

· 实验研究 ·

14-3-3 ϵ 调节小鼠受精卵纺锤体组装

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【摘要】目的: 研究 14-3-3 ϵ 蛋白调节小鼠受精卵纺锤体组装的作用。方法: 采用间接免疫荧光 * * * * 1- 细胞期受精卵 14-3-3 ϵ 和 α -微管蛋白的亚细胞定位; 利用显微注射方法将 14-3-3 ϵ siRNA 注射入 1- 细胞期受精卵, 观察小鼠受精卵纺锤体形态及检测 Polo 样激酶 1(Plk1) 的活性。结果: 14-3-3 ϵ 和 α -微管蛋白在 G₁ 期、S 期和 G₂ 期卵中主要共定位于细胞质, M 期卵 14-3-3 ϵ 主要位于细胞质皮质。小鼠受精卵注射 14-3-3 ϵ siRNA 后导致异常形态纺锤体形成及 Plk1 活性下降。结论: 14-3-3 ϵ 蛋白在调节小鼠受精卵纺锤体组装中发挥重要作用。

关键词: 14-3-3 ϵ 蛋白; 小鼠受精卵; 纺锤体组装; Polo 样激酶 1(Plk1)

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Involvement of 14-3-3 ϵ in the spindle assembly in mouse fertilized eggs

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【ABSTRACT】 Objective: To study the effect of 14-3-3 ϵ protein on the spindle assembly in mouse fertilized eggs. **Methods:** Indirect immunofluorescence was used to detect the localization of 14-3-3 ϵ and α -tubulin in the mouse fertilized eggs. 14-3-3 ϵ siRNA was microinjected into 1-cell fertilized eggs to study morphology of spindle and polo like kinase 1 (Plk1) activity. **Results:** In all phases of fertilized eggs investigated, 14-3-3 ϵ had a mainly cytoplasmic distribution and co-localized with α -tubulin in the cytoplasm at the G₁, S and G₂ phases. Knockdown of 14-3-3 ϵ resulted in abnormal morphology of spindle and decreased the Plk1 activity. **Conclusion:** 14-3-3 ϵ plays critical roles in spindle assembly in mouse fertilized eggs.

Key words: 14-3-3 ϵ ; mouse fertilized eggs; spindle assembly; polo like kinase 1 (Plk1)

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抗氧化剂对小鼠卵母细胞老化延缓作用的研究

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【摘要】目的: 探讨重金属耦合剂(乙二胺四乙酸和柠檬酸钠)与抗氧化剂(硫辛酸和乙酰肉碱)对小鼠卵子数目、线粒体和纺锤体老化的影响。方法: 随机将C57BL/6雌性小鼠分为4组, 重金属耦合剂组(A组)、抗氧化剂组(B组)、混合组(C组)和正常空白对照组(D组), 每组48只。分别在饮用水中添加重金属耦合剂和/或抗氧化剂, 并于饲养3个月、6个月、9个月和12个月后测定卵子数目、线粒体膜电位和纺锤体结构等指标。结果: 小鼠卵子数和线粒体活性均随年龄增长而下降和减弱, 纺锤体异常率随时间的延长而升高; 在同一年龄阶段中, 与A组和D组相比, B组和C组的卵子数目较多, 长时间作用后, 线粒体活性偏高, 而纺锤体异常率偏低。结论: 饮用水中添加抗氧化剂硫辛酸和乙酰肉碱可有延迟卵母细胞老化的作用。

关键词: 卵子衰老; 氧化应激; 抗氧化剂; 重金属耦合剂

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Effects of antioxidants on aging of mouse oocyte

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【ABSTRACT】 Objective: To investigate the effects of heavy metal coupling agent (EDTA and sodium citrate) and antioxidants (lipoic acid and acetyl-carnitine) on the number of oocytes as well as the aging of mitochondria and spindle in mice. **Methods:** The C57BL/6 female mice were divided randomly into four groups, including heavy metal coupling agent group, antioxidant group, mixed group and normal control group. Each group had 48 mice. Heavy metal coupling agents and antioxidants were solved in drinking water for feeding. Number of oocytes, mitochondrial membrane potential and structure of spindle were monitored in 3 months, 6 months, 9 months and 12 months post treatment, respectively. **Results:** With increasing of age, the number of oocytes in mice was significantly decreased among four groups, while mitochondrial activity dropped and malformation of spindle increased. For mice of the same age, the number of oocytes in antioxidant group and mixed group was greater than those of the heavy metal coupling agent group and normal control group. Additionally, after a long period of treatment, a higher activity of mitochondrial and a less spindle malformation were detected. **Conclusion:** Appropriate utilization of antioxidant lipoic acid and acetyl-carnitine could play a role in delaying oocyte aging.

