

• 实验研究 •

## 抗氧化剂抗坏血酸对小鼠卵母细胞 体外成熟和发育的影响

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**【摘要】目的:** 探讨抗氧化剂抗坏血酸(ascorbic acid, AA)对小鼠卵母细胞体外成熟和发育的影响。  
**方法:** 本实验采用4种不同浓度的AA加入M<sub>2</sub>基础培养液中, 即0 mg/L、25 mg/L、50 mg/L、100 mg/L。体外培养小鼠未成熟卵母细胞14~16 h, 观察各组间卵母细胞体外成熟率、线粒体分布、纺锤体形态和DNA损伤等4个相关指标。**结果:** 当AA浓度为50 mg/L时, 随着AA浓度的升高, 未成熟卵母细胞体外成熟率逐渐升高, 但差异无统计学意义( $P>0.05$ ); 而线粒体异常分布比率、异常纺锤体数和DNA损伤卵母细胞数逐渐降低, 以50 mg/L组最为显著, 差异有统计学意义( $P<0.05$ ); 而100 mg/L与0 mg/L组相比, 差异无统计学意义( $P>0.05$ )。**结论:** 在小鼠体外成熟培养基中添加适宜浓度的AA可提高卵母细胞体外成熟和后期的发育。

**关键词:** 抗坏血酸(AA); 体外成熟(IVM); 发育; 线粒体分布; 纺锤体形态; DNA损伤

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## Effects of anti-oxidant ascorbic acid on *in vitro* maturation and development of mouse oocytes

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**【ABSTRACT】 Objective:** To investigate the effects of antioxidants ascorbic acid (AA) on *in vitro* maturation (IVM) and development of mouse oocytes. **Methods:** GV oocytes of mouse were cultured *in vitro* culture (IVC) M<sub>2</sub> based medium which consisted of four different concentrations of AA (namely 0 mg/L, 25 mg/L, 50 mg/L, 100 mg/L). The oocytes in 4 groups were cultured for 14–16 h, and then the maturation rate, mitochondrial distribution, spindle malformation and DNA damage were observed. **Results:** In the AA concentration of 50 mg/L, the maturation rates of GV oocytes were gradually increased and the rates of abnormal mitochondrial distribution, spindle malformation and DNA damage were gradually reduced, especially in 50 mg/L group ( $P<0.05$ ). There was no statistically significance between the group of 100 mg/L and 0 mg/L. **Conclusion:** Appropriate utilization of AA in IVM medium could promote IVM and development of mouse oocytes.

**Key words:** ascorbic acid (AA); *in vitro* maturation (IVM); development; mitochondrial distribution; spindle malformation; DNA damage

# 黄体生成素受体及类固醇激素合成急性调节蛋白在大鼠多囊卵巢综合征模型中的表达

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**【摘要】**目的: 探讨黄体生成素受体(LHR)及类固醇激素合成急性调节蛋白(StAR)在大鼠多囊卵巢综合征(PCOS)模型中的表达及作用。方法: 将50只21日龄SD大鼠随机分为模型组(PCOS组,  $n=35$ )和对照组(NC组,  $n=15$ )。通过注射脱氢表雄酮(DHEA)建立PCOS大鼠模型, 放射免疫法和酶联免疫法分别检测血清孕酮(P)和雌二醇( $E_2$ )水平及睾酮(T)水平; 免疫组织化学法对LHR及StAR进行细胞定位分析, RT-PCR和Western blotting分别检测LHR及StAR mRNA和蛋白表达变化。结果: 与NC组相比, 血清 $E_2$ 和T水平显著升高, P水平无显著变化; LHR和StAR mRNA和蛋白表达水平均显著升高。结论: PCOS高雄激素血症可能与LHR和StAR表达调控有关; 两者与 $E_2$ 水平升高之间的关系仍有待阐明。

**关键词:** 多囊卵巢综合征(PCOS); 黄体生成素受体(LHR); 类固醇激素合成急性调节蛋白(StAR)

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## Expression of luteinizing hormone receptor and steroidogenic acute regulatory in the rat model of polycystic ovary syndrome

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**【ABSTRACT】 Objective:** To investigate the expression and the function of luteinizing hormone receptor (LHR) and steroidogenic acute regulatory protein (StAR) in rats with polycystic ovary syndrome (PCOS). **Methods:** PCOS rat model (PCOS group) was established by dehydroepiandrosterone (DHEA) injection. The serum levels of progesterone (P), estrogen (E<sub>2</sub>) and testosterone (T) were measured by immunoradioassay and enzyme immunoassay. The cellular distributions of LHR and StAR in ovaries were detected by immunohistochemistry. The expression levels of LHR and StAR were detected by RT-PCR and Western blotting. **Results:** Compared with normal control group (NC group), serum E<sub>2</sub> and T levels were significantly increased, P did not change significantly between PCOS and NC groups; the expression levels of *LHR* and *StAR* mRNA and protein were significantly increased in PCOS group. **Conclusion:** Hyperandrogenism in PCOS may be related to the expression of LHR and StAR. Their relation with increased E<sub>2</sub> need to be elucidated.

