

小鼠富含半胱氨酸分泌蛋白-1(DNA)疫苗 免疫避孕效果的评价

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【摘要】目的: 观察小鼠富含半胱氨酸分泌蛋白-1(Crisp-1)DNA 避孕疫苗免疫雌、雄性 BALB/c 小鼠后特异性抗体的表达及免疫避孕效果。方法: 将雌、雄性 BALB/c 小鼠随机分为实验组和对照组, 每组雌鼠 12 只, 雄鼠 8 只。每只动物经肌肉接种重组质粒 pcDNA3.1-Crisp-1 或 pcDNA3.1 空载体 3 次, ELISA 测定小鼠血清中抗 Crisp-1 抗体水平的变化, Western blotting 检测抗体的特异性。免疫结束后 2 周, 将实验小鼠分别与未接种的正常雌、雄性小鼠合笼, 记录每组雌鼠的妊娠率与每窝产仔数。结果: 重组质粒 pcDNA 3.1-Crisp-1 可以在小鼠体内诱发特异性抗 Crisp-1 免疫应答, 免疫后雌、雄性小鼠妊娠率和平均每窝产仔数均显著降低($P < 0.05$)。结论: 重组质粒 pcDNA3.1-Crisp-1 具有一定的抗生育潜能。

关键词: 富含半胱氨酸分泌蛋白-1(Crisp-1); DNA 疫苗; 免疫效果

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Immunocontraceptive Effects of Mouse Cysteine-rich Secretory Protein -1 DNA Vaccine on Mice

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【ABSTRACT】 Objective: To observe the expression of specific antibodies and immunological contraceptive effects induced by cysteine-rich secretory protein-1 (Crisp-1) DNA vaccine on male and female BALB/c mice. **Methods:** pcDNA3.1-Crisp-1 group (8 males and 12 females) and Crisp-1 group (8 males and 12 females) received 3-time injections of pcDNA3.1-Crisp-1 or pcDNA3.1 vector, respectively. ELISA and Western blotting were used to examine the immune responses and immunoreactivity of antisera. Two weeks after the third immunization, all the mice were mated with the normal contra-sexual fertile mice and then the fertility rate and mean litter size were analyzed. **Results:** The recombinant plasmid pcDNA3.1-Crisp-1 can induce specific anti-Crisp-1 immune response in mice. pcDNA3.1-Crisp-1 injected animals presented a statistically significant reduction in their fertility. **Conclusion:** The recombinant plasmid pcDNA3.1-Crisp-1 presented appreciable anti-fertility potential.

Key words: cysteine-rich secretory protein-1 (Crisp-1); DNA vaccine; immune effects

瘦素(leptin)对卵泡生长的启动作用及机制研究

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【摘要】目的: 探讨瘦素(leptin)在原始卵泡启动生长中的作用及其机制。方法: 利用2日龄大鼠离体卵巢体外培养模型, 在Waymouth培养体系中分别添加瘦素、瘦素抑制剂(leptin antagonist)以及ERK1/2信号通路特异性抑制剂(PD98059), 通过形态学观察原始卵泡启动生长的变化, Western blotting检测卵泡ERK1/2、磷酸化-ERK1/2(P-ERK1/2)蛋白表达量的变化。结果: 瘦素能够促进原始卵泡的启动生长($P<0.05$), 还可激活卵泡ERK1/2信号通路中的ERK1/2蛋白磷酸化($P<0.05$); 用瘦素抑制剂和PD98059可显著抑制瘦素促原始卵泡生长效应($P<0.05$), 亦可显著抑制瘦素对卵泡ERK1/2蛋白磷酸化($P<0.05$)。结论: 瘦素能够促进原始卵泡的启动生长, 其作用机制可能与ERK1/2信号通路有关。

关键词: 原始卵泡; 启动; 瘦素(leptin); ERK1/2信号通路

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Roles of Leptin in Rat Primordial Follicle Initiation and Development

