

• 实验研究 •

## 青春期雄性小鼠双酚A暴露对生殖功能及子代性别比的影响

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**【摘要】**目的: 研究双酚A(BPA)暴露对青春期雄性小鼠成年后生殖功能及对子代的影响。方法: 21日龄C57BL/6J雄性小鼠每日腹腔注射BPA 50 mg/kg连续7 d, 35 d后检测成年后雄鼠附睾尾精子数量、精子畸形率、睾丸组织学变化; 与正常雌性小鼠配种, 观测生育力指标以及仔鼠的出生情况。结果: BPA暴露能引起小鼠附睾尾精子数量下降20.6% ( $P < 0.01$ ); 精子畸形率增加9.65% ( $P < 0.05$ ); 睾丸组织结构异常; BPA暴露对雄性小鼠成年后的生育力没有明显影响; 但能引起子代雄:雌出生性别比升高。结论: 青春期雄鼠BPA暴露能引起成年雄鼠生精功能下降, 仔小鼠雄性比例增加。

**关键词:** 双酚A (BPA); 生殖功能; 性别比

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• 实验研究 •

## Adolescent exposure to bisphenol A affects the reproduction of male mice and sex ratio of offsprings

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**【ABSTRACT】 Objective:** To study the effects of adolescent exposure to bisphenol A (BPA) on the reproduction of male mice in adulthood and subsequent generation mice. **Methods:** Male mice aged 21 d were exposed to BPA at a dose of 50 mg/kg per day for 7 d by intraperitoneal injection. Sperm count, sperm deformity rate and testis histology were evaluated 35 d after exposure. Male fertility index and newborns were further observed by mating with the normal female mice. **Results:** The epididymal sperm number was decreased by 20.6% in BPA exposure group compared with the control ( $P<0.01$ ). Sperm deformity rate in BPA group was increased by 9.65% compared with the control ( $P<0.05$ ). Testis seminiferous tubules were abnormal with sloughing of germ cells; BPA exposure had no significant effects on the fertility of male mice in adulthood; sex ratio of male to female offspring was increased. **Conclusion:** Adolescent exposure to BPA can disrupt spermatogenesis in adulthood, and the proportion of male offspring was increased compared with the control.

**Key words:** bisphenol A (BPA); spermatogenesis; sex ratio

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## 二甲双胍通过抑制核糖体40S小亚基S6K蛋白激酶(P70S6)调节体外人颗粒细胞胰岛素受体底物-1(IRS-1)的表达

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**【摘要】**目的: 探讨二甲双胍对核糖体40S小亚基S6K蛋白激酶(P70S6k)及胰岛素受体底物-1(IRS-1)蛋白及其 ser307 位点磷酸化表达的影响。方法: 利用 0.1 mmol/L 二甲双胍体外连续作用多囊卵巢综合征(PCOS)患者黄素化颗粒细胞 24 h 为实验组, 设未加二甲双胍培养的颗粒细胞为对照组。  
■ ■ RT-PCR 和 Real-time PCR 检测 P70S6k 和 IRS-1 的表达, 细胞免疫荧光化学和 Western blotting 的方法检测 P70S6k、p-thr389-P70S6k、IRS-1 及 p-ser307-IRS-1 蛋白的表达。结果: Real-time PCR 结果显示实验组 P70S6k 和 IRS-1 mRNA 水平显著低于对照组, 差异有统计学意义 ( $P < 0.05$ )。细胞免疫荧光化学检测 IRS-1 和 p-ser307-IRS-1 蛋白在颗粒细胞胞质表达, P70S6k 和 p-thr389-P70S6k 蛋白在细胞核表达。Western blotting 法结果显示二甲双胍作用 24 h 前、后卵巢颗粒细胞 P70S6k、p-thr389-P70S6k、IRS-1 及 p-ser307-IRS-1 蛋白表达有统计学差异 ( $P < 0.05$ ), 灰度值分析显示添加二甲双胍组 P70S6k、p-thr389-P70S6k 蛋白表达显著升高, IRS-1 及 p-ser307-IRS-1 蛋白表达显著下降 ( $P < 0.05$ )。结论: 二甲双胍可抑制人颗粒细胞 P70S6k 的表达, 并通过 Akt/P70S6k/IRS 途径调节 IRS-1 的表达, 从而增加颗粒细胞胰岛素的敏感性。

**关键词:** 二甲双胍; 核糖体40S小亚基S6K蛋白激酶(P70S6k); 胰岛素受体底物-1(IRS-1); 人颗粒细胞

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## Effect of metformin-induced stimulation on the expression of insulin receptor substrate 1 (IRS-1) through negative regulation of P70S6k