Key words: oocyte aging; oxidative stress; antioxidant; coupling agent of heavy metals

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• 临床研究 •

美洁多治疗多囊卵巢综合征疗效的 多中心临床观察研究

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【摘要】目的: 观察国产避孕药炔雌醇环丙孕酮(商品: 名美洁多)治疗多囊卵巢综合征(PCOS)的临床疗效。**方法:** 研究采用多中心临床观察、自身对照研究的方式, 在上海6家医院纳入PCOS患者243例, 用美洁多治疗3个月。治疗前、后观察体质量指数(BMI)、痤疮评分、体毛评分; B超检查卵巢大小、每侧卵泡数; 测定FSH、LH、E₂、PRL、P、T水平及肝、肾功能。**结果:** 美洁多治疗PCOS 3个月可以明显降低患者LH、T水平, 缩小卵巢体积、减少卵泡数量、改善高雄激素症状。**结论:** 美洁多治疗PCOS疗效显著, 可有效降低雄激素和LH水平, 改善高雄症状, 调整月经周期, 且对肝肾功能无不良影响。

关键词: 多囊卵巢综合征(PCOS); 美洁多; 高雄激素血症

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Multi-center clinical study of ethinyl estradiol-cyproterone acetate (Mei Jieduo) in the treatment of polycystic ovary syndrome patients

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【ABSTRACT】 Objective: To investigate the clinical efficacy of ethinyl estradiol-cyproterone acetate (the brand name: Mei Jieduo, produced in China) in treating polycystic ovary syndrome (PCOS). **Methods:** A multi-center clinical study with self-control methods was empowered and 243 women with PCOS were included from 6 hospitals in Shanghai city. Ethinyl estradiol-cyproterone acetate was used to treat PCOS patients for 3 months. Before and after ethinyl estradiol-cyproterone acetate treatment, the data of clinical signs and symptoms were collected, hormone levels and liver and kidney function were measured, ovary volume and follicle number were examined by ultrasound. **Results:** LH and T levels were decreased significantly ($P<0.05$), ovaries volume and follicle numbers decreased and signs and symptoms were considerably improved after treatment compared to those before treatment. **Conclusion:** Mei Jieduo treatment for PCOS is very effective by reducing T and LH levels and improves the signs and symptoms of PCOS patients.

Key words: polycystic ovary syndrome (PCOS); ethinyl estradiol-cyproterone acetate (Mei Jieduo); hyperandrogenism

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改良超长方案改善多囊卵巢综合征(PCOS)不孕患者子宫内膜容受性的研究

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【摘要】目的: 探讨改良超长方案降调节结合人绝经期促性腺激素(hMG)在多囊卵巢综合征(PCOS)不孕患者行体外受精/卵胞质内单精子注射-胚胎移植术(IVF/ICSI-ET)助孕中的疗效及机理。**方法:** ①将行IVF/ICSI-ET的PCOS患者随机改良超长方案降调后促排卵组(A组, $n=86$)和标准的长效方案促排卵组(B组, $n=80$); 观察比较2种促排方案的实验室及临床结局。②分别于取卵后第6日收集A组和B组中因卵巢过度刺激综合征(OHSS)原因取消移植者的子宫内膜组织各5例(分别为C组和D组), 用电子显微镜、Real-time PCR和Western blotting、免疫组织化学方法观察内膜组织胞饮突分布以及同源框A10(*HOXA10*)、溶血磷脂酸受体3(*LPAR3*)、环氧化酶2(*COX2*)基因的表达变化。**结果:** ①Gn用量(IU)、用药时间(d)、hCG注射日 E_2 水平和LH水平、平均获卵数、受精率、优质胚胎率、周期取消率、移植胚胎数、重度OHSS发生率、流产率、异位妊娠率A、B组间均无统计学差异($P>0.05$)。A组种植率及移植妊娠率(60.65%和79.49%)均高于B组(44.53%和61.19%, $P<0.05$)。与B组相比, A组患者hCG注射日P水平及 P/E_2 明显降低, 子宫内膜(EM)的厚度、形态、血流情况明显改善($P<0.05$)。②C组子宫内膜上出现大量呈蘑菇状、表面光滑、边界清楚的完全发育胞饮突, D组的胞饮突的数量少于C组, 且形态发育不佳, 还可见少量退化的胞饮突。在着床期C组子宫内膜*LPAR3*、*COX2*、*HOXA10*的表达水平显著高于D组。**结论:** 对PCOS不孕患者实施IVF/ICSI-ET助孕过程中, 采用改良的GnRH-a超长方案降调节+hMG超促排卵可通过多种机理提高患者的着床率和妊娠率。

