。方法: 前瞻性研究 76 例薄型子宫内膜不孕患者, 随机分为对照组和研究组各 38 例, 对照组经阴道给予芬吗通, 研究组在对照组的基础上联合口服麒麟丸进行治疗。比较对照组和研究组治疗 3 个周期后子宫内膜厚度、类型、血流、血雌激素(E₂)浓度情况和治疗半年后的自然妊娠率。结果: 对照组和研究组治疗 3 个周期后的子宫内膜厚度、类型、血流、E₂浓度情况均有明显改善($P < 0.05$), 且研究组子宫内膜厚度和血流优于对照组, 差异均有统计学意义($P < 0.05$); 治疗半年后自然妊娠率研究组显著高于对照组(52.6% vs 28.9%), 差异有统计学意义($P < 0.05$); 研究组和对照组中妊娠患者子宫内膜厚度、类型、血流分别与本组中未妊娠患者比较, 差异均有统计学意义($P < 0.05$)。结论: 麒麟丸联合芬吗通治疗因子宫内膜薄而致的不孕, 可有效改善子宫内膜厚度及血流, 提高治疗半年后的自然妊娠率。

关键词: 薄型子宫内膜; 不孕不育; 麒麟丸; 芬吗通

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• 临床研究 •

**Effects of Qilin pills combined with femoston on the endometrial thickness,
endometrial blood flow and pregnancy rate of patients
with thin endometrium**

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【ABSTRACT】 Objective: To study the clinical effects of Qilin pills combined with femoston on the endometrial thickness, type and blood flow, and pregnancy rate of thin endometrium patients. **Methods:** A total of 76 patients with thin endometrium were equally assigned into study group and control group who were treated with Qilin pills combined with femoston and femoston alone, respectively, both for a course of three menstrual cycles. The endometrial thickness, type, blood flow, serum estradiol (E₂) levels, and natural pregnancy rates of two groups after treatment were compared. **Results:** The endometrial thickness, type, blood flow and serum E₂ levels of two groups after treatment were significantly improved as compared with these before treatment ($P<0.05$). Furthermore, the endometrial thickness and blood flow were significantly different between the two groups after treatment ($P<0.05$). Half a year after treatment, the natural pregnancy rate in study group was significantly increased compared with control group (52.6% vs 28.9%, $P<0.05$). Moreover, the endometrial thickness, type and blood flow were significantly different between pregnancy and unpregnancy in both groups ($P<0.05$). **Conclusion:** Qilin pills combined with femoston can effectively improve the endometrial thickness and blood flow, and significantly enhance the natural pregnancy rates in patients with thin endometrium.

Key words: thin endometrium; infertility; Qilin pills; femoston

A型行为对多囊卵巢综合征患者生存质量影响 及其与临床特征相关性的研究

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【摘要】目的: 探究A型行为(TABP)与多囊卵巢综合征(PCOS)患者临床特征的相关性及对PCOS患者生存质量的影响。方法: 对218名女性进行前瞻性研究, 对照组(正常女性)94例, 观察组(PCOS组)124例。所有对象均填写TABP量表(TABPQ)及中华生存质量量表。各组再根据TABPQ得分分为A组与非A组。检测早卵泡期生殖内分泌激素水平及糖脂代谢指标, 比较各组间各项指标的差异。运用逐步回归分析, 探究TABP与PCOS患者临床特征的相关性。结果: ①TABP在PCOS组与对照组之间的分布没有统计学差异($P>0.05$); ②PCOS组形神维度、喜、怒评分均显著低于对照组($P<0.05$); ③A组七情维度及其包括的喜、怒、忧悲、惊恐评分均显著低于非A组($P<0.05$); ④A组患者发生肥胖及痤疮的几率大于非A组($P<0.05$), 在性激素、糖脂代谢水平及多毛、黑棘皮发生率方面组间无统计学差异($P>0.05$); ⑤多元线性回归分析提示TABP评分与Ferriman-Gallwey(F-G)多毛评分呈正相关。结论: TABP可降低PCOS患者的生存质量, 加重肥胖、多毛及痤疮程度, 但并不影响PCOS患者的生殖内分泌激素及糖脂代谢水平。适当的心理指导对PCOS的治疗是必要的。