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【ABSTRACT】Objective: To explore the role of leptin in the initiation of rat primordial follicles. **Methods:** Ovaries of 2-day-old SD rats were cultured for 8 d in the Waymouth culture medium and divided into 6 groups which were supplemented with leptin, leptin antagonist and PD98059 respectively or combinedly. Growth changes of primordial follicles were observed by the morphology, and the expressions of ERK1/2 and P-ERK1/2 in the ovaries cultured in the groups were detected by Western blotting. **Result:** 1) Leptin could accelerate the initiation growth of primordial follicles ($P<0.05$). 2) Leptin could induce the activation of ERK1/2, and the expression of P-ERK1/2 in the ovaries was increased after leptin treatment ($P<0.05$). 3) The growth of primordial follicles activated by leptin via ERK1/2 pathway was blocked by leptin antagonist and PD98059 ($P<0.05$), respectively. **Conclusion:** Leptin may initiate rat primordial follicles growth via ERK1/2 pathways, suggesting an important role of leptin in rat primordial follicles initiation and development.

Key words: primordial follicle; initiation; leptin; ERK1/2 pathway

促排卵周期围着床期宫腔分泌物细胞因子表达与妊娠结局的关系初探

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【摘要】目的: 探索体外受精促排卵周期围着床期宫腔分泌物细胞因子表达与妊娠结局的关系。方法: 促排卵周期胚胎移植前宫腔分泌物 63 例(试验组), 同时选取同年促排卵后直接行胚胎移植的 171 例作为对照组, 以排除胚胎移植前取宫腔分泌物对妊娠结局的影响。采用多重免疫分析方法检测宫腔分泌物中与胚胎种植有关 17 种调节因子(IL-1 β 、IL-2、IL-4、IL-5、IL-6、IL-7、IL-8、IL-10、IL-12(p70)、IL-13、IL-17、G-CSF、GM-CSF、IFN- γ 、MCP-1、MIP-1 β 、TNF- α)的表达。试验组再根据妊娠结局进行分组, 比较妊娠组和非妊娠组 17 种调节因子的表达谱。结果: 患者的一般情况、促排卵数据及妊娠结局, 试验组和对照组间均无统计学差异($P>0.05$)。妊娠组 IL-13(9.76 ± 5.04 pg/ml)、IFN- γ (7.50 ± 2.62 pg/ml)、MCP-1(17.5 ± 9.63 pg/ml)水平均低于未妊娠组(分别为 18.37 ± 17.82 pg/ml、 8.87 ± 2.39 pg/ml 和 49.97 ± 85.95 pg/ml), 差异具有统计学意义($P<0.05$), 余各因子妊娠组与非妊娠组间均无统计学差异($P>0.05$)。结论: 胚胎移植前微量取样宫腔分泌物不影响临床结局; 围种植窗期宫腔分泌物 IL-13、IFN- γ 以及 MCP-1 表达水平升高可能不利于妊娠。

关键词: 体外受精 - 胚胎移植(IVF-ET); 宫腔分泌物; 内膜容受性; 细胞因子; 临床结局

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Preliminary Exploration of the Cytokines Profiling in Endometrial Secretions and Pregnancy Outcomes during the Window of Peri-implantation in Ovarian Stimulation Cycles

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【ABSTRACT】 Objective: To investigate the relationship between cytokines profiling in endometrial secretions on the window of peri-implantation, and pregnancy outcomes during ovarian stimulation cycle in *in vitro* fertilization (IVF). **Methods:** Patients (63 cycles) undergoing endometrial secretion aspiration, immediately before embryo transfer in ovarian stimulation cycle in IVF, were enrolled. Clinical outcomes of the participants who underwent endometrial secretion aspiration, were compared with 171 controls matched for important prognostic variables. Endometrial secretion samples were analysed by a multiplex immunoassay. Seventeen key soluble regulators of implantation, including IL-1 β , IL-2, IL-4, IL-5, IL-6, IL-7, IL-8, IL-10, IL-12 (p70), IL-13, IL-17, G-CSF, GM-CSF, IFN- γ , MCP-1, MIP-1 β and TNF- α , were identified as candidate mediators for inclusion in the assay. Participants were divided into two groups according to the pregnancy outcomes, 17 mediators in each group were analysed respectively. **Results:** There were no differences in patient's general characteristics, ovarian stimulation dates and pregnancy outcomes between test and control groups ($P>0.05$). The expression levels of IL-13 (9.76 ± 5.04 pg/ml vs 18.37 ± 17.82 pg/ml), IFN- γ (7.50 ± 2.62 pg/ml vs 8.87 ± 2.39 pg/ml), MCP-1 (17.5 ± 9.63 pg/ml vs 49.97 ± 85.95 pg/ml) in pregnancy group were significantly lower than those in non-pregnancy group ($P<0.05$). However, the remaining mediators had no difference ($P>0.05$). **Conclusion:** Endometrial secretions trace sampling prior to embryo transfer did not have a detectable effect on clinical pregnancy. The rising expressions of IL-13, IFN- γ and MCP-1 in endometrial secretions on peri-implantation window may be against to pregnancy.