关键词: 多囊卵巢综合征(PCOS); IVF/ICSI-ET; 子宫内膜容受性; 促排卵方案; 胞饮突; 溶血磷脂酸受体3(*LPAR3*); 环氧化酶2(*COX2*); 同源框A10(*HOXA10*)

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Study of modified super-long protocol on endometrial receptivity of patients with PCOS in IVF/ICSI-ET

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【ABSTRACT】 Objective: To explore the clinical outcomes and mechanism of modified super-long protocol down-regulation in combination with human menopausal gonadotropin (hMG) in polycystic ovary syndrome (PCOS) infertile women undergoing *in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer (IVF/ICSI-ET) prospectively. **Methods:** 1) PCOS patients who underwent IVF/ICSI-ET were divided into two groups: super-long protocol group ($n=86$) and long protocol group ($n=80$). The average number of obtained oocytes, fertilization rate, implantation rate, pregnancy rate, abortion rate, thickness, morphology and pulsed Doppler study of uterine artery of endometrium on the day of hCG administration were compared. Otherwise, the related indexes of two groups such as serum progesterone (P), estradiol (E_2) and luteinizing hormone (LH) level and P/E_2 on the day of hCG administration were compared. 2) PCOS patients in our hospital who were cancelled for the high risk of ovarian hyperstimulation syndrome (OHSS) in IVF/ICSI-ET were divided into two groups: super-long protocol group ($n=5$) and long protocol group ($n=5$). The expressions of homeoboxA10 (HOXA10), lysophosphatidic acid receptor 3 (LPAR3) and cytochrome c oxidase subunit II (COX2) in two groups were detected by immunohistochemistry, Real-time PCR, Western blotting, and pinopodes by electron microscopy of the patients in two groups on the sixth day after oocyte retrieval were comparatively studied. **Results:** 1) The average number of obtained oocytes, good-quality embryo rate, cancellation rate, severe OHSS rate showed no significant differences between the two groups ($P>0.05$). The serum P level and P/E_2 on the day of hCG administration in modified super-long down-regulation protocol were decreased. In the group of modified super-long down-regulation protocol, the endometrial thickness, morphology and blood flow detected by Doppler ultrasounds were significantly optimized compared with conventional long protocol. 2) We can detect a large number of distribution uniform in size, smooth surface, clear boundary, membranous protrusions mushroom, which was fully developed pinopodes in the endometrium of patients in modified long protocol. And in the group of long protocol, the pinopodes distribute focally, the surface was not smooth, much of them was covered with microvilli. Expressions of LPAR3, COX2, HOXA10 in the endometrium were higher in the modified super-long protocol group than those in long protocol group in the period of implantation window. **Conclusion:** Modified super-long protocol plus hMG raised the thickness of endometrium, improved the morphology and blood flow, thus improved the implantation rate and the pregnancy rate for PCOS infertile patients in IVF/ICSI-ET. Modified super-long protocol may improve the level of endometrial pinopodes, LPAR3, COX2, HOXA10 expression to improve endometrial receptivity.

Key words: polycystic ovary syndrome (PCOS); *in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer (IVF/ICSI-ET); endometrial receptivity; ovulation inducing protocol; pinopodes;