关键词: 多囊卵巢综合征(PCOS); A型行为(TABP); 生存质量; 生殖内分泌; 糖脂代谢

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Research on the correlation between type A behavior pattern and the survival quality & clinical features in patients with polycystic ovary syndrome

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【ABSTRACT】 Objective: To explore the correlation between type A behavior pattern (TABP) and the quality of life and clinical features in patients with polycystic ovary syndrome (PCOS). **Methods:** A prospective study was performed among 218 women, which were divided into control group (normal female, 94 cases) and PCOS group (124 cases). All subjects in two groups filled type A behavior pattern questionnaire (TABPQ) and the quality of life scale. The two groups were divided into group A and group non-A according to the scores of TABPQ, respectively. The levels of reproductive endocrine hormone and the indicators of glucolipid metabolism during early follicular phase were detected, and each indicator between the two groups was compared. Multiple linear regression was used to explore the correlation between TABP and the clinical characteristics in the patients with PCOS. **Results:** 1) There was no difference between control group and PCOS group in the distribution of TABP. 2) The scores of the dimension of shape and spirit, happiness and anger in PCOS group were lower than those in the control. 3) The scores of dimension of seven human emotion, happiness, anger, sorrow and fear in group A were lower than those in group non-A. 4) The incidence rate of obesity and acne in group A was greater than that in group non-A ($P < 0.05$). There were no significant statistical differences between the two groups in sex hormones, glucolipid metabolic index, hairy and acanthosis nigricans ($P > 0.05$). 5) Multiple linear regression analysis showed that TABP score was positively correlated with F-G score. **Conclusion:** TABP can reduce the survival quality of patients with PCOS, increase obesity, hairy and acne, but it does not affect the level of reproductive endocrine hormone or glucolipid metabolism. The appropriate psychological guidance is necessary for the treatment of PCOS.

Key words: polycystic ovary syndrome (PCOS); type A behavior pattern (TABP); quality of life; reproductive endocrinology; glucolipid metabolism

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博洛尼亚标准卵巢低反应者IVF/ICSI 妊娠结局的预测因子

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【摘要】目的: 探讨根据博洛尼亚标准诊断的卵巢低反应(POR)患者体外受精(IVF)/ 卵胞质内单精子注射(ICSI)临床妊娠结局的预测因子。方法: 回顾性分析392名符合博洛尼亚标准的POR患者的临床资料。采用多因素逻辑回归分析法研究这些POR患者IVF/ICSI-ET的临床妊娠结局的预测因子。结果: 女方年龄、移植胚胎数和促排卵方案是POR患者IVF临床妊娠结局的预测因子, 其中女方年龄是最佳的预测因子。结论: 随着女方年龄的增加, 妊娠率会不断下降。因此, 应该鼓励博洛尼亚标准POR患者积极接受IVF-ET助孕。生长激素、ICSI或辅助孵化均不能明显改善POR患者的IVF临床妊娠结局。

关键词: 体外受精(IVF); 博洛尼亚标准; 卵巢低反应(POR); 临床妊娠

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Predictive factors for clinical pregnancies of poor responders diagnosed according to the Bologna criteria in ovarian stimulation IVF

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【ABSTRACT】 Objective: To explore the predictive factors for clinical pregnancies of poor ovarian responders diagnosed according to the Bologna criteria in ovarian stimulation *in vitro* fertilization (IVF). **Methods:** The present study included 392 poor ovarian responders diagnosed according to the Bologna criteria (392 first poor response cycles and 247 subsequent conventional stimulation cycles) in our IVF center. Binary logistic regression analysis was used to study the association between possible predictive factors and clinical pregnancy of poor responders in ovarian stimulation IVF. **Results:** The significantly predictive factors for clinical pregnancies of poor responders in ovarian stimulation IVF were female age, number of embryos transferred and ovarian stimulation protocol. Female age had the best predictive value for clinical pregnancy of poor ovarian responders. **Conclusion:** Poor ovarian responders should be encouraged to attempt further ovarian stimulation IVF treatment as soon as possible because the pregnancy rate decreases with advancing female age. Growth hormone supplementation, ICSI procedure or assisted hatching seem not be able to prominently improve the pregnancy outcomes of poor responders diagnosed according to the Bologna criteria in ovarian stimulation IVF.