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**【ABSTRACT】 Objective:** To study the effects of metformin treatment on the expression of 70 kDa ribosomal protein S6 kinase (P70S6k), insulin receptor substrate 1 (IRS-1) and IRS-1Ser307 phosphorylation in granulosa cells. **Methods:** Granulosa cells were cultured in DMEM media supplemented with 0.1 mmol/L metformin for 24 h, and only cultured in DMEM media in the control. The expressions of P70S6k, IRS-1 mRNA were detected by RT-PCR and Real-time PCR. P70S6k, IRS-1, p-ser307-IRS-1 and p-thr389-P70S6k protein expressions were detected by immunohistochemistry and Western blotting. **Results:** P70S6k mRNA level showed an increasing tendency, whereas a decrease on the IRS-1 mRNA level was observed by Real-time PCR ( $P<0.05$ ). IRS-1, p-ser307-IRS-1, P70S6k and p-thr389-P70S6k protein level were significantly different after metformin treatment for 24 h, as compared with the control ( $P<0.05$ ). Compared the mean intensity of bands of Western blotting, in the metformin treatment group P70S6k and p-thr389-P70S6k protein level was significantly higher, and IRS-1, p-ser307-IRS-1 level was significantly lower ( $P<0.05$ ). **Conclusion:** Metformin treatment inhibited the expression of P70S6k mRNA and protein levels in granulosa cells, and improved insulin sensitivity with altered IRS-1 expression via an Akt/P70S6k/IRS-1-dependent pathway.

**Key words:** metformin; 70 kDa ribosomal protein S6 kinase (P70S6k); insulin receptor substrate 1 (IRS-1); human granulosa cells

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• 临床研究 •

## 种植窗期宫腔液单核细胞趋化蛋白(MCP)-1 预测冻融胚胎移植妊娠结局

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**【摘要】**目的: 探讨体外受精-冻融胚胎移植(IVF-FET)周期种植窗期宫腔液和血清生物因子表达谱与胚胎植入的关系。方法: 收集87例患者行FET前的血清及宫腔液, 根据妊娠结局分为妊娠组和非妊娠组, 分析患者血清和宫腔液中27种调节因子的表达谱。结果: 宫腔液中妊娠组单核细胞趋化蛋白-1(MCP-1)表达水平低于非妊娠组( $11.67 \pm 23.68$  ng/L vs  $17.02 \pm 33.67$  ng/L), 差异有统计学意义( $P < 0.05$ ), 宫腔液的其余因子及血清生物因子表达组间均无统计学差异( $P > 0.05$ )。结论: 种植窗期宫腔液MCP-1可预测FET妊娠结局, 且其表达水平与妊娠结局呈负相关。

**关键词:** 体外受精-胚胎移植(IVF-ET); 冻融胚胎移植(FET); 反复种植失败(RIF); 临床妊娠率

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## MCP-1 from endometrial secretions may predict pregnancy outcome during implantation window in frozen-thawed embryo transfer

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**【ABSTRACT】 Objective:** To investigate the relationship between embryo implantation during *in vitro* fertilization and frozen-thawed embryo transfer (IVF-FET) and cytokines profiling in serum and endometrial secretions, respectively. **Methods:** The serum and endometrial secretions samples from 87 patients before FET were collected. According to the pregnancy outcomes, all the patients were divided into pregnancy group and non-pregnancy group. Totally, 27 cytokines in serum and endometrial secretions were compared between the two groups, respectively. **Results:** Monocyte chemoattractant protein-1 (MCP-1) expression level in endometrial secretions in the pregnancy group was significantly lower than that in the non-pregnancy group ( $11.67 \pm 23.68$  ng/L vs  $17.02 \pm 33.67$  ng/L) ( $P < 0.05$ ). However, the remaining mediators in endometrial secretions had no differences in two groups, neither did the cytokines in serum. **Conclusion:** High MCP-1 level in endometrial secretions had a detectable effect on clinical pregnancy. And the expression level of cytokines in serum could not predict the clinical pregnancy outcome.