**Key words:** polycystic ovary syndrome (PCOS); luteinizing hormone receptor (LHR); steroidogenic acute regulatory protein (StAR)

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# 新建IVF实验室中挥发性有机化合物的浓度变化及其对鼠胚体外发育的影响

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**【摘要】**目的: 探讨新建成的体外受精(IVF)胚胎实验室挥发性有机化合物(volatile organic compound, VOC)的浓度变化及不同浓度VOC环境对小鼠体外受精和胚胎发育的影响, 同时比较目前常用的去除实验室内VOC方法的效率。方法: 测定胚胎实验室装修后不同时间段的VOC浓度变化, 比较不同浓度的VOC对小鼠体外受精率、2-细胞率和囊胚率的影响; 比较排风扇抽风机、Coda空气净化器和单纯活性炭包去除室内VOC的效率。结果: 装修后第1个月(M1)VOC浓度为384.00 ppb, 显著高于对照组(199.00 ppb)( $P < 0.05$ ); 装修后第2个月(M2)VOC浓度为279.50 ppb, 与对照组相比差异具有统计学意义( $P < 0.05$ ); 装修后第3个月(M3)VOC浓度为210.25 ppb, 与对照组(206.00 ppb)相比差异无统计学意义( $P > 0.05$ )。装修后1个月(M1)实验组体外受精率、2-细胞率和囊胚率分别为62.3%、71.5%、72.0%, 显著低于对照组(91.8%、92.2%、93.0%), 组间差异具有统计学意义( $P < 0.05$ )。装修后3个月(M3)时受精率、2-细胞率和囊胚率(91.5%、90.7%、91.4%)与对照组(89.8%、90.1%、92.5%)相比差异无统计学意义( $P > 0.05$ )。Coda空气净化器处理3个月后可去除室内60.15%的VOC, 显著高于排风扇抽风(51.88%)和单纯活性炭吸附(28.95%)的去除效率。结论: 实验室内高浓度的VOC会对小鼠体外受精胚胎造成严重的胚胎毒性, 导致受精率、2-细胞率和囊胚率降低, 胚胎质量下降和发育受阻; Coda空气过滤器是一种有效的去除实验室内VOC的方法。

**关键词:** 挥发性有机化合物(VOC); 鼠胚实验; 胚胎发育; 体外受精(IVF)

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## Variation of volatile organic compounds concentration in newly constructed IVF laboratories and their effects on the *in vitro* development of mouse embryos

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**【ABSTRACT】 Objective:** To explore the concentration changes of volatile organic compounds (VOC) in newly constructed *in vitro* fertilization (IVF) embryo laboratories and their effects on the IVF and embryo development of mice. At the same time, the efficiency of different methods to remove VOC in laboratories was compared. **Methods:** The changes of VOC concentration in decorated embryonic laboratories were measured at different time periods, and the effects of various VOC concentrations on the IVF rate, 2-cell rate and blastocyst rate of mice were analyzed. The removal rates of indoor VOC of drawing fan, coda air purifiers and small packaged carbon were compared. **Results:** One month after decoration (M1), VOC concentration was 384.00 ppb, which was significantly higher than that of the control (199.00 ppb,  $P<0.05$ ). It decreased to 279.50 ppb 2 months later (M2), but it was still significantly higher than that of the control ( $P<0.05$ ). VOC concentration was not significantly different from that of the control 3 months after the decoration (210.25 ppb vs 206.00 ppb). The IVF rate, 2-cell rate and blastocyst rate one month after decoration (M1) were 62.3%, 71.5% and 72.0%, respectively, which were significantly lower than those of the control (91.8%, 92.2%, 93.0%) ( $P<0.05$ ). The IVF rate, 2-cell rate and blastocyst rate 3 months after the decoration (M3) were 91.5%, 90.7% and 91.4%, respectively, which were not significantly different from that of the control (89.8%, 90.1% and 92.5%,  $P>0.05$ ). The clearance efficiency of indoor VOC after 3 months by Coda air purifiers was 60.15%, which was remarkably higher than that of drawing fan (51.88%) and activated carbon package (28.95%). **Conclusion:** High concentration of VOC in laboratories can cause serious toxicity of the mouse embryos developed *in vitro*, including the decrease of fertilization rate, cleavage rate and blastocyst rate. Coda air filter is an effective device to remove VOC in the laboratory.