Key words: *in vitro* fertilization (IVF); Bologna criteria; poor ovarian respond (POR); clinical pregnancy

E-钙粘蛋白基因遗传变异与子宫内膜异位症的关联研究

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【摘要】目的: 探讨 E-钙粘蛋白(*E-cadherin*, *CDH1*)基因遗传变异与子宫内膜异位症(EMS)发病风险的关系。方法: 采用病例-对照研究方法, DNA 测序技术分析 *CDH1* 基因启动子区、所有外显子和 3' 非翻译区(3'-UTR)SNPs 位点, 从中筛选出 6 个候选位点(rs16260、rs28372783、rs1801552、rs1801026、rs8049282、rs13689)。扩大样本, 通过聚合酶链反应-连接酶检测反应(PCR-LDR)方法检测 651 例 EMS 患者(病例组)和 655 名健康对照妇女(对照组)6 个 SNPs 位点的基因型频率分布情况。结果: DNA 测序结果显示 *CDH1* 基因启动子区、所有外显子和 3'-UTR 的 17 个 SNP 位点中 15 个位点在 NCBI 数据库中有记载, 而 2 个位点尚无相关记载, 位于 3'-UTR+759 和 3'-UTR+1445。统计学分析显示 6 个候选的 SNPs 基因型和等位基因在病例组和对照组间的频率分布均无统计学差异($P>0.05$)。但进一步分层分析显示, rs8049282 C/T 多态可能与 EMS 患者的原发不孕相关, 即与 CT+TT 基因型相比, CC 基因型可显著增加 EMS 患者原发不孕的风险($OR=2.25$, $95\%CI=1.32\sim3.83$)。结论: *CDH1* 基因启动子区、外显子和 3'-UTR 区的遗传变异可能与中国北方汉族妇女 EMS 的发病风险无关, 但 rs8049282 C/T 多态可能是 EMS 患者原发不孕的潜在危险因素。

关键词: 子宫内膜异位症(EMS); E-钙粘蛋白(CDH1); 基因多态性; 遗传易感性; 原发不孕

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Study on the associations of E-cadherin gene polymorphisms with the risk of endometriosis

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【ABSTRACT】 Objective: To investigate the associations of single nucleotide polymorphisms (SNPs) of the *E-cadherin* (*CDH1*) gene with endometriosis (EMS). **Methods:** SNPs in the promoter region, exons, and 3'-UTR of the *CDH1* gene were identified by direct sequencing in women with EMS and control women. Genotyping analysis was performed using polymerase chain reaction and ligase detection reaction (PCR-LDR) in 651 women with EMS and 655 control women for the 6 selected SNPs (rs16260, rs28372783, rs1801552, rs1801026, rs8049282, rs13689). **Results:** In total, 17 SNPs were reported by direct sequencing among which 15 SNPs had been recorded in the NCBI database, while there was no record of 2 SNPs located in 3'-UTR at +759 and +1445. There were no significant associations between the SNPs and the risk of developing EMS ($P>0.05$). But further stratified analysis found that the CC genotype of rs8049282 may significantly increase the risk of primary infertility in patients with ovarian EMS ($OR=2.25$, $95\%CI=1.32-3.83$). **Conclusion:** SNPs in the promoter region, exons, and 3'-UTR of the *CDH1* gene may be not associated with the risk of developing EMS in northern Chinese women. But the rs8049282 SNP of the *CDH1* gene may be a potential risk factor of EMS-related infertility.

Key words: endometriosis (EMS); E-cadherin (CDH1); genetic polymorphism; susceptibility; primary infertility