**Key words:** *in vitro* fertilization-embryo transfer (IVF-ET); frozen-thawed embryo transfer (FET); repeated implantation failure (RIF); clinical pregnancy rate

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# 针灸对IVF-ET反复种植失败患者子宫内膜血流及胞饮突表达的影响

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**【摘要】**目的: 探讨针灸对体外受精-胚胎移植(IVF-ET)反复种植失败(RIF)患者子宫内膜容受性的影响及其作用机制。方法: 将IVF-ET胚胎质量好但RIF的40例患者随机分为试验组及对照组, 每组20例。试验组于月经第7日开始运用艾条灸神阙穴, 针刺穴位关元、气海、子宫、血海等至排卵后第7日止, 此为1个疗程, 共行3个疗程。对照组于相同时间运用安慰针灸治疗。观察治疗前、后排卵第7日的子宫内膜厚度、类型、子宫内膜血流指数[搏动指数(PI)及阻力指数(RI)], 并用扫描电子显微镜观察患者子宫内膜表面胞饮突情况。结果: 治疗前所有IVF-ET反复失败患者发育的胞饮突少, 不同步, 发育完全的胞饮突少见, 试验组治疗后的患者子宫内膜胞饮突表达丰富, 发育完全, 与治疗前比差异有统计学意义, 对照组治疗前、后变化差异无统计学意义。试验组治疗3个疗程后, 排卵后第7日A型内膜比例高于对照组, 差异有统计学意义( $P < 0.05$ ), 子宫内膜血流参数PI、RI低于对照组, 差异均有统计学意义( $P < 0.01$  或  $P < 0.05$ ), 试验组与对照组治疗后的排卵第7日子宫内膜厚度差异无统计学意义( $P > 0.05$ )。结论: 针灸可以改善IVF-ET胚胎质量好, 但RIF患者的子宫内膜形态, 降低子宫内膜的血流阻力, 改善血供, 提高患者子宫内膜胞饮突的表达, 从而提高子宫内膜容受性, 有利于胚胎种植。

**关键词:** 针灸; 体外受精-胚胎移植(IVF-ET); 反复种植失败(RIF); 子宫内膜; 胞饮突

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## Effect of acupuncture and moxibustion on the endometrial blood flow and pinopodes express in patients with repeated implantation failure during IVF-ET process

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**【ABSTRACT】 Objective:** To investigate the influence of acupuncture and moxibustion on endometrial receptivity in patients with repeated implantation failure (RIF) during IVF-ET process and its mechanism. **Methods:** Forty RIF patients were randomized into experimental group ( $n=20$ ) and control group ( $n=20$ ). The acupuncture and moxibustion intervention was also added in the experimental group from the 7th day of menstruation until the 7th day after ovulation, which was a course of the treatment. Three courses of the treatment were carried out. Shenque (CV8), Zhongji (CV3), Guanyuan (CV4), Qihai (CV6), Zigong (CA1), Xiehai (SP10), etc. were selected. The clinical data including endometrial thickness, endometrial blood flow index and expression of pinopodes were compared between the two groups, respectively. **Results:** The endometrial pinopodes of two groups showed deficient, delayed, and out of step before treatment. Fully developed ones appeared much less. Compared with the control, the experimental group showed abundant pinopodes coverage and the pinopodes developed after treatment ( $P<0.01$ ). After 3 courses of treatment, the proportion of type A endometrium on the 7th day after ovulation was higher in the experimental group than in control group ( $P<0.05$ ). The PI and RI of endometrial blood flow were significantly lower in the experimental group than in control group ( $P<0.01$  or  $P<0.05$ ). The endometrial thickness of the two groups after treatment on the 7th day after ovulation had no statistically significant differences ( $P>0.05$ ). **Conclusion:** Acupuncture can take the beneficial effect on the endometrial blood supply and morphology, effectively improve endometrial receptivity, and hence is expected to become the excellent adjuvant therapy of improving treatment outcome in IVF-ET.

**Key words:** acupuncture and moxibustion; *in vitro* fertilization-embryo transfer (IVF-ET); repeated implantation failure (RIF); endometrium; endometrial pinopodes

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# 不同剂量戊酸雌二醇用于中、重度宫腔粘连术后辅助治疗的临床疗效观察