**Key words:** volatile organic compound (VOC); mouse embryo assay; embryo development; *in vitro* fertilization (IVF)

• 临床研究 •

## 处理后前向运动精子总数对夫精人工授精妊娠率的影响

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**【摘要】**目的: 探讨处理后前向运动的精子总数(post-wash total mobile sperm count, PTMC)对夫精宫腔内人工授精(intrauterine insemination, IUI)妊娠率的影响。方法: 回顾性分析因男方因素行 IUI 治疗的不孕夫妇的数据, 并比较了 PTMC  $(3.0\sim 9.9) \times 10^6$  (研究组)及 PTMC  $\geq 10 \times 10^6$  (对照组)患者的 IUI 妊娠率。结果: 共纳入 139 例(274 个周期)患者。其中研究组 87 个周期, 平均 PTMC 为  $(6.2 \pm 1.7) \times 10^6$ , 对照组 187 个周期, 平均 PTMC 为  $(25.6 \pm 13.7) \times 10^6$ , 组间周期妊娠率差异无统计学意义( $P > 0.05$ )。在 139 例患者中, 有 32 例患者(55 个周期)PTMC 始终  $< 10 \times 10^6$ , 83 例患者(149 个周期)PTMC 始终  $\geq 10 \times 10^6$ , 在 4 个周期后患者的累积妊娠率(cumulative pregnancy rate, CPR)分别为 15.6% (5/32)和 25.3% (21/83), 组间比较也无统计学差异( $P > 0.05$ )。在 PTMC 始终  $< 10 \times 10^6$  组, 在第 4 周期没有妊娠发生。结论: 对于因男方因素行辅助生殖技术助孕治疗的患者, 即使 PTMC  $< 10 \times 10^6$  也可以尝试 IUI, 并能获得较好的妊娠率, 但对于反复 PTMC  $< 10 \times 10^6$  患者, 不建议患者多次反复尝试, 在经过 3 次 IUI 后仍未孕者, 可考虑行 IVF 助孕治疗。

**关键词:** 夫精人工授精(IUI); 活动精子总数; 妊娠率

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## Effects of post-wash total mobile sperm count on pregnancy rate of intrauterine insemination

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**【ABSTRACT】 Objective:** To investigate the effects of post-wash total mobile sperm count (PTMC) on the pregnancy rate of intrauterine insemination (IUI). **Methods:** The data of infertility patients who underwent IUI treatment as a result of male factors were retrospectively analyzed. And the pregnancy rate of study group ( $3.0 \times 10^6 \leq \text{PTMC} < 10 \times 10^6$ ) was compared with control group ( $\text{PTMC} \geq 10 \times 10^6$ ). **Results:** A total of 139 patients (274 cycles) were included. In the study group, 87 cycles were included, and the average PTMC was  $(6.2 \pm 1.7) \times 10^6$ , while in the control, 187 cycles were included, and the average PTMC was  $(25.6 \pm 13.7) \times 10^6$ . There was no significant difference in the pregnancy rate per cycle of these two groups ( $P > 0.05$ ). In the 139 patients, there were 32 patients (55 cycles) with recurrent  $\text{PTMC} < 10 \times 10^6$  and 83 patients (149 cycles) with recurrent  $\text{PTMC} \geq 10 \times 10^6$ . After 4 cycles, the cumulative pregnancy rate (CPR) was comparable between these two groups [15.6% (5/32) vs 25.3% (21/83)] ( $P > 0.05$ ). In the group with recurrent  $\text{PTMC} \geq 10 \times 10^6$ , no pregnancy was occurred in the fourth cycle. **Conclusion:** The data suggested that even in couples with  $\text{PTMC} < 10 \times 10^6$  could benefit from IUI. But for those couples with recurrent  $\text{PTMC} < 10 \times 10^6$ , it was not suggested to try IUI more than 3 cycles. If there was no pregnancy after 3 cycles for IUI, *in vitro* fertilization (IVF) should be considered.

**Key words:** intrauterine insemination (IUI); total mobile sperm count; pregnancy rate

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# IVF-ET周期中1原核(PN)及0PN(2Pb)胚胎的染色体组成分析

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**【摘要】**目的: 初步探寻体外受精-胚胎移植(IVF-ET)周期中高发育潜能的1原核(PN)及0PN(2Pb)胚胎的方法。方法: 观察787个IVF周期患者的PN及卵裂情况, 培养至第6日, 观察其囊胚形成情况。取囊胚滋养层细胞活检, 采用胚胎植入前遗传学筛查(PGS)技术检测0PN(2Pb)、1PN及2PN囊胚的染色体组成。结果: 787个IVF周期共获卵8352枚, 2PN、0PN(2Pb)、1PN胚胎的形成率分别为64.35%、4.93%、3.65%, 囊胚形成率分别为45.71%、30.03%、18.18%。PGS结果显示, 1PN及0PN(2Pb)囊胚染色体正常的比例明显低于2PN囊胚, 差异有统计学意义( $P < 0.05$ )。0PN(2Pb)囊胚的染色体正常比例较1PN囊胚的略高, 差异无统计学意义( $P > 0.05$ )。此外, 发育至第6日的0PN(2Pb)囊胚及1PN囊胚较第5日胚胎的正常染色体比例高。结论: 对于本周期无可利用胚胎的患者, 建议移植1PN及0PN(2Pb)来源的第6日评分较好的囊胚。

