

# • 专家风采 •

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现为上海交通大学医学院附属第九人民医院辅助生殖中心主任；中华医学会生殖医学上海分会副主任委员；中西医结合生殖医学分会副主任委员。

1995年开始从事辅助生殖技术临床诊疗和科学研究工作。从事辅助生殖工作以来，一直致力于“安全、高效、少干扰”试管婴儿技术的研究和推广。在辅助生殖技术上有多项原创性研究成果。在我国率先将玻璃化冷冻全面用于辅助生殖临床，率先开始了自然周期与轻微刺激获卵方案的应用，而且首创黄体期促排卵，在国内、外率先提出了高孕酮下促排卵的概念，并建立了多种针对卵巢储备低下患者的个体化促排卵治疗方案。发表SCI及核心期刊论文30余篇，主持国家自然科学基金、上海市科委自然科学基金项目等多项，申请多项专利，其中一种新型胚胎冷冻载体和取卵针首次在国内生殖中心应用。

# • 专家风采 •

## **Professor Yan-ping KUANG**

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*Director of the assisted reproduction department of the Ninth People's Hospital of Shanghai Jiao Tong University School of Medicine, Vice chairman of the Chinese Medical Association for reproductive medicine, Vice chairman of integrated Traditional and Western Medicine for reproductive medicine.*

*Prof. Kuang has practiced for more than 20 years in assisted reproductive technology (ART). He has been devoted to safe and effective approaches for ART for years. Prof. Kuang makes unique and creative ways in infertility treatment. He is not only the advocate and pioneer in the application of natural-cycle IVF, minimal ovarian stimulation and embryo vitrification technology in China, but also the creator of efficiency luteal-phase ovarian stimulation. And he also devotes himself to the scientific research. Till now, he has published lots of articles in different science journals which have the considerable influence in the field of assisted reproduction. In addition, he is appointed as a director of one of the projects in National Natural Science Foundation of China, and he holds many patents in the field of Translational Medicine (985). A new medium for embryo vitrification and a new follicle aspiration needle are invented, which are the first Chinese products in ART field.*

• 临床指南 •

## 辅助生殖促排卵药物治疗专家共识

乔杰 马彩虹 刘嘉茵 马翔 李尚为 杨业洲 张波 腊晓琳  
朱依敏 陈子江 周从容 徐艳文 张松英 孙贇 章汉旺  
艾继辉 孙莹璞 胡琳莉 李蓉 盛燕 林戈 武学清 刘平

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**【摘要】** 辅助生殖技术(ART)的重要内容之一是促排卵治疗,其应用改善了临床妊娠率,但多胎妊娠、卵巢过度刺激综合征(OHSS)等并发症发生几率较高。促排卵最常用药物为克罗米芬(CC),芳香化酶抑制剂、促性腺激素(Gn)类和促性腺激素释放激素类似物(GnRHa),包括激动剂(GnRH-a)和拮抗剂(GnRH-A)近年来的应用也逐渐增加。各种药物有不同的适应证、禁忌证和用药方案,另外还可使用其他促排卵辅助药物,如口服避孕药(OC)、二甲双胍、多巴胺受体激动剂等,这些促排卵治疗效果可通过常用的疗效评估指标及计算方法来统计。中华医学会生殖医学分会部分专家结合近年来国内、外相关领域研究进展及临床应用,对促排卵药物在ART中的应用达成共识,以指导规范的临床应用。

**关键词:** 辅助生殖技术(ART); 促排卵; 促性腺激素(Gn); 促性腺激素释放激素激动剂(GnRH-a); 促性腺激素释放激素拮抗剂(GnRH-A)

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## A consensus of poor ovarian response

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**【ABSTRACT】** One of the important content of assisted reproductive technology (ART) is ovarian stimulation, the application which can improve the clinical pregnancy rate, but increase multiple pregnancy, ovarian hyperstimulation syndrome (OHSS), and some other complication rates. The common used drugs for ovulation induced include clomiphene citrate (CC), aromatase inhibitors, gonadotropin (Gn), gonadotrophin-releasing hormone analog (GnRHa) such as GnRH-agonist (GnRH-a) and GnRH-antagonist (GnRH-A). Drugs have different indications, contraindication and protocols. There are other ovulation stimulants including oral contraceptive (OC), metformin, dopamine receptor agonists, etc. The commonly used therapeutic evaluation index and calculation method are also introduced. Combining the study progress and clinical application of related fields domestic and abroad in recent years, some experts of Chinese Medical Association Reproductive Medicine Group reached a consensus on the application of ovarian stimulation in ART, in order to guide the standardization of its clinical use.