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**【摘要】**目的: 探讨雌激素(戊酸雌二醇)用于中、重度宫腔粘连术后的辅助治疗的最佳剂量。方法: 选取90例宫腔镜下确诊为中、重度宫腔粘连患者, 成功施行宫腔镜下粘连分离术, 术后宫腔留置Foley尿管水囊, 随机分成3组, 每组30例, 给予不同剂量雌激素人工周期治疗3个月, A组4 mg/d, B组8 mg/d, C组12 mg/d。定期随访观察患者的月经、宫腔形态、内膜厚度及对有生育要求者随访1年内的妊娠情况。结果: 对于中度粘连, B、C组在改善月经、恢复宫腔形态及增加内膜厚度上明显优于A组, 差异有统计学意义( $P < 0.05$ ), B、C组间差异无统计学意义( $P > 0.05$ ); 对于重度粘连, 3组间差异均无统计学意义( $P > 0.05$ ); A、B、C组1年内妊娠率分别为40.0%(4/10), 33.3%(4/12)和35.3%(6/17), 差异无统计学意义( $P > 0.05$ )。结论: 对于中度宫腔粘连, 适当运用大剂量雌激素能明显提高治疗有效率, 增加内膜厚度, 预防再次粘连, 且安全可行; 但不必盲目增加雌激素剂量而相应增加药物的不良风险。对于重度宫腔粘连, 大剂量雌激素未能明显提高治疗有效率, 且3组辅助治疗后均未有效提高术后妊娠率。

**关键词:** 戊酸雌二醇; 宫腔粘连(IUA); 宫腔粘连分离术(TCRA); 人工周期

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## Effects of different doses of estrogen on endometrium restoration after separation of moderate or severe intrauterine adhesions

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**【ABSTRACT】 Objective:** To investigate the effect of artificial cycle treatment with different doses of estrogen (estradiol valerate) in preventing secondary adhesions after the surgical separation of moderate or severe intrauterine adhesions. **Methods:** A prospective randomized controlled trial was conducted. Ninety cases with moderate or serious intrauterine adhesion were confirmed by hysteroscope and underwent transcervical resection of adhesions, foley catheter balloons were inserted postoperatively. All cases were randomly divided into three groups and received artificial treatment for 3 months. In group A, 30 cases were all given estrogen 4 mg/d. In group B, 30 cases were all given estrogen 8 mg/d while in group C, 30 cases received estrogen 12 mg/d. All cases were analyzed by menstruation, morphology of the uterine cavity, endometrial thickness and the one-year outcome of fertility for patients with fertility requirements. **Results:** For the moderate intrauterine adhesion, the menstruation, morphology of the uterine cavity and endometrial thickness were significantly improved between groups B and C compared with group A ( $P < 0.05$ ). No significances were found in groups B and C ( $P > 0.05$ ). For the severe intrauterine adhesion patients, no statistically significant difference was observed among the three groups ( $P > 0.05$ ). One-year pregnancy rate after operation in groups A, B, C was 40.0% (4/10), 33.3% (4/12) and 35.3% (6/17), respectively, without statistically significant difference ( $P > 0.05$ ). **Conclusion:** For the moderate intrauterine adhesion patients, large dose of estrogen improved the efficiency in preventing secondary intrauterine adhesions and increasing the endometrial thickness. Don't blindly increase estrogen dose, and accordingly increase the risk of adverse drug. For the severe intrauterine adhesion patients, large dose of estrogen failed to significantly improve the treatment efficiency. Although there were no significances in the one-year outcome of fertility, further study with large sample was still needed to confirm our results.

**Key words:** estradiol valerate; intrauterine adhesion (IUA); transcervical resection of adhesion (TCRA); artificial cycle

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# 人工流产术后即时放置第三代“爱母”牌宫内节育器(MYCu IUD)的临床效果观察

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**【摘要】**目的: 观察第三代“爱母”牌宫内节育器(MYCu IUD)在人工流产术后即时放置的临床效果和安全性。方法: 通过前瞻性随机对照研究, 对932例研究对象于人工流产术后即时放置MYCu IUD (研究组)、T形含铜IUD(TCu380A)(对照组), 每组各466例, 放置后1个月、3个月、6个月、12个月定期随访。结果: 930例完成了12个月的随访, 失访2例; 无子宫穿孔、带器妊娠发生; 无其他医疗原因或个人原因取器者; 置器12个月时研究组与对照组随访率均为99.8%; 置器1年净累积续用率研究组(96.14%)高于对照组(88.41%)( $P<0.05$ ); 置器后1个月、3个月、6个月、12个月研究组与对照组累积脱落率相似, 差异无统计学意义( $P>0.05$ ); 置器后1个月、3个月、6个月因症取出率研究组均显著低于对照组, 每次随访差异均有统计学意义( $P<0.05$ ); 置器后1个月IUD嵌顿发生率研究组明显高于对照组( $P<0.05$ ); 置器后1个月、3个月、6个月与IUD使用相关的终止率研究组均明显低于对照组( $P<0.05$ ); 置器后1个月、3个月、6个月副反应发生率研究组均明显低于对照组( $P<0.05$ )。结论: 人工流产术后即时放置MYCu IUD、TCu380A的避孕效果均良好, 虽然MYCu IUD因症取出率、副反应发生率低于TCu380A, 但其嵌顿发生率高于TCu380A。