**关键词:** 体外受精(IVF); 1原核(PN)胚胎; 0PN(2Pb)胚胎; 胚胎植入前遗传学筛查(PGS); 染色体组成

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## Analysis of the chromosome composition of embryos exhibiting non- and mono-pronuclear at the fertilization check in *in vitro* fertilization cycles

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**【ABSTRACT】 Objective:** To find out a good method to select the highest development potential embryos exhibiting non- and mono-pronuclear (PN) at the fertilization check. **Methods:** The pronuclear zygote morphology and cleavage of 788 IVF cycles were evaluated, which subsequently cultured to day 6. Then the chromosomal constitution of blastocysts derived from non- and mono-pronuclear was checked by trophectoderm cell biopsy and preimplantation genetic screening (PGS). **Results:** In the 788 IVF cycles, 8 352 oocytes were retrieved, of which 64.35% developed to bi-pronuclear zygotes and the other 4.93% and 3.65% were non- and mono-pronuclear zygotes respectively. Incidences of blastocysts for bi-, non- and mono-pronuclear zygotes were 45.71%, 30.03% and 18.18%, respectively. The array-based comparative genomic hybridization (aCGH) results showed that the percentage of normal chromosomal composition of blastocysts from non- and mono-pronuclear zygotes was significantly lower than that of blastocysts from bi-pronuclear zygotes, while it was slightly higher in the non-pronuclear ones than in the mono-pronuclear ones. Furthermore, the percentage of normal chromosomal composition of blastocysts derived from non- and mono-pronuclear zygotes was higher on day 6 than on day 5. **Conclusion:** The results demonstrated that blastocysts derived from non- and mono-pronuclear zygotes in IVF cycles with good morphology on day 6 might be utilized for embryo transfer for patients without enough available embryos.

**Key words:** *in vitro* fertilization (IVF); mono-pronucleated zygotes; non-pronucleated zygotes; preimplantation genetic screening (PGS); chromosome composition

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# HP-hMG在卵巢次高反应患者体外受精周期中的临床应用效果

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**【摘要】**目的: 探讨卵巢次高反应患者体外受精-胚胎移植(*in vitro* fertilization-embryo transfer, IVF-ET)周期应用高纯度尿促性素(HP-hMG, 贺美奇)与重组人卵泡刺激素(r-FSH, 果纳芬)促排卵的临床结局。方法: 选择IVF-ET助孕的卵巢次高反应患者310例, 随机分为A组和B组, 分别给予r-FSH+HP-hMG(A组,  $n=124$ )和r-FSH(B组,  $n=186$ )促排卵, 统计促性腺激素(Gn)总用量、Gn使用天数、获卵数、受精率、卵裂率、优质胚胎率、临床妊娠率以及因卵巢过度刺激综合征(OHSS)周期取消率及ET后OHSS发生率。结果: 患者的基本情况组间无统计学差异( $P>0.05$ ), B组Gn使用天数明显多于A组( $P<0.05$ ), Gn总用量明显多于A组( $P<0.05$ ), hCG注射日 $E_2$ 、LH组间无统计学差异( $P>0.05$ ), B组hCG注射日孕酮(P)值显著高于A组( $P<0.05$ ); 获卵数B组显著多于A组 ( $P<0.05$ ), 受精率、卵裂率、移植胚胎数组间无统计学差异( $P>0.05$ ), 但优质胚胎率B组却显著低于A组( $P<0.05$ ), 移植患者临床妊娠率组间差异无统计学意义( $P>0.05$ ), A组仅稍高于B组。A组预防OHSS周期取消率较B组明显下降( $P<0.05$ ), B组移植患者OHSS发生率略高于A组( $P>0.05$ )。结论: 在卵巢次高反应患者人群中从启动日添加HP-hMG能改善胚胎质量, 增加子宫内膜容受性, 降低OHSS发生率。

**关键词:** 体外受精(IVF); 次高反应; 重组人卵泡刺激素(r-FSH); 高纯度尿促性素(HP-hMG)

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## Clinical outcome following stimulation with highly purified hMG in hyper-responsive patients undergoing IVF