Key words: *in vitro* fertilization-embryo transfer (IVF-ET); endometrial secretion aspiration; endometrial receptivity; cytokines; clinical outcomes

P300/CBP相关因子(PCAF)表达水平对 人子宫内膜间质细胞增殖的影响

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【摘要】目的: 观察 P300/CBP 相关因子(P300/CBP associated factor, PCAF)对人子宫内膜间质细胞增殖的调控作用。方法: 通过 Western blotting、实时定量 PCR 及 Cell Counting Kit-8(CCK-8)细胞增殖实验, 观察分析 Ad-FLAG-PCAF 重组腺病毒介导的 PCAF 过表达及 PCAF-siRNA 介导的 PCAF 低表达对体外培养的人子宫内膜间质细胞增殖的影响。结果: 获得滴度为 8×10^{10} ifu/ml 的重组 Ad-FLAG-PCAF 腺病毒, 转染体外培养的人子宫内膜间质细胞后, 可有效介导细胞内 FLAG-PCAF 融合蛋白的高表达; 而转染 PCAF 特异的 siRNA 后, 可有效抑制人子宫内膜间质细胞中 PCAF 的表达。PCAF 过表达的人子宫内膜间质细胞中, 其细胞周期标志蛋白 cyclinD1 和 cyclinD3 的表达水平显著降低($P < 0.05$), 而 PCAF 低表达的人子宫内膜间质细胞中, 其 cyclinD1 和 cyclinD3 的表达水平显著升高($P < 0.05$); 此外, CCK-8 实验结果显示, PCAF 过表达能显著抑制由雌、孕激素共同刺激所引起的人子宫内膜间质细胞的增殖, 而基因沉默人子宫内膜间质细胞中内源性 PCAF 的表达后, 间质细胞的增殖增加 $> 20\%$ ($P < 0.05$)。结论: PCAF 可能通过蛋白乙酰化修饰作用, 参与调控人子宫内膜间质细胞的增殖过程。

关键词: P300/CBP 相关因子(PCAF); 人子宫内膜间质细胞; 增殖

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Effects of the Expression Level of P300/CBP Associated Factor (PCAF) on Proliferation of Human Endometrial Stromal Cells *in Vitro*

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【ABSTRACT】 Objective: To detect the effects of P300/CBP associated factor (PCAF) expression level on the proliferation of human endometrial stromal cell (hESCs) *in vitro*. **Methods:** Western blotting, real-time PCR, cell counting Kit-8 (CCK-8), adenovirus-mediated over-expression of PCAF and PCAF-siRNA mediated down-regulation of PCAF expression were performed to study the effects of PCAF in regulating the proliferation of hESCs. **Results:** A total of 8×10^{10} ifu/ml adenovirus Ad-FLAG-PCAF was obtained, which can over-express FLAG-PCAF fusion protein in hESCs. On the other hand, PCAF siRNA could effectively inhibit PCAF protein expression level in hESCs. PCAF over-expression resulted in a decreased both of cyclinD1 and cyclinD3 protein and mRNA expression in hESCs ($P < 0.05$). Down-regulation of PCAF in hESCs significantly increased cyclinD1 and cyclinD3 protein and mRNA expression ($P < 0.05$). Moreover, adenovirus-mediated over-expression of PCAF markedly impaired cell proliferation by 33% induced by estrogen and progesterone and down-regulation of endogenous PCAF increased cell proliferation over 20% ($P < 0.05$). **Conclusion:** PCAF might play critical roles in regulation of hESCs proliferation.