**关键词:** 宫内节育器(IUD); 临床效果; 人工流产

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## Observation on clinical effects of MYCu IUD inserted immediately after vacuum aspiration

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**【ABSTRACT】 Objective:** To understand the safety and effectiveness of MYCu IUD insertion immediately after vacuum aspiration. **Methods:** A multi-center randomized controlled clinical trial was performed in three family planning service stations of medical institutions located in Shanghai Pudong New Area. Totally 932 eligible women were inserted MYCu or TCu380A IUD randomly after vacuum aspiration immediately, each for 466 cases, they were followed up in 1, 3, 6, 12 months. **Results:** Except for 2 cases who dropped out (loss rate was 0.22%, 2/932), the data of 930 cases were analyzed. No uterine perforation was found. No pregnancy with IUD *in situ* occurred. There were no other medical or personal reasons for removal. Rate of follow up in 12th months was 99.8% in two groups. The rate of cumulative continue in 12th months MYCu IUD was higher (96.14%) than that of T380A IUD group (88.41%) ( $P<0.05$ ). In 1, 3, 6, 12 months after insertion, the rate of accumulation expulsion was similar in MYCu IUD and T380A IUD group, there was no difference between the two groups ( $P>0.05$ ). The termination rates for symptoms in 1, 3, 6 months of the MYCu IUD were significantly lower than those of the TCu380A IUD ( $P<0.05$ ). The embedment rate in 1st month MYCu IUD was significantly higher than those of TCu380A IUD ( $P<0.05$ ); the termination rate of associated with an IUD use of the MYCu IUD were significantly lower than that of the TCu380A IUD ( $P<0.05$ ) in 1, 3, 6 months. The complaint rates of the MYCu IUD were significantly lower than that of the TCu380A IUD ( $P<0.05$ ) in 1, 3, 6 months. **Conclusion:** There are effectiveness for two types of IUD immediately after vacuum aspiration. Although there were lower termination rate and complaint rate in MYCu IUD group than those of TCu380A IUD group, the embedment rate of patients who placed MYCu IUD immediately after abortion was significantly higher than that of TCu380A IUD.

**Key words:** intrauterine device (IUD); clinical effect; abortion induced

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· 综述 ·

## 卵母细胞冷冻保存技术新进展

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**【摘要】** 卵母细胞的冷冻保存已经成为女性生殖力保存的一个重要方式, 在人类辅助生殖领域中起着关键的作用。近几年, 卵母细胞冷冻保存技术的研究有了很大的突破, 在诸多方面都提出了一些新技术与新方法, 主要包括冷冻方法、保护剂种类、保护剂添加与去除的方式以及卵母细胞质量的评价等, 其中微流体装置不仅用于保护剂的连续添加和去除, 还能用于细胞的玻璃化冷冻保存, 同时细胞质量评价技术的优劣直接会影响胎儿的发育, 甚至成人的健康。因此, 微流体技术与科学的质量评价方法可能是未来卵母细胞冷冻保存研究的重要方向。

**关键词:** 卵母细胞; 冷冻保存; 低温保护剂; 冷冻载体

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## Progress on cryopreservation technology of oocytes

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**【ABSTRACT】** Oocyte cryopreservation has become an essential means in fertility preservation for women, and plays a key role in the field of human assisted reproduction. In recent years, the research of oocyte cryopreservation technology has made a significant breakthrough, and put forward some new technologies and new methods in many ways, mainly including freezing method, types of cryoprotectants, the way of the cryoprotective agent (CPA) loading and unloading, and oocyte quality assessment and so on. The microfluidic device is not only used for CPA continuous loading and unloading, also used for cell vitrification preservation, and the advantages and disadvantages of cell quality evaluation technology can directly affect the fetal developmental, even the adult health. So microfluidic technology and scientific quality evaluation method may be an important direction for oocyte cryopreservation in the future.