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**【ABSTRACT】 Objective:** To compare the differences in clinical outcomes of ovulation induction with highly purified (HP)-hMG (Menopur) versus recombinant FSH (r-FSH) (Gonal-F) when applied during the in vitro fertilization-embryo transfer (IVF-ET) cycle in patients with ovarian hyper-responsion. **Methods:** A total of 310 patients with ovarian hyper-responsion who received IVF-ET were randomized into two groups to receive the respective r-FSH+HP-hMG Menopur (group A,  $n=124$ ) and r-FSH Gonal-F (group B,  $n=186$ ) for ovulation induction. The differences in total gonadotropin (Gn) dose, number of Gn treatment days, number of retrieved oocytes, fertilization rate, cleavage rate, good-quality embryo rate, clinical pregnancy rate, cycle cancellation rate due to ovarian hyperstimulation syndrome (OHSS) and incidence of OHSS following ET were compared between the two groups. **Results:** The differences in the basic conditions between the two groups of patients were not statistically significant. The number of Gn treatment days ( $P<0.05$ ) and total Gn doses ( $P<0.05$ ) were significantly higher in group B than in group A. There was no significant difference in  $E_2$  and LH levels on hCG injection day between the two groups ( $P>0.05$ ), but the P level on hCG injection day was significantly higher in group B than in group A ( $P<0.05$ ). The number of retrieved oocytes was significantly higher in group B than in group A ( $P<0.05$ ). There were no significant differences in fertilization rate, cleavage rate and number of transferred embryos between the two groups, but high-quality embryo rate was significantly

# 克罗米芬与GnRH拮抗剂在控制性超促排卵中抑制LH峰效果的比较

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**【摘要】**目的: 探讨克罗米芬(CC)与GnRH拮抗剂(GnRH-A)在控制性超促排卵(COH)中对黄体生成素(LH)峰抑制效果的比较。方法: 对应用CC后置方案和拮抗剂方案的181个周期的资料进行回顾性分析。其中应用CC抑制LH峰方案65例(CC组), 应用GnRH-A(思则凯组)抑制LH峰方案116例。比较2种药物对LH峰的抑制作用、Gn用量、获卵数、可移植胚胎数、优质胚胎数、受精率等。结果: hCG注射日LH值与加用CC或思则凯日LH值的差值[LH( $\Delta$ )]具有统计学差异( $1.30 \pm 5.12$  IU/L vs  $-1.37 \pm 7.15$  IU/L,  $P=0.004$ ); Gn用量、获卵数、可移植胚胎数、优质胚胎数、受精率等CC组和思则凯组比较差异无统计学意义( $P>0.05$ )。结论: CC与思则凯对早发LH峰均有一定抑制效果, 但较CC相比其抑制早发LH峰效果可能更明显。

**关键词:** 克罗米芬(CC); GnRH拮抗剂(GnRH-A); LH峰; 早发LH峰

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## Availability of clomiphene citrate with GnRH-A in controlled ovarian hyperstimulation to suppress premature LH surge

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**【ABSTRACT】 Objective:** To compare the availability of clomiphene citrate (CC) with GnRH-A (Cetrotide) in controlled ovarian hyperstimulation (COH) to suppress premature LH surge. **Methods:** A total of 181 cycles from infertile patients who underwent COH were retrospectively analyzed. The patients were divided into CC group (administered with CC to suppress LH surge,  $n=65$ ) and GnRH-A group (administered with Cetrotide to suppress LH surge,  $n=116$ ). The difference of clinical outcome was compared and analyzed between the two groups. **Results:** The serum LH value on hCG injection day in CC group was statistically lower than that in GnRH-A group, and the difference was statistically significant ( $P<0.05$ ). No statistically significant difference was found between the two groups in oocyte number and transferable embryo number ( $P>0.05$ ). **Conclusion:** Both CC and GnRH-A are effective to suppress premature LH surge, but the effect might be better in CC group.

**Key words:** clomiphene citrate (CC); GnRH-A; LH surge; premature LH surge

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· 循证医学 ·

# 生精类中成药治疗男性少、弱精子症的 Network Meta分析和系统评价

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**【摘要】**目的: 利用 Network Meta 分析观察生精类中成药治疗男性少、弱精子症的疗效。方法: 检索 Cochrane 图书馆、Pubmed 数据库、中国生物医学文献数据库、CNKI 数据库、VIP 数据库、万方数据库等, 纳入生精类中成药治疗少、弱精子症的随机对照试验(RCT)研究, 并进行方法学质量评价。采用 ADDIS 软件 v1.16.5 进行统计学分析, 对纳入的 RCT 的研究结果进行合并, 并进行偏倚评估和稳定性分析。结果: 共纳入 20 篇 RCT 文献, 累计病例 2 947 例, 包括 8 种干预措施(生精胶囊、麒麟丸、养精胶囊、黄精赞育胶囊、复方玄驹胶囊、生精片、四子种王胶囊和五子衍宗丸)。Network Meta 分析显示 8 种生精类中成药在两两比较改善和提高精子参数总有效率、a 级精子率、a+b 级精子率和精子浓度方面, 除四子种王胶囊对五子衍宗丸在 a 级精子和精子浓度之间有统计学意义 $P < 0.05$ , 其余各药之间对比差异则无统计学意义( $P > 0.05$ )。结论: 基于贝叶斯理论的 Network Meta 分析对 8 种干预措施进行疗效排序显示, 虽然 8 种生精类中成药在治疗男性少、弱精子症方面对改善和提高精子参数各自具有独特的优势, 但需要在辨病、辨证的基础上灵活组合搭配使用, 并通过大数据、高质量、多中心的随机对照双盲临床试验进一步加以验证。