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• 循证医学 •

二甲双胍对体外受精 / 卵胞质内单精子显微注射中多囊卵巢综合征患者妊娠结局有效性的系统评价

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【摘要】目的: 系统性评价二甲双胍对常规体外受精 / 卵胞质内单精子显微注射(IVF/ICSI)中多囊卵巢综合征(PCOS)患者妊娠结局的有效性, 旨在为助孕前的干预措施提供理论依据。方法: 计算机检索中国学术期刊全文数据库(CNKI)、万方数据库、维普数据库、PubMed、Medline、Embase有关二甲双胍对IVF/ICSI中PCOS患者妊娠结局的临床随机对照试验(RCT)。按Cochrane系统评价方法, 首先对纳入的文献进行质量评价和资料提取后, 采用RevMan5.2软件进行Meta分析。结果: 纳入11个RCT研究, 共1310例患者, 其中二甲双胍组713例, 对照组597例。Meta分析结果显示: 与对照组相比较, 二甲双胍组的临床妊娠率($OR=1.60$, $95\%CI: 1.26\sim 2.04$, $P=0.0002$)较高, 卵巢过度刺激综合征(OHSS)发生率较低($OR=0.45$, $95\%CI: 0.31\sim 0.64$, $P=0.0001$)。而活产率($OR=1.38$, $95\%CI: 0.98\sim 1.94$, $P=0.06$)和流产率($OR=0.72$, $95\%CI: 0.51\sim 1.02$, $P=0.07$)组间无统计学差异。结论: 二甲双胍可提高IVF/ICSI中PCOS患者的妊娠率、降低OHSS发生率, 但不能提高活产率及降低流产率。

关键词: 二甲双胍; 体外受精 / 卵胞质内单精子显微注射 - 胚胎移植(IVF/ICSI-ET); 多囊卵巢综合征(PCOS); 妊娠结局; Meta分析

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• 循证医学 •

Pregnancy outcome of metformin in patients with polycystic ovary syndrome undergoing IVF/ICSI: a systematic review

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【ABSTRACT】 Objective: To evaluate the effect of metformin on pregnancy outcomes in patients with polycystic ovary syndrome (PCOS) undergoing *in vitro* fertilization/intracytoplasmic sperm injection (IVF/ICSI), so as to provide evidence for clinical interventions. **Methods:** Randomized controlled trials (RCTs), which focus on the comparison of pregnancy outcomes in PCOS patients undergoing IVF/ICSI were search. Literatures were collected from China National Knowledge Infrastructure (CNKI), Wanfang database, VIP Information, Pubmed, Medline and Embase database. Quality assessment and data extraction were performed independently by two investigators and were analyzed by RevMan 5.2. **Results:** Eleven literatures involving 1 310 cases were selected for Meta analysis, of which 713 cases were in metformin group while the other 597 cases were in control group. Meta analysis showed that the pregnancy rate ($OR=1.60$, $95\%CI=1.26-2.04$, $P=0.000 2$) was higher, ovarian hyperstimulation syndrome (OHSS) rate ($OR=0.45$, $95\%CI=0.31-0.64$, $P=0.000 1$) was lower in metformin group than in control group. But live birth rate ($OR=1.38$, $95\%CI=0.98-1.94$, $P=0.06$) and miscarriage rate ($OR=0.72$, $95\%CI=0.51-1.02$, $P=0.07$) were not significantly different between the two groups. **Conclusion:** Metformin can improve pregnancy rate, reduce OHSS rate, but it has no effects on improving live birth rate and reducing miscarriage rate in PCOS patients undergoing IVF/ICSI.

Key words: metformin; *in vitro* fertilization/intracytoplasmic sperm injection (IVF/ICSI); polycystic ovary syndrome (PCOS); pregnancy outcome; Meta analysis

· 综述 ·

子宫内膜异位症有关信号通路的研究进展

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【摘要】 子宫内膜异位症(endometriosis, EMS)在生育年龄妇女中多发且发病率呈上升趋势,但其具体机制未完全明确,近年国内外学者研究表明EMS中存在的多种细胞凋亡/存活信号转导通路的异常,这些通路的异常启动及其复杂的相互作用会导致异位内膜组织的异常增殖、分化、侵入性增强及炎症反应,促进异位病灶形成,引起不孕、宫腔粘连、痛经等,对患者身心及经济带来极大挑战。因此,进一步研究EMS有关的信号通路对其所致的不孕症的临床治疗提供可靠依据,本文就EMS有关的MAPs通路、PI3K/AKT(PKB)通路、腺上皮-间质相互作用通路、Rho/ROCK通路的研究进展作一综述。

关键词: 子宫内膜异位症(EMS); 信号通路; 丝裂原活化蛋白激酶(MAPK); PI3K/Akt(PKB); 腺上皮-间质相互作用; 转化生长因子- β (TGF- β); Wnt/ β -catenin; 核转录因子- κ B(NF- κ B); 发病机理