**Key words:** oocyte; cryopreservation; cryoprotectants; frozen carrier

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# 子宫内膜容受性各相关标志物研究进展

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**【摘要】**子宫内膜容受性是指母体子宫内膜对胚泡的接受能力。子宫内膜的形态学及相关因子表达伴随子宫内膜容受性发生变化,如胞饮突的出现、白血病抑制因子(leukemia inhibitory factor, LIF)、白介素-1(interleukin-1, IL-1)、整合素、选择素、胰岛素样生长因子(insulin-like growth factors, IGF)、前列腺素(prostaglandin, PG)、降钙素、基质金属蛋白酶(matrix metalloproteinases, MMPs)、组织金属蛋白酶抑制剂(tissue inhibitor of matrix metalloproteinases, TIMPs)、同源框基因(*HOX* 基因)等蛋白和基因表达水平的变化。这些均可作为子宫内膜容受性不同时空的标志物,研究这些标志物不仅能够很好地监测子宫内膜容受性,而且能针对性地改善子宫内膜容受性,有助于提高胚胎着床率。

**关键词:** 子宫内膜容受性; 标志物; 胚胎着床

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## Research progress in relevant markers for endometrial receptivity

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**【ABSTRACT】** Endometrium receptivity refers to the ability of maternal endometrium to accept a blastocyst. Endometrial morphology and the expression of some relevant protein or cytokine change with the endometrium receptivity, for example, the appearance of pinopodes and the increased expressions of leukemia inhibitory factor (LIF), interleukin-1 (IL-1), integrin, selectin, insulin-like growth factors (IGF), prostaglandin (PG), calctinin, matrix metalloproteinases (MMPs), tissue inhibitor of matrix metalloproteinases (TIMPs) and HOXA10 in the endometrium. In this study we will discuss about the responsible markers for the endometrium receptivity. We try to provide the targets helpful to the treatment of infertility.

**Key words:** endometrial receptivity; marker; embryo implantation

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# 更年期妇女生存质量研究进展

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**【摘要】** 更年期妇女出现的潮热出汗、焦虑抑郁等生理、心理症状可能严重影响生存质量。更年期妇女生存质量的影响因素和更年期综合征治疗方法一直是该领域的研究热点。对更年期妇女生存质量常用的评价工具有生存质量量表(UQoLS)、妇女健康问卷(WHQ)、更年期生存质量评分量表(MRS)。较为公认的影响更年期妇女生存质量的因素有肥胖、肌肉力量、经济状况、受教育程度、职业和生育次数。目前, 更年期症状的治疗以激素治疗为主导, 也可以选择使用中药、穴位埋线等治疗方法。

**关键词:** 更年期; 生存质量; 进展

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## Research progresses on life quality of climacteric women

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**【ABSTRACT】** Menopausal women's physiological and psychological symptoms such as hot flashes, sweating, anxiety and depression may seriously affect the quality of life. Factors influencing the quality of life and treatments of menopausal syndrome have always been a research focus in the field. The common assessment tools used to assess menopausal women's quality of life include the Utian Quality of Life Scale (UQoLS), the Women's Health Questionnaire (WHQ), menopause rating scale (MRS), WHOQOL-BREF (WHO). Factors influencing the quality of life include obesity, muscular strength, financial situation, educational level, occupation, number of birth. Therapies for menopause syndrome include hormone replacement therapy (HRT), Chinese Medicine, and acupuncture catgut embedding, etc.

**Key words:** climacteric; quality of life; progress

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• 临床报道 •

## 短时授精对IVF受精正常患者 治疗结局的影响

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**【摘要】**目的: 探讨短时授精对IVF受精正常患者体外受精-胚胎移植(IVF-ET)治疗结局的影响。方法: 回顾性分析IVF受精率>60%患者的临床资料, 按授精方案分为短时授精组( $n=153$ )和常规受精组( $n=180$ )。结果: IVF短时授精组和常规IVF组分别获卵1 619枚和1 986枚, 分别有133名和152名患者接受了新鲜胚胎移植。组间女方年龄、基础FSH(bFSH)、bLH、bE<sub>2</sub>、Gn量、hCG注射日FSH水平、hCG注射日E<sub>2</sub>水平、hCG注射日LH水平、获卵数、卵子成熟度及移植日内膜厚度均无显著差异。IVF短时授精组和常规IVF组的正常受精率(65.55% vs 67.84%)、正常卵裂率(98.02% vs 96.90%)、胚胎种植率(29.41% vs 27.84%)、临床妊娠率(44.36% vs 45.39%)、继续妊娠率(41.35% vs 42.76%)、流产率(5.45% vs 2.90%)和异位妊娠率(1.82% vs 2.90%)均无统计学差异, 但是短时授精组的多原核受精率(14.56%)显著高于常规IVF组(6.19%), 而短时授精组的优质胚胎率(33.51%)高于常规IVF组(28.99%)。结论: 因IVF短时授精可避免常规IVF完全受精失败而逐渐在国内广泛应用, 但其远期影响还有待进一步认识。