**关键词:** 男性不育症; 少、弱精子症; 循证医学; Network Meta 分析

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• 循证医学 •

## Efficacy of the Chinese patent medicine for treatment of oligospermia and asthenospermia: a systematic review and Network Meta-analysis

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**【ABSTRACT】Objective:** To explore the efficacy of the Chinese patent medicine on oligospermia and asthenospermia through Network Meta-analysis. **Methods:** The studies involving randomized controlled trials (RCT) were collected from the database, such as the Cochrane Library, Pubmed, CBM Disc, CNKI, VIP and Wanfang from the founded year to November 2014. After the necessary methodological quality evaluation of the selected studies and assessment of publication bias analysis, the statics analysis was conducted by the software ADDIS v1.16.5. **Results:** Twenty eligible reports were identified in this study, including 2 947 cases. The Network Meta-analysis showed that there were significant differences in improving the grade a sperm rate and the sperm concentration between SiZiZhongWang capsule and WuZiZong pill. There was no significant difference for other 6 kinds of intervention methods to improve the total effective rate, the grade a sperm rate, the grade a+b sperm rate and the sperm concentration in the treatment of male infertility. **Conclusion:** Network Meta-analysis based on Bayesian theory could rank 8 kinds of intervention methods and showed that the 8 kinds of the Chinese patent medicine have their unique advantages in treatment of male infertility. Although the Chinese patent medicine did show a definitely effect on the treatment of male infertility, we still need flexibly combine and collocate them on the basis of differentiation of disease and syndrome, and urge more further large-scale, high quality, multi-centre, randomized, double-blind, parallel-controlled trials to prove it.

**Key words:** male infertility; oligospermia and asthenospermia; evidence-based medicine; Network Meta-analysis



• 综述 •

# 微小RNA在女性生殖调节中的研究进展

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**【摘要】**微小RNA(miRNA)是含有19~22个核苷酸序列的短链非编码RNA,调控内源性基因的转录后表达。随着miRNA在生殖领域不断被发现,miRNA作为女性生殖系统的重要调控因子越来越受到关注。miRNA通过调节靶基因的转录后水平,调控卵巢颗粒细胞的增殖、分化和凋亡并参与控制类固醇激素的分泌。卵巢功能异常,如多囊卵巢综合征(PCOS)和卵巢早衰(POF)均会发生miRNA调控异常。除此之外,miRNA还通过调节目标基因的表达决定胚胎的整倍体性及胚胎发育的命运。miRNA对于维持子宫内膜容受性非常重要,miRNA的异常表达会导致子宫内膜种植窗的偏移,从而导致胚胎种植失败。对miRNA在生殖调节中作用的了解,有助于发现新的预测体外受精成功率的生物指标和靶向治疗的位点,进一步提高辅助生殖的有效性和安全性。

**关键词:** 基因调控; 微小RNA(miRNA); 生殖

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## **New advancement of microRNA as a regulatory role in female reproduction**

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**【ABSTRACT】** MicroRNAs (miRNA), also called miRNAs are small 19–22 nucleotide (nt) sequences of noncoding RNA that work as endogenous post-transcriptional gene expression regulators. As more and more miRNA family members have been explored in the human reproductive system, the study of the regulatory role of these small RNA molecules has begun to be popular in the reproductive research. MiRNAs are expressed in all tissues and the post-transcriptional gene regulation by miRNAs plays a key role during the ovarian cellular proliferation, differentiation, apoptosis and in control of ovarian steroidogenesis. Ovarian dysfunction such as polycystic ovary syndrome (PCOS) and premature ovarian failure (POF) are related to the aberrant regulation of miRNA. Besides, the disorder of miRNA targets could affect the ploidy and development of embryos. Moreover, the endometrial receptivity is influenced by the expression of candidate genes which are regulated by miRNAs. Therefore, identification of miRNAs in each female reproduction will enable us to investigate the predictive biomarkers and target therapy, in order to improve the validity and security of assisted reproductive technology.

**Key words:** gene expression regulators; microRNA (miRNA); reproduction

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# *HOXA10*、*HOXA11* 基因与子宫内膜异位症 性不孕的研究进展

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**【摘要】** 子宫内膜异位症(endometriosis, EMS)是不孕症的常见病因, *HOXA10*、*HOXA11* 这2种基因的正常表达与子宫内膜分泌中、晚期容受性的形成关系密切, 而这2种基因在EMS患者的子宫内膜中与正常人相比表达下降, 故EMS不孕的主要机制可能为低表达的*HOXA10*、*HOXA11* 这2种基因, 使子宫内膜的蜕膜化异常、容受性下降。此外, 近期研究指出, 导致EMS患者*HOXA10*、*HOXA11*基因表达下降的主要因素可能是基因异常甲基化。

**关键词:** *HOXA10*; *HOXA11*; 子宫内膜异位症(EMS); 不孕症

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## Recent advances in *HOXA10*, *HOXA11* genes and endometriosis infertility

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**【ABSTRACT】** The expressions of *HOXA10* and *HOXA11* were reduced in endometrium who were suffering endometriosis (EMS), a common cause of infertility, compared with normal person. Furthermore, *HOXA10* and *HOXA11* are closely associated with endometrial receptivity of middle and late secretory phase. Abnormal decidualization and decreased endometrial receptivity may be the primary mechanisms of EMS infertility, according to the low expression level of *HOXA10* and *HOXA11*. Additionally, aberrant methylation may be the major factor for the two genes' reduced expression according to recent studies.