卵巢功能正常患者使用不同促性腺激素联合安宫黄体酮促排卵的IVF/ICSI-FET结局

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【摘要】目的: 比较2种人绝经期促性腺激素(hMG)和尿源性卵泡刺激素(u-FSH)联合安宫黄体酮(MPA)对卵巢功能正常患者促排卵的内分泌特征及体外受精/卵胞质内单精子注射(IVF/ICSI)临床结局。方法: 回顾性分析258个行IVF/ICSI取卵周期的患者资料, 入组患者均采用促性腺激素(Gn)联合MPA方案进行促排卵, 根据所使用的Gn药物的类型分为: A组, hMG-A组(商品名: 丰原, $n=105$); B组, hMG-B组(商品名: 乐宝得, $n=90$); C组, u-FSH组(商品名: 丽申宝, $n=63$)。比较3组患者促排卵过程中的卵巢反应、胚胎实验室结局及行冻融胚胎移植(FET)后的妊娠结局。结果: A、B、C组的获卵数分别为 12.1 ± 6.9 、 12.1 ± 5.7 、 13.1 ± 8.9 , 3组间比较无统计学差异($P>0.05$); 3组的成熟卵数、正常受精卵数、卵裂数、可用胚胎数等胚胎实验室指标均无统计学差异($P>0.05$); 促排卵过程中患者的LH水平维持在 $0.04\sim 7.38$ IU/L之间, 未监测到LH峰; FET后, A、B、C组的临床妊娠率(43.48% vs 37.93% vs 40.74%)和种植率(34.88% vs 22.22% vs 26.42%)组间比较均无统计学差异($P>0.05$)。结论: 促排卵过程中加用MPA能够有效抑制早发性LH峰, 卵泡期高孕激素状态促排卵(PPOS)为基于FET的促排卵提供了新思路, 在PPOS方案中对于卵巢功能正常的患者使用hMG和u-FSH进行促排卵具有相同的临床效果。

关键词: 人绝经期促性腺激素(hMG); 尿源性卵泡刺激素(u-FSH); 黄体生成素峰(LH峰); 安宫黄体酮(MPA); 冻融胚胎移植(FET)

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Endocrine characteristics and the clinical outcomes of using three gonadotropins and medroxy-progestrone acetate during ovarian stimulation in normal ovulatory women undergoing IVF/ICSI-FET treatments

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【ABSTRACT】Objective: To explore the clinical characteristics of gonadotropins (Gn) and medroxyprogesterone acetate (MPA) in normal ovulatory women undergoing IVF/ICSI treatments using the three types of Gn. **Methods:** A total of 258 IVF/ICSI patients undergoing ovarian stimulation in a Gn and MPA protocol were analyzed in this retrospective study and were allocated into three groups according to the Gn used: group A, hMG-A (brand name: fengyuan, $n=105$); group B, hMG-B (brand name: lebaode, $n=90$); group C, u-FSH (brand name: lishenbao, $n=63$). The hormone profiles such as serum FSH, LH, E₂, P, β -hCG levels, embryological characteristics, and the pregnant results after frozen-thawed embryo transfer (FET) were compared among the three groups. **Results:** There was no significant difference in the number of oocytes retrieved among the three groups (12.1 ± 6.9 vs 12.1 ± 5.7 vs 13.1 ± 8.9 , $P>0.05$). Other indicators such as the number of mature oocyte, fertilization, cleavage and viable embryo were similar ($P>0.05$). No premature LH surges were detected, with a range of 0.04–7.38 IU/L. No differences were found in the clinical pregnancy rate per transfer cycle (43.48% vs 37.93% vs 40.74%, $P>0.05$) and the implantation rate (34.88% vs 22.22% vs 26.42%, $P>0.05$). **Conclusion:** MPA is an effective oral alternative for the prevention of premature LH surges. Progestin-primed ovarian stimulation (PPOS) is a novel regimen of ovarian stimulation in combination with embryo cryopreservation, in which the two types of hMG are as effective as uFSH.

Key words: human menopausal gonadotropin (hMG); urinary follicle stimulation hormone (u-FSH); luteinizing hormone (LH) surge; medroxy-progestrone acetate (MPA); frozen-thawed embryo transfer (FET)