**关键词:** 短时授精; 早期拆除颗粒细胞; 多原核受精; 临床妊娠率

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## Effect of short co-incubation of gametes on clinical outcomes in patients with no barriers to fertilization during IVF-ET

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**【ABSTRACT】 Objective:** To investigate the clinical significance of short co-incubation of gametes in patients with no barriers to fertilization during IVF-ET. **Methods:** IVF patients with fertilization rate >60% were collected in the study and divided into short co-incubations group ( $n=153$ ) and traditional IVF group ( $n=180$ ). The parameters and clinical outcomes had been analyzed between above two groups. **Results:** The patients in short co-incubation group and traditional IVF group received 1 619 eggs and 1 986 eggs, and 133 patients and 152 patients accepted embryo-transfer in fresh cycles, respectively. There were no significant differences between the two groups in ages, basal FSH/LH/E<sub>2</sub> level, FSH/LH/E<sub>2</sub> level on hCG injection day, total dosage of Gn used, numbers of oocytes retrieved, maturation of oocyte and endometrial thickness in ET day. The rates of normal fertilization (65.55% vs 67.84%), cleavage (98.02% vs 96.90%), implantation (29.41% vs 27.84%), clinical pregnancy (44.36% vs 45.39%), ongoing pregnancy (41.35% vs 42.76%), abortion (5.45% vs 2.90%) and ectopic pregnancy (1.82% vs 2.90%) between the two groups were not significantly different. However, polyspermy rate was significantly higher in short co-incubation group (14.56%) than in traditional IVF group (6.19%), and short co-incubation group (33.51%) had more good-quality embryos than traditional IVF group (28.99%). **Conclusion:** Short co-incubation of gametes combined with early rescue ICSI had been used widely for avoiding complete fertilization failure in traditional IVF. Long-term effects and indications of short co-incubation followed by early removal of granular cells should be further recognized and standardized.

**Key words:** short co-incubation of gametes; early removal of granule cells; polyspermy; clinical pregnancy rate

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## 放置左炔诺孕酮宫内缓释系统(LNG-IUS)后 不同月经模式的多普勒超声观察

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**【摘要】**目的: 探讨左炔诺孕酮宫内缓释系统(LNG-IUS, 曼月乐)对子宫动脉的血流动力学及子宫内膜厚度的影响。方法: 对比放置LNG-IUS患者6个月前、后的子宫螺旋动脉搏动指数(PI)、阻力指数(RI)及子宫内膜厚度, 并对其出现的不同月经模式进行比较。结果: ①置LNG-IUS 6个月 after 子宫内膜变薄, 子宫螺旋动脉PI值、RI值较置曼月乐前升高( $P < 0.05$ )。②置LNG-IUS后出现3种月经模式: 月经规律组、闭经组及阴道不规则出血组。其中阴道不规则出血组PI值、RI值较置曼月乐前升高, 且高于闭经组和月经规律组( $P < 0.05$ ); 闭经组、月经规律组与置LNG-IUS前比较PI值、RI值无明显变化( $P > 0.05$ ), 组间比较亦无统计学差异( $P > 0.05$ )。结论: 置LNG-IUS后阴道不规则出血患者子宫螺旋动脉血流会发生改变。

**关键词:** 左炔诺孕酮宫内缓释系统(LNG-IUS, 曼月乐); 子宫螺旋动脉; 多普勒超声

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## Doppler evaluation of the uterine spiral arteries from different menstrual bleeding patterns with use of levonorgestrel intrauterine system

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**【ABSTRACT】 Objective:** To evaluate the effect of levonorgestrel intrauterine system (LNG-IUS) on the uterine spiral arteries blood flow and endometrial thickness. **Methods:** Ultrasonographic examination was performed on 35 women before and after 6 months of LNG-IUS placement. Pulsatility index (PI), resistance index (RI) and endometrial thickness were recorded and compared. **Results:** After 6 months of LNG-IUS placement, the mean PI and mean RI were higher than before ( $P<0.05$ ), endometrial thickness was thinner than before ( $P<0.05$ ). After LNG-IUS placements, the women were divided into 3 groups: amenorrheic women, prolonged bleedings women and women with normal cycling. Intergroup analysis documented a statistically significant difference in endometrial thickness among the three groups ( $P<0.05$ ); in addition, mean PI and RI in the uterine spiral arteries were significantly lower in amenorrheic women and normal cycling women than those in prolonged bleedings women ( $P<0.05$ ). This difference persisted also when comparing within subjects of prolonged bleedings women — mean PI and RI values before and after insertion ( $P<0.05$ ). **Conclusion:** The LNG-IUS not only altered endometrial thickness, but in women with prolonged bleedings also significantly changed uterine artery blood flow.