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• 综述 •

Progress of studies on the endometriosis signaling pathway

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【ABSTRACT】 Endometriosis (EMS) is a disease which mostly strike reproductive age women and incidence of which is on the rise. But its concrete mechanism is not completely clear by now. In recent years, scholars at home and abroad have indicated that there's a variety of abnormal signal transduction pathways of cell's apoptosis/survival in the EMS, the abnormal activation and interaction of which will cause ectopic lesions' excessive proliferation, differentiation, invasive enhancement and inflammation, promote the formation of ectopic lesions, and cause the infertility, intrauterine adhesions and menstrual cramps, etc. That will take great challenges on the patients' body, mind and economy. Thus, further study on the signal paths relat to EMS which cause infertility provide reliable basis for the clinical treatment. This review focuses on the progress of studies on MAPKs (mitogen-activated protein kinases) signaling pathway, PI3K (phosphatidyl inositol 3-kinase)/AKt (PKB) signaling pathway, glandular epithelium and stroma interaction pathways and Rho/ROCK (Rho associated coiled coil forming protein kinase) signaling pathway, which are concerned with EMS.

Key words: endometriosis (EMS); signal pathway; MAPK; PI3K/Akt (PKB); glandular epithelium and stroma interactions; TGF- β ; Wnt-catenin; nuclear factor-kappa B (NF- κ B); pathogenesis

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非编码RNA在卵泡发育和卵巢疾病中的研究进展

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【摘要】 非编码RNA(non-coding RNA, ncRNA)是目前生物医学领域的研究热点, 如长链非编码RNA(long non-coding RNA, lncRNA)和小非编码RNA: 微小RNA(mircoRNA, miRNA)、内源性小干扰RNA(endogenous small interfering RNA, endo-siRNA)、PIWI相互作用RNA(PIWI interacting RNA, piRNA)等, 它们作为细胞内基因调控网络的重要成员影响细胞的各种生命活动。近年来研究表明这些非编码RNA在卵巢也发挥重要作用, 参与了颗粒细胞增殖、分化、凋亡以及激素合成的调控, 在卵母细胞存活和发育中发挥重要作用, 非编码RNA的表达异常与多囊卵巢等疾病密切相关, 本文就非编码RNA与卵巢卵泡发育以及卵巢相关疾病的研究作一简述。

关键词: 长链非编码RNA(lncRNA); 微小RNA(miRNA); PIWI相互作用RNA(piRNA);
内源性小干扰RNA(endo-siRNA); 卵泡发育

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Research progress of non-coding RNA in follicle development and ovarian diseases

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【ABSTRACT】Non-coding RNA (ncRNA) has been the hotspot of biomedical field in recent years, such as long non-coding RNA (lncRNA), mircoRNA (miRNA), PIWI interacting RNA (piRNA) and endogenous small interfering RNA (endo-siRNA). As important factors of gene regulating network, they play important roles in cellular activities. Recent studies showed that non-coding RNA was also involved in ovaries. In this paper, we will summarize the research progress of non-coding RNA in follicle development and ovarian diseases.

Key words: non-coding RNA (ncRNA); mircoRNA (miRNA); PIWI interacting RNA (piRNA); endogenous small interfering RNA (endo-siRNA); follicle development

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双调蛋白在女性生殖系统作用的研究进展

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【摘要】 在女性生殖功能实现的复杂过程中, 双调蛋白(amphiregulin, Areg)参与调控颗粒细胞的黄素化、卵母细胞减数分裂的恢复及调控卵子成熟、卵丘复合体的扩张及排卵, 而且其表达水平与卵子的发育潜能密切相关。Areg与子宫内膜的容受性密切相关, 可能参与到胚胎的着床过程中。Areg诱导合体滋养层细胞分泌大量绒毛膜促性腺激素(hCG), 参与孕早期妊娠的维持。

关键词: 双调蛋白(Areg); 表皮生长因子(EGF)家族; 卵泡发育; 子宫内膜

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Current research progress of amphiregulin on female reproductive system

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【ABSTRACT】 In the complex process for completion of female reproductive function, amphiregulin (Areg) plays a role in the regulation of luteinization of granulosa cells, resumption of meiosis and oocyte maturation, expansion of cumulus-oocyte complex (COC) and ovulation. It is also closely related to the development potential of oocytes. Areg is representative of endometrial receptivity, which may take part in the process of implantation. Areg induces the secretion of human chorionic gonadotropin in syncytiotrophoblast, participating in the maintenance of early pregnancy.