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【摘要】目的: 探讨宫腔内人工授精(IUI)的最佳促排卵方案。方法: 回顾性分析 646 个 IUI 周期, 比较自然周期与促排卵周期、不同优势卵泡数目的促排卵周期、不同促排卵方案之间患者的临床妊娠率、多胎率、流产率的差异。结果: ① 促排卵周期人工授精临床妊娠率显著高于自然周期 (20.84% vs 8.77%, $P < 0.05$); ② hCG 注射日优势卵泡数目 1 个、2 个、3 个之间的促排卵周期临床妊娠率分别为 13.6%、24.14%、32.35%, 差异有统计学意义 ($P < 0.01$); ③ 氯米芬(CC)与 CC 联合尿促性腺激素(CC+hMG)2 种促排卵方案相比, CC+hMG 组与 CC 组比较, hCG 注射日优势卵泡数(2.0 ± 0.9 vs 1.5 ± 0.3)、子宫内膜厚度(9.41 ± 1.88 mm vs 8.06 ± 1.92 mm)、妊娠率(22.13% vs 10.93%)差异均有统计学意义 ($P < 0.05$); 来曲唑(LE)与 LE+hMG 2 种促排卵方案相比, LE+hMG 组优势卵泡数显著大于 LE 组(1.6 ± 0.7 vs 1.0 ± 0.0 , $P < 0.01$), 且临床妊娠率有增高的趋势。结论: 各种促排卵方案能增加 IUI 临床妊娠率, CC 或 LE 联合小剂量 hMG 的温和促排卵方案, 能获得一个最为理想的临床结局。

关键词: 宫腔内人工授精(IUI); 促排卵周期; 妊娠率

中图分类号: R711.6

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Effects of ovarian mild-stimulation protocols on pregnancy outcomes of intrauterine insemination patients

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【ABSTRACT】 Objective: To evaluate the best ovarian mild-stimulation protocol of intrauterine insemination (IUI) patients. **Methods:** A total of 646 IUI cycles were included, consisting of 171 nature cycles (NC) and 475 ovarian mild-stimulation cycles (OMC). Clinical pregnancy rates (PR), miscarriage rates (MR), multiple pregnancy rates (MPR) between NCs and OMCs, different number of dominant follicles groups and ovarian mild-stimulation protocols were compared, respectively. **Results:** 1) PRs were significantly higher in OMC than in those NC (20.84%, 8.77%, $P<0.05$). 2) The clinical PRs were 13.60%, 24.14%, 32.35%, respectively on the day of human chorionic gonadotrophin (hCG) administration when the number of dominant follicles was from 1 to 3. 3) The number of dominant follicles and the thickness of endometrium on hCG injection day and PRs were more higher in CC+hMG group than those in CC group ($P<0.05$). The number of dominant follicles was more in LE+hMG group than in LE group ($P<0.05$), and the PRs in LE+hMG group seemed higher, but with no statistic differences. **Conclusion:** Ovarian stimulation can increase the PR in IUI cycle. CC or LE with a low dose of hMG, a mild ovarian stimulation protocol can get a satisfied pregnancy outcome.

Key words: intrauterine insemination (IUI); ovarian mild-stimulation cycle (OMC); pregnancy rate (PR)

经皮雌激素治疗对手术绝经妇女围绝经症状和 辅助性T细胞1和2平衡的影响

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【摘要】目的: 研究经皮雌二醇(E₂)凝胶对手术绝经妇女围绝经症状和T淋巴细胞分泌辅助性T细胞1(Th1)和辅助性T细胞2(Th2)型细胞因子的影响。方法: 研究对象为手术绝经组, 使用经皮E₂凝胶(17β-E₂, 0.75 mg/d)3个月, 用药前、后分别取外周静脉血分离T淋巴细胞, 检测T淋巴细胞分泌干扰素-γ(IFN-γ)、白细胞介素-4(IL-4)水平和IFN-γ/IL-4比值, 检测外周血E₂和卵泡刺激素(FSH)水平, 评估围绝经症状和生存质量。生育年龄组检测外周血E₂和FSH水平及T淋巴细胞分泌IFN-γ、IL-4水平和IFN-γ/IL-4比值。手术绝经组用药前、后进行自身比较, 另以生育年龄组作为对照组。结果: 手术绝经组用经皮雌激素治疗(ET)后, E₂水平较用药前明显升高($P<0.05$); FSH水平较用药前有下降趋势, 但差异无统计学意义($P>0.05$); 围绝经症状和生存质量均得到显著改善($P<0.01$)。手术绝经组用ET前T淋巴细胞分泌IFN-γ和IL-4的水平均明显低于生育年龄组($P<0.05$ 和 $P<0.01$), IFN-γ/IL-4水平明显高于生育年龄组($P<0.01$), 呈现出Th1优势。手术绝经组用ET后IFN-γ较用药前显著下降($P<0.01$), IL-4较用药前显著上升($P<0.01$), IFN-γ/IL-4的水平较用药前显著下降($P<0.01$), 与生育年龄组无明显差异, 显示了Th1/Th2趋于平衡。结论: 经皮雌激素治疗能显著改善手术绝经妇女的围绝经症状, 同时能使手术绝经妇女的Th1/Th2趋于平衡。