**Key words:** levonorgestrel intrauterine system (LNG-IUS); uterine spiral arteries; ultrasound Doppler

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# 利用三维超声测量正常早孕期妊娠囊体积参数

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**【摘要】**目的: 建立正常早孕期妊娠囊的体积参数。方法: 选择正常早期单胎妊娠妇女303例, 先用腹部容积探头二维模式对妊娠早期妊娠囊进行扫描, 常规测量妊娠囊、卵黄囊及胚芽的大小(直径或长度)。再启用三维超声对妊娠囊进行三维图像采集, 应用三维容积自动测量技术(VOCAL)测量其体积。结果: 妊娠早期, 随着孕周增加, 妊娠囊体积、胚芽体积及卵黄囊体积均呈增长趋势; 妊娠囊胚芽体积比随孕周增大逐渐减少; 妊娠囊体积在孕7~10周的相邻两周之间, 差异有统计学意义( $P<0.05$ ); 而10周与11周间, 差异无统计学意义( $P>0.05$ ); 胚芽体积在孕7~11周的相邻两周之间, 差异有统计学意义( $P<0.05$ ); 卵黄囊体积在早孕各孕周的相邻两孕周之间, 差异无统计学意义( $P>0.05$ )。结论: 利用三维超声建立正常孕早期妊娠囊的体积参数和变化规律。

**关键词:** 超声检查; 胎儿; 妊娠早期; 妊娠囊体积

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## Three-dimensional ultrasound study parameters in terms of the volume of early pregnancy

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**【ABSTRACT】 Objective:** To explore the value of three-dimensional ultrasound in early pregnancy volume parameters area. **Methods:** A total of 303 cases of normal pregnancy were collected. The volume probe using a two-dimensional pattern on the abdomen early pregnancy was used to scan the gestational sac, gestational sac, yolk sac and embryo size which were conventionally measured (diameter or length). Gestational sac three-dimensional image was then captured, using a three-dimensional volume, each volume was measured by the automatic measurement techniques (VOCAL). **Results:** With increasing gestational age, gestational sac size, embryo and yolk sac volume showed volume growth trends; germ gestational sac volume ratio decreased with increasing gestational age, the difference of two weeks gestational sac volume between adjacent 7–10 weeks was statistically significant ( $P<0.05$ ), which was not statistically significant between 10 weeks and 11 weeks; germ volume between adjacent two weeks of 7–11 weeks was significantly different ( $P<0.05$ ); each trimester gestational sac volume between the two adjacent gestation was not significantly different. **Conclusion:** Three-dimensional ultrasound has a high value in the study of early pregnancy volume parameters.

**Key words:** ultrasound; fetus; early pregnancy; gestational sac volume

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• 个案报道 •

## B超定位下注射甲氨蝶呤治疗 早期腹腔妊娠1例

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**【摘要】**目的: 探讨腹腔妊娠药物治疗的可行性和有效性。方法: 在B超定位下注射甲氨蝶呤(MTX)治疗罕见部位腹腔妊娠1例。结果: 该异位妊娠孕囊的直径约28 mm, 位于右肾下方, 毗邻重要脏器血管。B超定位下成功注射MTX, 1个月后血hCG降至正常, 并且B超随访包块消失。结论: 并非所有腹腔妊娠都须手术治疗, B超辅助下进行孕囊内注射MTX的治疗方法有效、安全, 可在临床上实践。

**关键词:** 腹腔妊娠; B超; 甲氨蝶呤(MTX)

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## **Methotrexate injection by the location of B ultrasound for the treatment of early abdominal pregnancy**

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**【ABSTRACT】 Objective:** To explore the probability and effectiveness of drug therapy for abdominal pregnancy. **Methods:** A case of abdominal pregnancy treated by methotrexate (MTX) injection under the location of ultrasound was introduced. **Results:** The diameter of the gestation sac was 28 mm, which was located under the right kidney and adjacent to important organs and vessels. After the successful MTX injection, the serum level of hCG declined to normal level after 1 month and ultrasonography showed the mass disappeared. **Conclusion:** Not all abdominal pregnancy needs operation. With high effectiveness, it is possible to practice MTX injection by the location of ultrasound.

**Key words:** abdominal pregnancy; B ultrasound; methotrexate (MTX)

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