**Key words:** assisted reproductive technology (ART); ovarian stimulation; ganodotrophin (Gn); GnRH agonist (GnRH-a); GnRH antagonist (GnRH-A)

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· 实验研究 ·

## 双酚 A 对小鼠精原干细胞 C18-4 的增殖 及表观遗传机制的影响

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**【摘要】**目的: 研究不同剂量的双酚 A(BPA)暴露对小鼠精原干细胞 C18-4 的增殖及表观遗传机制的影响。方法: C18-4 细胞暴露于不同浓度的 BPA( $10^{-9}$ ~ $10^{-4}$  mol/L) 96 h, 用 CCK-8 方法测定细胞的增殖; 通过点杂交、Real-time PCR、Western blotting 方法检测  $10^{-5}$  mol/L BPA、 $10^{-9}$  mol/L BPA 对 DNA 甲基化水平、组蛋白甲基转移酶基因、组蛋白 H3K27Me3、H3K36Me3 水平的变化。结果: ①  $10^{-9}$ ~ $10^{-6}$  mol/L BPA 促进 C18-4 细胞增殖;  $10^{-5}$  mol/L BPA 抑制细胞增殖, 促进细胞凋亡;  $10^{-4}$  mol/L BPA 导致细胞死亡。②  $10^{-5}$  mol/L 高剂量 BPA 引起 C18-4 细胞 DNA 整体甲基化水平下降( $P<0.01$ )。③  $10^{-5}$  mol/L 高剂量 BPA 能引起 H3K27Me3、H3K36Me3 水平下降( $P<0.01$ )。结论: BPA 能干扰小鼠精原干细胞 C18-4 的细胞增殖; 高剂量 BPA 能引起 DNA 甲基化水平和组蛋白甲基化水平的下降。

**关键词:** 双酚 A(BPA); 精原细胞; DNA 甲基化; 组蛋白甲基化

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## Effects of bisphenol A on cell proliferation and epigenetic mechanisms of mouse spermatogonial C18-4 cell line

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**【ABSTRACT】 Objective:** To study the effects of different doses of bisphenol A (BPA) exposure on cell proliferation and epigenetic mechanisms in mouse spermatogonial stem cell C18-4. **Methods:** C18-4 cell proliferation was measured after exposure to different concentrations of bisphenol A ( $10^{-9}$ – $10^{-4}$  mol/L) for 96 h using a CCK-8 assay. The levels of global DNA methylation, histone methyltransferase gene expression and histone H3K27Me3, H3K36Me3 were detected after the C18-4 cells exposed to two different concentrations of BPA ( $10^{-5}$  mol/L and  $10^{-9}$  mol/L), by using the methods of dot blotting, real-time RT-PCR, Western blotting, respectively. **Results:** 1)  $10^{-9}$ – $10^{-6}$  mol/L BPA exposure promoted C18-4 cell proliferation, while  $10^{-5}$  mol/L BPA inhibited cell proliferation meanwhile increased cell apoptosis rate, and  $10^{-4}$  mol/L BPA led to cell death. 2)  $10^{-5}$  mol/L BPA decreased the level of global DNA methylation of C18-4 cells ( $P<0.01$ ). 3)  $10^{-5}$  mol/L BPA decreased the levels of H3K27Me3 and H3K36Me3 ( $P<0.01$ ). **Conclusion:** BPA can disturb cell proliferation of spermatogonial stem cell C18-4;  $10^{-5}$  mol/L BPA exposure can decrease the levels of DNA methylation and histone methylation of C18-4 cells.