Key words: amphiregulin (Areg); epidermal growth factor (EGF) family; follicle development; endometrium

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• 临床报道 •

全部胚胎冷冻保存在卵巢低反应患者 微刺激方案 IVF-ET 中的应用

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【摘要】目的: 探讨全部胚胎冷冻保存对卵巢低反应患者微刺激方案助孕结局的影响。方法: 回顾性分析微刺激方案 IVF-ET 共 483 个周期, 根据胚胎移植时机不同分为 A 组(新鲜胚胎移植组, 275 个周期)和 B 组[全部胚胎冷冻保存首次冷冻胚胎复苏移植术(FET)组, 208 个周期], 比较组间患者的年龄、基础 FSH、不孕年限、扳机日优势卵泡数目、内膜厚度、获卵数、可利用胚胎数及临床妊娠率、胚胎种植率、流产率。结果: A 组扳机日内膜厚度和获卵数高于 B 组, 差异有统计学意义($P < 0.05$), A 组的临床妊娠率、胚胎种植率低于 B 组, 差异有统计学意义($P < 0.05$), 患者的年龄、基础 FSH、Gn 总量、扳机日优势卵泡数、扳机日雌二醇(E_2)和孕酮(P)值、可利用胚胎数、移植周期内膜厚度、移植胚胎数、流产率组间均无统计学差异($P > 0.05$)。结论: 对于使用微刺激方案助孕的卵巢低反应患者, 全部胚胎冻存择期进行 FET 可以改善其助孕结局, 是一种值得临床推广的助孕策略。

关键词: 全部胚胎冷冻保存; 微刺激; 卵巢低反应; 临床妊娠率; 胚胎种植率

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• 临床报道 •

Clinical application of all embryos cryopreservation for mild stimulation protocol IVF-ET in women with poor ovarian response

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【ABSTRACT】 Objective: To explore the clinical application of all embryos cryopreservation for mild stimulation protocol *in vitro* fertilization-embryo transfer (IVF-ET) in women with poor ovarian response (POR). **Methods:** A total of 483 cycles of mild stimulation protocol for IVF-ET were retrospectively analyzed. According to the timing of embryo transfer, the patients were divided into group A (fresh embryo transfer, 275 cycles) and group B [the first frozen-thawed embryo transfer (FET) of all embryos cryopreservation, 208 cycles]. The age, basal FSH, duration of infertility, number of dominant follicles on trigger day, endometrial thickness, the number of retrieved oocytes, portable embryos number, clinical pregnancy rate, implantation rate and abortion rate were compared. **Results:** The endometrial thickness on trigger day and the number of retrieved oocytes in group A were higher than those in group B ($P<0.05$), the clinical pregnancy rate and the implantation rate in group A were significantly lower compared with group B ($P<0.05$). There were no significant differences between the two groups in age, basal FSH, the dose of gonadotropin, the number of dominant follicles on trigger day, E_2 and P value on trigger day, portable embryos number, endometrial thickness in ET cycle, the number of ET embryo and the abortion rate ($P>0.05$). **Conclusion:** The strategy of all embryos cryopreservation and selective FET could improve the clinical outcomes of POR patients with mild ovarian stimulation, it's a worthy strategy to promote in assisted reproductive technology.

Key words: all embryos cryopreservation; mild ovary stimulation; poor ovarian response (POR);
clinical pregnancy rate; embryo implantation rate

控制性超促排卵刺激中子宫内膜息肉对体外受精 - 胚胎移植妊娠结局的影响

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【摘要】目的: 探讨在控制性超促排卵(controlled ovarian hyperstimulation, COH)刺激过程中新诊断的子宫内膜息肉(endometrial polyp, EP)对体外受精/卵胞质内单精子显微注射-胚胎移植(IVF/ICSI-ET)新鲜周期妊娠结局的影响。方法: 选择行IVF/ICSI-ET新鲜周期的3 003例患者的3 003个周期进行回顾性分析。IVF/ICSI-ET术前行相关检查诊断宫腔形态正常,根据在COH过程中是否新发现EP将其分为研究组(新发现息肉, $n=60$)和对照组(未发现息肉, $n=2 943$)。观察患者妊娠结局。结果: 患者的临床妊娠率、自然流产率、继续妊娠率组间比较,差异均无统计学意义($P>0.05$)。研究组和对照组生化妊娠率(20.0% vs 9.8%)、异位妊娠率(3.3% vs 0.1%),差异有统计学意义($P=0.035$, $P<0.000 1$)。结论: 在COH刺激过程中新诊断的与生化妊娠和异位妊娠的发生相关,但不影响IVF-ET新鲜周期的最终临床妊娠率、继续妊娠率以及早期流产率的发生。