关键词: 雌激素治疗(ET); 辅助性T细胞1(Th1); 辅助性T细胞2(Th2); 围绝经症状

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Effects of transdermal estrogen therapy on perimenopausal symptoms and Th1 and Th2 balance in surgically menopausal women

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【ABSTRACT】 Objective: To investigate the effect of transdermal estradiol (E_2) gel on perimenopausal symptoms and T helper (Th) 1 and Th2 type cytokines secreting by T lymphocytes in surgically menopausal women. **Methods:** The women were distributed into two groups: surgically menopause group (menopause group) and reproductive age group (young group). Surgically menopausal women had taken transdermal E_2 gel (0.75 mg/d 17β - E_2) for 3 months. Before and after estrogen therapy (ET), the serum levels of E_2 and follicle stimulating hormone (FSH) were measured, the menopausal complaints and quality of life were evaluated, and the levels of IFN- γ and IL-4 secreting by T lymphocytes and the ratio of IFN- γ to IL-4 were examined. In young group, the serum levels of E_2 and FSH were measured, and the levels of IFN- γ and IL-4 and the ratio of IFN- γ to IL-4 were examined. Before and after ET, the results of menopause group with young group were compared. **Results:** After ET, the serum E_2 level of menopause group was significantly increased ($P<0.05$), and the serum FSH level was decreased, but the difference was not significant; the menopausal complaints and quality of life were significantly improved ($P<0.01$). Before ET, the levels of IFN- γ and IL-4 in menopause group were significantly lower than those in young group ($P<0.05$ and $P<0.01$), the ratio of IFN- γ to IL-4 was extremely higher than that in young group ($P<0.01$), which suggested a Th1 polarization. After ET, the level of IFN- γ in menopause group was significantly decreased ($P<0.01$), the level of IL-4 was significantly increased ($P<0.01$); the ratio of IFN- γ to IL-4 was extremely decreased ($P<0.01$), which had no significant difference between the two groups. **Conclusion:** Low dose transdermal ET can relieve perimenopausal symptoms and act to improve the balance of Th1/Th2 type cytokines.

Key words: estrogen therapy (ET); T helper 1 (Th1); T helper 2 (Th2); perimenopausal symptoms

• 综述 •

胚胎着床中的分子机制研究进展

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【摘要】 胚胎顺利着床是获得妊娠的关键环节, 该过程蕴含着复杂的生物学分子机制。本文从子宫内膜因素和胚胎因素 2 个方面, 归纳和总结了近年来关于胚胎着床时分子机制的研究进展。其中, 肌节同源框基因 1 (muscle segment homeobox gene 1, *Msx1*)、转录因子库鲁普样因子 5 (kruppel like factor 5, *Klf5*)、节律调节基因和 Sirt 1 蛋白等分子介导的信号通路调节着子宫内膜的容受性。肝素结合 EGF 样生长因子 (heparin binding EGF-like growth factor, HB-EGF) 对发育停滞的胚胎具有潜在的保护作用, 基因 *B3gnt5*、*Eomes*、印记基因 *PHLDA*、核因子 E2 相关因子 2 (nuclear factor-E2-related factor 2, NRF2) 等对胚胎自身发育、代谢、滋养层细胞功能的影响和抵抗外界不利环境的分子作用机制。

关键词: 胚胎; 胚胎着床; 子宫内膜; 分子机制

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Advances in molecular mechanisms of embryo implantation

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【ABSTRACT】 Embryo implantation is a key link of pregnancy. Complex and esoteric biological mechanisms are implicated in the process. This review includes respects of the endometrial and embryonic molecular aspects of metabolic mechanisms of embryo implantation. Signaling pathways of muscle segment homeobox gene 1 (*Msx1*), kruppel like factor 5 (*Klf5*), circadian gene and Sirt 1 protein regulate and control endometrial reception. heparin binding EGF-like growth factor (HB-EGF) plays a protective role to the embryo. *B3gnt5* gene, *Eomes* gene, imprinted gene *PHLDA* and nuclear factor-E2-related factor 2 (NRF2) protein impact the embryo metabolism, function of trophoblast cells and resistance to adverse environment.