**Key words:** *HOXA10*; *HOXA11*; endometriosis (EMS); infertility

# 雌激素在宫腔粘连中的应用及机制探讨

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**【摘要】**宫腔粘连(IUA)对女性的身体及心理造成不同程度的伤害。宫腔镜手术能恢复宫腔正常形态,但不能修复子宫内膜,从而造成再粘连的发生。有研究显示,行宫腔镜宫腔粘连分离的患者术后再粘连的发生率为3.1%~23.5%。雌激素能促进内膜腺体和间质细胞的增殖,促进内膜血管的生成,从而达到尽快修复创面、形成子宫壁的功能性分离,有利于新生内膜的生长。因此,IIA术后多应用雌激素预防再粘连发生,但目前关于雌激素的用法、用量并不十分统一,有待于进一步的深入研究。

**关键词:** 宫腔粘连; 雌激素; 子宫内膜

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## Application and mechanism of estrogen in intrauterine adhesion

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**【ABSTRACT】** Intrauterine adhesion (IUA) caused varying degrees of damage on physical and mental health of women. Hysteroscope operation can make uterine cavity shape return to normal, but not repair the endometrium, thus resulting in the recurrence of adhesion. It has been reported that the recurrence rate of patients with IUA is 3.1% to 23.5% after transcervical resection of adhesion. Estrogens can increase endometrial glands and stroma cells proliferation, promote angiogenesis, lead to the separation of uterine wall, and be favor of the growth of neointima formation. So, estrogens are often used in IUA patients after transcervical resection of adhesion. However, it is not agreed on the usage and dosage of estrogen yet, and it is needed to be further studied.

**Key words:** intrauterine adhesion (IUA); estrogen; endometrium

• 临床报道 •

## 曼月乐和安宫黄体酮在围绝经期异常子宫出血治疗中的疗效分析

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**【摘要】**目的: 比较曼月乐和安宫黄体酮在围绝经期异常子宫出血治疗中的疗效。方法: 回顾性分析接受保守治疗的围绝经期异常子宫出血患者, 分为安宫黄体酮组( $n=35$ )和曼月乐组( $n=33$ ), 进行配对研究, 比较安宫黄体酮组和曼月乐组患者治疗后的有效率及治疗前、后血红蛋白和子宫内膜厚度的变化。结果: 在治疗3个月后, 曼月乐组有效率为90.91%, 安宫黄体酮组有效率为68.57%, 差异有统计学意义( $P<0.05$ ); 患者治疗后血红蛋白(Hb)均上升, 但以曼月乐组更为显著; 但治疗后子宫内膜厚度均变薄, 组间差异无统计学意义( $P>0.05$ )。所有患者均未见明显不良反应。结论: 曼月乐和安宫黄体酮治疗围绝经期异常子宫出血均安全有效, 但是曼月乐组效果更明显。

**关键词:** 曼月乐; 安宫黄体酮; 围绝经期异常子宫出血

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## Effects of levonorgestrel-releasing intrauterine system and medroxyprogesterone on perimenopausal abnormal uterine bleeding

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**【ABSTRACT】 Objective:** To compare the effect of levonorgestrel-releasing intrauterine system (Mirena<sup>®</sup>) and medroxyprogesterone on perimenopausal abnormal uterine bleeding. **Methods:** Sixty-eight perimenopausal patients with abnormal uterine bleeding were divided into medroxyprogesterone group ( $n=35$ ) and Mirena group ( $n=33$ ). The effective rate, endometrial thickness, hemoglobin before and after treatment were compared between the two groups. **Results:** After treatment for three months, the effective rates were 90.91% in Mirena group and 68.57% in the medroxyprogesterone group ( $P<0.05$ ). The concentration of hemoglobin significantly increased in the both groups, especially in Mirena group ( $P<0.05$ ). The endometrial thickness all became thinner, the difference was not statistically significant ( $P>0.05$ ). There was no significant side effect between the two groups. **Conclusion:** Both Mirena<sup>®</sup> and medroxyprogesterone are safe and effective in treatment of perimenopausal abnormal uterine bleeding, especially Mirena<sup>®</sup>.