**Key words:** bisphenol A (BPA); spermatogonia; DNA methylation; histone methylation

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# 小鼠卵巢玻璃化冻融过程中重组人卵泡刺激素 干预对血管内皮生长因子(VEGF)及整合素 $\alpha v \beta 3$ 表达的影响

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**【摘要】**目的: 观察重组人卵泡刺激素(rFSH)对小鼠卵巢血管内皮生长因子(VEGF)以及整合素 $\alpha v \beta 3$ 表达的影响。方法: 将4周龄C57BL/6J小鼠卵巢随机分为新鲜对照组(FCG)、玻璃化冻存对照组(VCG)、300 IU/L rFSH干预玻璃化冻存组(rFSH-VG)。通过对冻融卵巢内各级卵泡计数、免疫组织化学观察VEGF和整合素 $\alpha v \beta 3$ 在卵巢不同细胞中的定位, Western blotting检测VEGF、整合素 $\alpha v$ 和整合素 $\beta 3$ 蛋白表达量。结果: 各级卵泡计数、VEGF及整合素 $\beta 3$ 的蛋白表达均为rFSH-VG组优于VCG组( $P < 0.05$ ), 整合素 $\alpha v$ 的表达组间均无统计学差异( $P > 0.05$ )。结论: 玻璃化冻融过程中添加rFSH可以上调VEGF及整合素 $\beta 3$ 蛋白的表达。

**关键词:** 小鼠; 卵巢; 重组人卵泡刺激素(rFSH); 玻璃化冻存; 血管内皮生长因子(VEGF); 整合素 $\alpha v \beta 3$

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## **Influence of recombinant FSH interpose on the vascular endothelial growth factor and integrin $\alpha v \beta 3$ expression during cryopreservation by vitrification**

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**【ABSTRACT】 Objective:** To investigate the influence of recombinant FSH (rFSH) interpose on the vascular endothelial growth factor (VEGF) and integrin  $\alpha v \beta 3$  expression during cryopreservation by vitrification. **Methods:** Four-week-old C57BL/6J mice in anestrus were chosen. Ovaries were randomized into fresh control group (FCG), vitrification control group (VCG) and rFSH intervened vitrification group (rFSH-VG) treated by 300 IU/L rFSH during freezing-thawing. Follicles at different stages were counted; the expression of VEGF, integrin  $\alpha v \beta 3$  in different cells of ovary were observed by immunohistochemical technique. The effect of rFSH intervention on the expression of VEGF, integrin  $\alpha v$ , integrin  $\beta 3$  protein was observed and analyzed by Western blotting. **Results:** Follicle count, the expression of VEGF and integrin  $\beta 3$  were all higher in rFSH-VG group than in VCG group ( $P < 0.05$ ), the expression of integrin  $\alpha v$  was not significantly different among those three groups ( $P > 0.05$ ). **Conclusion:** Vitrification freezing and thawing process of adding rFSH may increase the expression of VEGF and integrin  $\beta 3$  protein.

**Key words:** mouse; ovary; recombinant FSH (rFSH); vitrification; vascular endothelial growth factor (VEGF); integrin  $\alpha v \beta 3$

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• 临床研究 •

## 胸腺活化调节趋化因子17和CC趋化因子受体4 与不明原因复发性流产的相关性研究

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**【摘要】**目的: 探讨血清中胸腺活化调节趋化因子17(CCL17)与CC趋化因子受体4(CCR4)水平与不明原因复发性流产的关系。方法: 选取健康早孕女性(HEP组)、健康未孕女性(HNP组)和不明原因复发性流产孕妇(URSA组)各50例, 采用ELISA法测定血清中CCL17与CCR4浓度。结果: HEP组中CCL17、CCR4水平显著高于URSA组和HNP组, 且差异具有统计学意义( $P < 0.05$ ); URSA组中的CCL17、CCR4水平高于HNP组, 但差异无统计学意义( $P > 0.05$ )。结论: 不明原因复发性流产患者血清中CCL17与CCR4的水平较正常妊娠妇女显著降低, 提示CCL17和CCR4与不明原因复发性流产的发生具有相关性, 且有望成为判断不明原因复发性流产发生的新的参考指标。

**关键词:** 不明原因性流产(URSA); 胸腺活化调节趋化因子/趋化因子配体17 (TRAC/CCL17);  
CC趋化因子受体4 (CCR4)

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## Relationship between human activation regulated chemokine ligand 17/CC chemokine receptor 4 and unexplained recurrent spontaneous abortion

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**【ABSTRACT】 Objective:** To explore the relationship of human activation regulated chemokine ligand 17 (CCL17) and CC chemokine receptor 4 (CCR4) in serum with unexplained recurrent spontaneous abortion (URSA). **Methods:** Healthy pregnant women (HEP group), healthy nonpregnant women (HNP group) and unexplained recurrent spontaneous abortion of pregnant women (URSA group) were collected with 50 cases each. The concentrations of serum CCL17 and CCR4 were tested by ELISA. **Results:** The concentrations of serum CCL17 and CCR4 of HEP group were higher than those of URSA group and HNP group ( $P < 0.05$ ). The concentration of serum CCL17 and CCR4 of URSA group were higher than those in HNP group, but the difference was not statistically significant ( $P > 0.05$ ). **Conclusion:** The concentrations of serum CCL17 and CCR4 of URSA group were lower than those in HEP group, which suggested that the correlation held in the CCL17/CCR4 and URSA, and the CCL17/CCR4 was expected to become a new reference index in the URSA.