Key words: embryo; embryo implantation; endometrium

USP9Y基因在男性不育等疾病中的研究进展

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【摘要】 Y染色体上的基因缺陷是导致男性生精障碍的重要因素之一, 其中无精子症因子(azoospermia factor, AZF)区的基因缺失与男性不育关系十分密切。USP9Y(ubiquitin specific peptidase 9, Y-linked)基因是AZF区的重要基因之一, 近年来的研究表明USP9Y基因的缺失和突变与不育男性无精子症和严重少精子症之间存在密切联系, 因此被认为是Y染色体上的不育基因。明确USP9Y基因的功能及其缺陷在男性不育中的分子作用机制, 能为临床男性不育提供早期和确切诊断、合理的治疗方法以及遗传咨询提供理论基础。

关键词: USP9Y基因; 男性不育; 无精子症; 少精子症

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Research progress of *USP9Y* in male infertility

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【ABSTRACT】 Genetic defects in Y chromosome play an important role in male infertility. The gene deletion in azoospermia factor (AZF) region has been found closely associated with impaired spermatogenesis in men. Ubiquitin specific peptidase 9, Y-linked (*USP9Y*) gene is one of the candidate genes for AZF region and its defects is closely associated with azoospermia and severe oligozoospermia of infertile men. Therefore *USP9Y* has been considered as infertility gene on the Y chromosome. Understanding the role of *USP9Y* and its molecular mechanism in male infertility can provide theoretical foundations for early and definitive diagnosis, making appropriate clinical treatment solutions, and genetic counseling for next generation.

Key words: ubiquitin specific peptidase 9, Y-linked (*USP9Y*); male infertility; azoospermia; oligozoospermia

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甲状腺功能对女性生育力的影响

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【摘要】甲状腺是人体重要的内分泌器官, 其功能亢进或减退均会影响女性生育能力。甲状腺功能异常可影响女性血清促性腺激素和性激素水平。甲状腺激素可直接作用于卵巢, 其过多或过少均可影响卵泡发育, 损害卵巢储备力。甲状腺激素对输卵管功能的影响尚不明确。已有证据显示甲状腺激素可直接参与调节子宫内膜生理功能, 影响子宫内膜容受性。甲状腺疾病可能影响宫腔对妊娠的承受能力, 增加产科并发症和不良妊娠结局的发生。

关键词: 甲状腺; 生育力; 卵巢储备力; 不孕

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Influence of thyroid function on female fertility

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【ABSTRACT】 Thyroid is as an important human endocrine organ and it's dysfunction can affect female fertility. Thyroid dysfunction can change gonadotropin and sex hormone levels in female serum. Thyroid hormones may also have a direct effect on the ovary, interfere with ovarian follicular development and impair ovarian reserve. The effects of thyroid hormones on the oviduct function is still not clear. However, there are evidences showing thyroid hormone receptor and thyroid stimulating hormone receptor in tubal tissues, suggesting that the oviduct is also one of the target of thyrod hormones. Evidences have also indicated that thyroid hormones can be directly involved in endometrial physiology and may affect endometrial receptivity. Thyroid diseases may also affect uterine bearing capacity during pregnancy and increase the incidence of obstetric complications and adverse pregnancy outcomes.

Key words: thyroid; fertility; ovarian reserve; infertility

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• 临床报道 •

血清生殖激素水平及盆腔积液、异位妊娠灶大小对异位妊娠保守治疗效果的预测价值

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【摘要】目的: 探讨血清人绒毛膜促性腺激素(β -hCG)、孕酮(P)水平及盆腔积液程度、异位妊娠病灶大小对异位妊娠保守治疗的预测价值。方法: 150例异位妊娠患者随机分为A、B、C组, 每组50例, 分别给予不同的保守治疗方案, A组: 甲氨蝶呤多次给药, B组: 甲氨蝶呤多次给药+四氢叶酸, C组: 甲氨蝶呤单次给药。各组治疗前清晨空腹采集静脉血, 采用化学发光法测定血清中 β -hCG、P水平; 阴道彩色超声检测盆腔积液、病灶情况, 治疗2~3个疗程后评价治疗效果, 分析各检测因素对治疗效果的影响。结果: 150例患者共治愈117例(治愈组), 治疗失败33例(失败组)。A、B、C组治愈率分别为78.0%、76.0%、80.0%, 组间无统计学差异($P>0.05$)。治愈组血清 β -hCG、P水平、盆腔积液最大径线值均明显低于失败组($P<0.01$)。各检测因素对治疗效果的影响如下: 随着血清 β -hCG水平、P水平、盆腔积液最大径线值升高, 治愈率有下降趋势。结论: 血清 β -hCG、孕酮水平及盆腔积液、异位妊娠病灶大小是监测病情的指标, 也是影响保守治疗效果的因素。