**Key words:** Mirena<sup>®</sup>; medroxyprogesterone; perimenopausal abnormal uterine bleeding

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# 磁共振成像在子宫畸形诊断中的价值

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**【摘要】**目的: 评价磁共振成像(MRI)在不孕症患者先天性子宫畸形诊断中的价值。方法: 对临床怀疑有子宫畸形可能的66名不孕患者进行MRI检查, 并将三维容积成像序列(Cube序列)所得图像信息进行重建。结果: 66名患者中, MRI检测出55例先天性子宫畸形, 包括先天性无子宫2例、幼稚子宫1例、单角子宫4例、残角子宫4例、双子宫8例、纵隔子宫30例、弓形子宫5例、双角子宫1例, MRI的后期重建能清晰显示子宫宫体和宫颈、宫腔内外各结构。结论: MRI检查对先天性子宫畸形的诊断准确性为100%, 能为临床诊疗提供帮助。

**关键词:** 先天性子宫畸形; 磁共振成像(MRI); 三维重建; 不孕症

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## Diagnostic value of MRI 3D sequence for the congenital malformation of uterine

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**【ABSTRACT】 Objective:** To evaluate the value of magnetic resonance imaging (MRI) Cube sequence in the diagnosis of infertility patients with congenital uterine malformation. **Methods:** Totally 66 cases of patients suspected uterine malformations underwent MRI with Cube sequence. And the images of the Cube sequence was rebuilt. **Results:** Among 66 cases, 55 cases were malformation of uterine, including 2 congenital absence of uterus, 1 puerile uterus, 4 unicornous uteruses, 4 rudimentary horn of uteruses, 8 double uteruses, 30 septate uteruses, 5 arcuate uteruses and 1 uterus bicornis. Three-dimensional (3D) MRI could display the uterine external appearance, internal structure and cervix shape. **Conclusion:** MRI Cube sequence and 3D reconstruction can correctly diagnose and classify the congenital uterine malformation, it's verscity is 100%. MRI can assist the clinical diagnosis and treatment.

**Key words:** congenital malformation of uterine; magnetic resonance imagine (MRI);  
three-dimensional (3D) reconstruction; infertility

· 个案报道 ·

# 腹腔镜下可逆性子官动脉阻断联合宫腔镜下吸 宫术在剖宫产疤痕妊娠治疗中的应用: 附 10 例病例报告

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**【摘要】目的:** 探讨经腹腔镜可逆性子官动脉阻断联合宫腔镜下吸宫术在剖宫产疤痕妊娠治疗中的临床价值。**方法:** 对确诊为剖宫产疤痕妊娠、采用腹腔镜可逆性子官动脉阻断联合宫腔镜下吸宫术治疗的10例患者临床资料进行回顾性分析。**结果:** 10例患者手术均顺利完成, 无中转开腹, 无术后并发症。手术时间65~120 min, 平均 $86 \pm 4$  min; 术中出血量60~110 mL, 平均 $85 \pm 7$  mL。患者术后6~12 h离床活动; 术后24 h检测血 $\beta$ -hCG下降幅度均超过50%; 术后住院时间2~4 d, 平均3 d; 血 $\beta$ -hCG于术后2~4周降至正常范围。**结论:** 腹腔镜可逆性子官动脉阻断联合宫腔镜下吸宫术治疗剖宫产疤痕妊娠是一种安全、有效、损伤小、恢复快、相对微创的治疗方式, 具有一定的推广意义。

**关键词:** 剖宫产疤痕妊娠(CSP); 子官动脉阻断; 吸宫术; 宫腔镜

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## **Application of laparoscopic reversible uterine artery occlusion combined with suction curettage under hysteroscopy in the treatment of cesarean scar pregnancy: case report with 10 patients**

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**【ABSTRACT】 Objective:** To determine the clinical efficacy of laparoscopic reversible uterine artery occlusion combined with suction curettage under hysteroscopy in the treatment of patients with cesarean scar pregnancy (CSP). **Methods:** The clinical data of 10 patients with CSP undergoing laparoscopic reversible uterine artery occlusion combined with suction curettage under hysteroscopy were retrospectively analyzed. **Results:** In 10 patients, the gestational sacs were successfully removed by suction curettage after laparoscopic reversible uterine artery occlusion. The operative time ranged 65–120 min (median, 86 min). The operative blood loss ranged from 60–110 mL (median, 85 mL). Neither blood transfusion nor conversion to laparotomy was required. There was no intraoperative complication. The mean postoperative hospital stay ranged 2–4 d (median, 3 d). Blood  $\beta$ -hCG in 2–4 weeks after operation dropped to normal range. **Conclusion:** Laparoscopic reversible uterine artery occlusion combined with suction curettage under hysteroscopy in the treatment of CSP is a kind of safe, effective, small trauma, rapid recovery and relatively minimally invasive treatment.

**Key words:** cesarean scar pregnancy (CSP); uterine artery occlusion; suction curettage; hysteroscopy