**Key words:** unexplained recurrent spontaneous abortion (URSA); human activation regulated chemokine ligand 17 (CCL17); CC chemokine receptor 4 (CCR4)

# 多囊卵巢综合征患者初次IVF/ICSI-ET助孕 临床方案选择

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**【摘要】**目的: 探讨多囊卵巢综合征(PCOS)患者初次进行体外受精/卵胞质内单精子注射-胚胎移植(IVF/ICSI-ET)助孕时最佳方案的选择。方法:  $\leq 45$ 岁初次行IVF/ICSI-ET助孕的PCOS患者1407名, 按照超长方案(A组)、长方案(B组)、短方案(C组)和拮抗剂方案(D组)分成4组, 比较各组患者基本临床特征、控制性超促排卵(COH)特征、重度卵巢过度刺激综合征(OHSS)发生率及临床结局。结果: 除A组年龄偏大外, 各组体质量指数(BMI)、基础血清性激素水平相当; A组与B组促性腺激素(Gn)使用天数、剂量高于C组和D组, C组与D组hCG注射日血清LH、 $E_2$ 水平明显高于A组和B组, hCG注射日内膜厚度A组与B组明显高于C组和D组, A组临床妊娠率、持续妊娠率和活产率明显高于其他各组( $P < 0.05$ )。重度OHSS、异位妊娠率、早期流产率各组间无统计学差异( $P > 0.05$ )。多元因素回归显示IVF方案( $OR = 0.813$ , 95%CI=0.667~0.991)、hCG注射日内膜厚度( $OR = 1.262$ , 95%CI=1.148~1.388)和空腹血糖水平( $OR = 1.395$ , 95%CI=1.021~1.905)可能影响PCOS患者临床妊娠率( $P < 0.05$ )。结论: PCOS患者在初次尝试IVF助孕时, 选择超长方案可获得更佳的子宫内膜容受性, 提高临床妊娠率、持续妊娠率以及活产率, 且不增加重度OHSS发生率。不足之处是Gn应用时间较长、剂量较大, 可能增加临床治疗费用。

**关键词:** 多囊卵巢综合征(PCOS); 控制性超促排卵(COH); 卵巢过度刺激综合征(OHSS); 临床妊娠率; 持续妊娠率; 活产率

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## Clinical choice of ovarian stimulation protocol in the first IVF/ICSI cycle of polycystic ovary syndrome (PCOS) patients

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**【ABSTRACT】 Objective:** To find a better clinical choice for polycystic ovary syndrome (PCOS) patients undergoing their first IVF/ICSI cycles. **Methods:** A total of 1 407 PCOS patients aged under 45 years who underwent their first IVF/ICSI-ET cycles were recruited in this study. Patients were divided into four groups based on controlled ovarian hyperstimulation (COH) protocols: prolonged GnRH-a group (group A), long GnRH-a group (group B), short GnRH-a group (group C) and GnRH-A group (group D). Their basic clinical features and COH procedure, severe ovarian hyperstimulation syndrome (OHSS) incidence rate, and clinical outcomes were compared among the four groups. **Results:** Patients in group A were older than the other three groups, and the body mass index (BMI) and basic hormone levels were similar among groups. Group A and group B had longer gonadotropin (Gn) use duration and higher Gn use dosage and higher endometrial thickness on hCG administration day than the other two groups. Group A had significantly higher clinical pregnancy rate, ongoing pregnancy rate, and live birth rate ( $P<0.05$ ). The severe OHSS rate, the ectopic pregnancy rate, and the early onset spontaneous abortion rate were similar among groups. Multivariate analysis showed that COH protocol ( $OR=0.813$ , 95% CI=0.667–0.991), endometrial thickness on hCG administration day ( $OR=1.262$ , 95% CI=1.148–1.38), and fasting glucose levels ( $OR=1.395$ , 95% CI=1.021–1.905) may affect clinical pregnancy rates in PCOS patients undergoing IVF/ICSI-ET ( $P<0.05$ ). **Conclusion:** For PCOS patients in the first IVF cycles, prolonged GnRH-a protocol is a better choice for superior endometrium receptivity, and has higher clinical pregnancy rate, ongoing pregnancy rate, and live birth rate than other COH protocols, and no higher rate of severe OHSS is found. The disadvantages of this protocol are longer duration and higher dosage of Gn application, which may increase the cost of clinical treatment.