关键词: 人绒毛膜促性腺激素(hCG); 孕酮(P); 盆腔积液; 异位妊娠; 治疗

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Predictive value of serum reproductive hormone levels, ectopic effusion size and pregnancy conservative treatment of pelvic ectopic pregnancy

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【ABSTRACT】 Objective: To investigate the predictive value of β -human chorionic gonadotropin (hCG), progesterone (P), pelvic cavity accumulates fluid and the size of the ectopic pregnancy lesions in ectopic pregnancy conservative treatment. **Methods:** A total of 150 patients with ectopic pregnancy were collected and randomly divided into groups A, B and C, 50 cases in each group, and were given different conservative treatments. Before treatment, venous blood was collected in the morning, β -hCG and P levels were detected by chemiluminescence method, pelvic cavity accumulates fluid and the size of the ectopic pregnancy lesions were detected by Color Doppler ultrasound. The effect of the treatment after 2–3 procedure was evaluated. The test effects of factors on therapeutic effect were analyzed. **Results:** Among 150 patients, 117 cases were cured (cure group). Cure rate in groups A, B, C were 78.0%, 76.0% and 78.0%, respectively ($P>0.05$). Serum β -hCG and P levels, pelvic cavity accumulates fluid, maximum diameter line in cure group were significantly lower than those in the failure group ($P<0.01$). As the β -hCG levels, serum P levels and maximum diameter line of pelvic cavity accumulates fluid were rising, cure rate was falling. **Conclusion:** Serum β -hCG, P levels and pelvic cavity accumulates fluid, ectopic pregnancy lesion size are the index of monitoring condition, and the influencing factors of the conservative treatment effect.

Key words: human chorionic gonadotropin (hCG); progesterone (P); pelvic cavity accumulates fluid; ectopic pregnancy; treatment

· 个案报道 ·

黄体期促排卵方案在多囊卵巢综合征患者实施 IVF-ET技术中的应用——3例病案报道

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【摘要】目的: 报道3例多囊卵巢综合征(PCOS)患者实施IVF-ET技术采用黄体期促排卵方案的病案。方法: 对3例PCOS患者接受常规促排卵方案单一卵泡发育或提前排卵后继续行黄体期促排卵进行回顾性总结与分析。结果: 采用微刺激、拮抗剂方案控制性超促排卵(COH), 单一卵泡发育或提前排卵后, 补救性联合黄体期促排卵可提高获卵数, 增加优质胚胎数, 降低卵巢过度刺激综合征(OHSS)的发生率。结论: 对于常规方案促排卵单一卵泡发育或提前排卵后的PCOS患者, 继续黄体期促排卵可能成为一种新的有效促排卵方案。

关键词: 黄体期促排卵; 多囊卵巢综合征(PCOS); 卵巢过度刺激综合征(OHSS)

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Application of ovulation induction at luteal phase in patients with polycystic ovary syndrome during IVF-ET —— three cases report

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【ABSTRACT】 Objective: To report ovulation induction at luteal phase in 3 patients with polycystic ovary syndrome (PCOS) during IVF-ET. **Methods:** A retrospective clinical study was performed to analyze 3 cases with PCOS who received conventional ovulation induction program, single follicle developed or advance, the luteal phase progesterone ovulation continue. **Results:** Controlled ovarian hyperstimulation (COH) was performed by micro-stimulation or antagonist protocol when single follicle developed or advance, remedial joint ovulation induction at luteal phase increased the number of oocytes retrieved and good-quality embryos, reduced the incidence of OHSS. **Conclusion:** For those PCOS patients who have only a single follicle development or in advance of ovulation in the conventional ovarian stimulation protocols, ovulation induction at luteal phase may become a new and effective protocol.

Key words: ovulation induction at luteal phase; polycystic ovary syndrome (PCOS); ovarian hyperstimulation syndrome (OHSS)