关键词: 体外受精-胚胎移植(IVF-ET); 妊娠结局; 宫腔镜; 子宫内膜息肉(EP)

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Influence of newly diagnosed endometrial polyps during controlled ovarian hyperstimulation on pregnancy outcome in *in vitro* fertilization-embryo transfer

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【ABSTRACT】 Objective: To investigate the influence of newly diagnosed endometrial polyps (EP) during controlled ovarian hyperstimulation (COH) on the outcomes of fresh *in vitro* fertilization/intracytoplasmic sperm injection-embryo transfer (IVF/ICSI-ET) cycles. **Methods:** A total of 3 003 patients undergoing IVF/ICSI were studied, retrospectively. Patients were stratified into two groups based on the presence or absence of newly diagnosed EP during COH, which were divided into research group ($n=60$) and control group ($n=2\ 943$). **Results:** There was no statistical difference in the overall clinical pregnancy rate, spontaneous miscarriage rate, and ongoing pregnancy rate between research group and control group ($P>0.05$). The biochemical pregnancy rate (20.0% vs 9.8%) and the ectopic pregnancy rate (3.3% vs 0.1%) were statistically different between the two groups ($P=0.035$, $P<0.000\ 1$). **Conclusion:** Newly diagnosed EP during COH is associated with an increased biochemical pregnancy rate and ectopic pregnancy rate, but does not adversely impact clinical pregnancy rate or ongoing pregnancy rate after fresh IVF-ET.

Key words: *in vitro* fertilization and embryo transfer (IVF-ET); pregnancy outcome; hysteroscopy; endometrial polyps (EP)

基于拉曼光谱评估人类精子存活能力的研究

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【摘要】目的: 探讨拉曼光谱用以鉴别正常精子和死精子的可行性。方法: 以10例捐精者正常精子为实验组, 5例死精子为对照组。伊红染色法鉴别死活精子, 分别按照形态学对精子核仁、顶体、颈部进行拉曼光谱扫描, 比较研究组和对照组拉曼光谱强度。结果: 精子的拉曼光谱主要由500~650/cm、1 000~1 200/cm 2个区域组成, 峰强集中在550/cm及1 100/cm左右, 不同扫描位点的拉曼光谱无统计学差异($P>0.05$)。死精子在拉曼光谱强度上明显强于正常精子: 正常精子强度普遍 <300 IU, 死精子强度 >400 IU。结论: 拉曼光谱可对精子的存活能力提供新的评估方法, 并为进一步筛选正常精子用于辅助生殖技术开拓新思路。

关键词: 拉曼光谱; 死活精子; 无创检测

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Non-invasive evaluation of human sperm vitality using Raman spectroscopy

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【ABSTRACT】 Objective: To investigate if Raman spectroscopy can be used to distinguish live and dead human sperm. **Methods:** Five necrospermic semen samples were selected as experimental group, while 10 normal semen samples were set as control group. Eosin-Y test was firstly used to distinguish live and dead sperm, then Raman spectroscopic scanning was set on nucleus, acrosome, and neck of sperm, respectively. **Results:** Raman spectrum of sperm was mainly consisted of two areas at 500–650/cm and 1 000–1 200/cm, and the spectral peaks concentrated around 550/cm and 1 100/cm($P>0.05$). The Raman spectra had a significantly higher intensity in dead sperm (>400 IU) than in live sperm (<300 IU)($P<0.05$), while no obvious differences were found in nucleus, acrosome and neck. **Conclusion:** Raman spectroscopy provides a new evaluation method for human sperm vitality, and may serve as a new approach to select live sperm for assisted reproductive technique.

Key words: Raman spectroscopy; dead and live sperm; non-invasive detection

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