**Key words:** polycystic ovary syndrome (PCOS); controlled ovarian hyperstimulation (COH); ovarian hyperstimulation syndrome (OHSS); clinical pregnancy rate; ongoing pregnancy rate; live birth rate

# 人精子-透明质结合试验与IVF-ET结局相关性研究

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**【摘要】**目的: 分析精子-透明质结合试验(hyaluronan binding assay, HBA)与精子常规参数及体外受精-胚胎移植(*in vitro* fertilization-embryo transfer, IVF-ET)结局的相关性, 探寻精子质量评估和授精方式选择的新指标。方法: 对进入IVF-ET周期的136例患者进行HBA检测, 并按HBA结合率将患者分为HBA结合率 $\geq 65\%$ 组(A组)与HBA结合率 $< 65\%$ 组(B组), 统计分析HBA与精液常规参数、体外受精率、胚胎质量和临床妊娠结局的相关性。结果: A组与B组相比, 精子浓度无统计学差异( $P > 0.05$ ); 而前者的前向运动(PR)精子明显高于后者, 差异有显著统计学意义( $P < 0.01$ )。A组总受精率和正常受精率均高于B组( $P < 0.01$ ), 而可利用胚胎率、临床妊娠率、胚胎着床率及活产婴儿出生率组间均无统计学差异( $P > 0.05$ )。结论: HBA反映精子活动力, 对体外受精率具有指示作用, 对于临床选择体外辅助授精方式具有一定的参考意义。

**关键词:** 精子-透明质结合试验(HBA); 体外受精(IVF); 受精率; 临床妊娠

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## Relationship between human sperm-hyaluronan binding assay and IVF-ET outcomes

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**【ABSTRACT】 Objective:** To investigate the relationship between hyaluronan binding assay (HBA) and routine sperm parameters, to assess the potential value of HBA to predict fertilization and reproductive outcomes. **Methods:** A total of 136 patients undergoing IVF cycle for non-male infertility were divided into two groups based on HBA score cut-off (65%). Routine sperm parameters, fertilization rate, embryo quality, implantation rate and reproductive outcome were compared between the two groups. **Results:** The rate of progressive (PR) sperm in group of HBA  $\geq 65\%$  (group A) was significantly higher than that in group of HBA  $< 65\%$  (group B) ( $P < 0.01$ ). Both total and normal fertilization rates were significantly higher in group A than those in group B ( $P < 0.01$ ). In addition, no relationship between HBA and available embryo rate, implantation rate, clinical pregnancy rate and live birth rate was found between the two groups ( $P > 0.05$ ). **Conclusion:** HBA is highly correlated with sperm motility and fertilization rate, thus, it may be a predictive parameter to select the method of fertilization.

**Key words:** sperm-hyaluronan binding assay (HBA); *in vitro* fertilization (IVF); fertilization rate; clinical pregnancy

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• 循证医学 •

## 黄体酮肌肉注射与阴道缓释凝胶对 IVF-ET结局影响的Meta分析

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**【摘要】**目的: 评价黄体酮肌肉注射和阴道缓释凝胶(Crinone 8%)2种给药途径对体外受精-胚胎移植(IVF-ET)结局的影响。方法: 计算机检索PubMed、EMbase、Cochrane图书馆、中国知网和万方。收集2种给药途径的随机对照试验(RCT), 提取有效数据后采用RevMan 5.1软件进行Meta分析。结果: 纳入10个随机对照试验, 共计2 528例患者, 其中肌肉注射组1 331例, 阴道缓释凝胶组1 197例。Meta分析结果显示: 阴道缓释凝胶组和肌肉注射组的临床妊娠率( $OR=0.93$ ,  $95\%CI=0.79\sim 1.09$ ,  $P=0.35$ )、继续妊娠率( $OR=0.88$ ,  $95\%CI=0.64\sim 1.21$ ,  $P=0.43$ )、流产率( $OR=0.75$ ,  $95\%CI=0.52\sim 1.08$ ,  $P=0.12$ )无统计学差异。结论: 黄体酮肌肉注射和阴道缓释凝胶对IVF-ET后的临床妊娠率、继续妊娠率及流产率无显著影响。

**关键词:** 黄体支持; 体外受精-胚胎移植(IVF-ET); 阴道缓释凝胶; 肌肉注射; Meta分析

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## Effect of vaginal gel and intramuscular progesterone for luteal phase support in *in vitro* fertilization-embryo transfer: a Meta analysis

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**【ABSTRACT】 Objective:** To evaluate the effect of Crinone vaginal gel and intramuscular (IM) progesterone for luteal phase support (LPS) in *in vitro* fertilization-embryo transfer (IVF-ET) with respect to clinical outcomes. **Methods:** Papers from PubMed, Embase, Cochrane library, CNKI and Wanfang data were electronically searched. Randomized controlled trials (RCT) were identified about vaginal gel and IM progesterone for LPS in IVF-ET. Data were extracted from these trials and analyzed by RevMan 5.1 software. **Results:** A total of 10 RCTs involving 2 528 cases were included, of which 1 331 cases were in Crinone 8% group while the other 1 197 cases were in IM group. Meta analysis showed a comparable effect between vaginal gel and IM progesterone on the end points of clinical pregnancy rate ( $OR=0.93$ ,  $95\% CI=0.79-1.09$ ,  $P=0.35$ ), ongoing pregnancy rate ( $OR=0.88$ ,  $95\% CI=0.64-1.21$ ,  $P=0.43$ ) and miscarriage rate ( $OR=0.75$ ,  $95\% CI=0.52-1.08$ ,  $P=0.12$ ). **Conclusion:** There is no significant difference between vaginal gel and im progesterone in terms of clinical pregnancy rate, ongoing pregnancy rate and miscarriage rate.

**Key words:** luteal phase support; *in vitro* fertilization-embryo transfer (IVF-ET); vaginal gel; intramuscular progesterone; Meta analysis

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• 流行病学研究 •

## 2004~2012年上海市已婚育龄妇女IUD使用率的变化趋势及其影响因素分析

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**【摘要】**目的:了解上海市已婚育龄妇女宫内节育器(IUD)使用率的变化趋势并分析其影响因素。方法:对2004~2012年上海已婚育龄妇女避孕节育数据进行加权、单因素分析及多因素分析。结果:上海已婚育龄妇女的IUD使用率从2004年的71.3%下降至2012年的43.9%;年龄>45岁的妇女IUD使用率是<30岁者的2.63倍;初中文化妇女IUD使用率是大学以上妇女的2.15倍。结论:年龄越大、文化水平越低的妇女IUD使用率越高;IUD使用率逐年下降可能与上海近年来加大避孕套宣传和符合生育二孩条件妇女比例增加有关。

**关键词:** 避孕; 宫内节育器(IUD); 已婚育龄妇女; 多水平模型; 上海

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## Intrauterine device utilization of married women of childbearing age in Shanghai during 2004–2012

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**【ABSTRACT】 Objective:** To estimate the prevalence of intrauterine device (IUD) and associated determinations of IUD utilization. **Methods:** This study relied on yearly sampling survey in married women of childbearing aged 15–49 years who lived in Shanghai. Several demographic characteristics were stratified and multi-level Logistic models were used to find out the determinations of IUD utilization. **Results:** The IUD utilization rate decreased from 71.3% to 43.9% from 2004 to 2012. Married women aged more than 45 years had about 2.63 times more risks to use IUD. The probability of IUD utilization was 2.15 times higher among the women who attained secondary level education. **Conclusion:** The prevalence of IUD utilization is more likely among older women or who attained lower education in Shanghai. The rate of IUD utilization continued to decline from 2004 to 2012. It may be partly due to the increasing condom promotion in recent years.

**Key words:** contraception; intrauterine device (IUD); married women of childbearing age; multi-level model; Shanghai

· 综述 ·

## MicroRNA与多囊卵巢综合征关系的研究进展

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**【摘要】** MicroRNAs(miRNA)是一类长度为19~25nt的内源性非编码RNA, 主要参与调节基因转录后水平的表达。研究发现miRNAs在卵巢组织中广泛表达, 在卵巢功能调节过程中发挥着重要的作用。近年来, 越来越多的证据表明, miRNAs与多囊卵巢综合征(PCOS)关系密切。miRNA表达水平的变化与PCOS患者甾体激素调节紊乱、高雄激素血症、胰岛素抵抗及不孕症等主要表现有关。将来, miRNAs有望成为PCOS疾病诊断和预后评估的潜在生物学标志物, 可为PCOS的治疗提供新思路。

**关键词:** MicroRNA(miRNA); 多囊卵巢综合征(PCOS); 高雄激素血症; 胰岛素抵抗(IR); 不孕症

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## Recent advances in microRNA with polycystic ovary syndrome

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**【ABSTRACT】** MicroRNAs (miRNAs) are endogenously produced short non-coding RNAs about 19–25 nucleotides in length and found to involve in regulation of genes expression at the post-transcriptional level. Studies have shown that miRNAs are abundantly expressed in ovarian tissues, and play critical roles in regulating ovarian function. In recent decades, more and more evidence suggests that miRNAs are closely related to polycystic ovary syndrome (PCOS). Altered miRNA levels have been connected with the unregulated of steroid hormone secretion, hyperandrogenism, insulin resistance and infertility. In future, miRNAs may serve as potential biomarkers of PCOS diagnosis and prognosis and offer novel treatment strategies for PCOS.

**Key words:** microRNA (miRNA); polycystic ovary syndrome (PCOS); hyperandrogenism; insulin resistance; infertility

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# 子宫内膜容受性的评价指标及其应用价值

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**【摘要】**现代辅助生殖技术(ART)中,子宫内膜容受性受损成为限制胚胎成功种植的重要因素之一。如何合理评价子宫内膜容受性一直是临床和基础研究关心的问题。本文主要综述目前用于评估子宫内膜容受性的临床指标,形态学、分子标志物,以及最新的蛋白组学评估方法,并分析其应用价值,以期提供更好、更客观和实时的子宫内膜容受性的评价指标,进而更加有的放矢地治疗不孕症患者,最大可能提高ART妊娠率。

**关键词:** 分子标志物; 子宫内膜容受性; 辅助生殖技术(ART)

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## Evaluation markers and its practical value of endometrial receptivity

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**【ABSTRACT】** In modern assisted reproductive technology (ART), impaired endometrial receptivity might be one of the major limiting factors for a successful implantation of embryos. How to evaluate endometrial receptivity reasonably has been a focused issue by both clinical and basic research. This paper mainly reviewed some evaluation markers of endometrial receptivity, including clinic index, morphological features, biomarkers, and the latest proteomics method. In addition, we will analyze the practical value, in order to provide more reasonable, objective and real-time index to assess endometrial receptivity, and thus a more targeted and personal treatment of infertility patients, and finally increase pregnancy rate of ART.

**Key words:** biomarkers; endometrial receptivity; assisted reproductive technology (ART)

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# 口服避孕药在辅助生殖技术中的应用

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**【摘要】** 口服避孕药(OCP)在辅助生殖技术(ART)中有着广泛的应用,但是不同的学者的研究结果不一。多数研究认为, OCP可以改善体外受精的妊娠结局。在助孕周期前应用 OCP预处理,可以计划性安排治疗时机、改善卵巢反应性、提高妊娠率、降低周期取消率、预防卵巢过度刺激综合征(OHSS)以及功能性卵巢囊肿等并发症的发生。

**关键词:** 口服避孕药(OCP); 体外受精 / 卵胞质内单精子注射(IVF/ICSI); 辅助生殖技术(ART)

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## Oral contraceptive pill pretreatment in assisted reproductive technology

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**【ABSTRACT】** There are extensive applications of oral contraceptive pills (OCP) in the field of assisted reproductive technology (ART). However, the effect of OCP appears to be controversial. Most researches indicate that OCP makes ART cycles efficient. Contraception pretreatment may be beneficial in scheduling cycles, improving ovarian responses and pregnancy rates, reducing cycles cancellation rates and risk of ovary hyperstimulation syndrome (OHSS) or functional ovarian cysts.

**Key words:** oral contraception pill (OCP); *in vitro* fertilization/intracytocyctic sperm injection (IVF/ICSI); assisted reproductive technology (ART)