Key words: P300/CBP associated factor (PCAF); human endometrial stromal cells; proliferation

降调节联合人工周期方案在冻融胚胎移植周期中的应用

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【摘要】目的: 探讨降调节联合人工周期方案对冻融胚胎移植助孕周期临床妊娠结局的影响。方法: 收集到行冻融胚胎移植助孕治疗的297个周期, 按不同内膜准备方案分组, 133例降调节联合人工周期为降调节组, 164例行单纯人工周期为人工周期组进行比较分析, 同时对部分2种方案均实施过的同一患者进行自身对照分析, 并对影响降调节联合人工周期的妊娠结局进行多因素回归分析。结果: 患者的年龄、不孕年限、基础FSH、体质量指数(BMI)、内膜厚度、移植胚胎数、优质胚胎数、优质胚胎率、多胎率、异位妊娠率、早期流产率组间均无统计学差异($P>0.05$)。降调节组的临床妊娠率、胚胎着床率分别为42.11%(56/133)、24.32%(81/333), 显著高于人工周期组的29.88%(49/164)、13.83%(52/376), 差异有统计学意义($P<0.05$)。自身对照分析显示患者的内膜厚度、优质胚胎率均无统计学差异($P>0.05$), 但降调节联合人工周期的临床妊娠率[52.17%(24/46)]显著高于单纯人工周期的[13.04%(6/46)], 差异有统计学意义($P<0.05$)。另外, Logistic回归分析显示, 优质胚胎数、手术史可影响妊娠结局。结论: 在临床上, 对于既往有盆腔手术史、多次冻融周期助孕失败史的患者, 可试行降调节联合人工周期方案进行助孕。

关键词: 冻融胚胎移植(FET); 促性腺激素释放激素-激动剂(GnRH-a); 外源性雌激素;
子宫内膜容受性

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Application of Gonadotrophin-releasing Hormone Agonist (GnRH-a) Combined Exogenous Steroid Supplementation in Frozen-thawed Embryo Transfer Cycles

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【ABSTRACT】 Objective: To explore the impact of gonadotrophin-releasing hormone agonist (GnRH-a) combined with exogenous steroid supplementation on clinical pregnancy outcome in frozen-thawed embryo transfer cycle. **Methods:** According to the different endometrial preparation protocols, 297 frozen-thawed embryos transfer cycles were collected and analysed, including 133 GnRH-a combined with exogenous steroid supplementation cycles as down-regulation group and 164 mere exogenous steroid supplement cycles as hormone replacement treatment (HRT) group, in addition to this, the patients who had used both of these protocols were analysed, what's more, the logistic regression for the relationship between clinical pregnancy and the related factors was done as to find the important factors. **Results:** There were no statistical differences between the two groups with regard to the age of the women, duration of infertility, basal FSH (follicle-stimulating hormone), BMI (body-mass index), endometrial thickness, number of embryos transferred, number of good-quality embryo, good-quality embryo rate, multiple pregnancy rate, ectopic pregnancy rate, early abortion rate ($P>0.05$), however, compared with the patients from HRT group, the patients from down-regulation group achieved significantly higher clinical pregnancy rate [42.11% (56/133) vs 29.88% (49/164)] and implantation rate [24.32% (81/333) vs 13.83% (52/376)], and the difference was statistically significant ($P<0.05$). And for the same person who had used the two protocols, there was no significant difference between the two groups with regard to endometrial thickness, good-quality embryo rate ($P>0.05$), however, the clinical pregnancy outcomes of down-regulation group was better than the HRT group [52.17% (24/46) vs 13.04% (6/46)], and the difference was statistically significant ($P<0.05$). Furthermore, the result of Logistic regression showed that the number of good-quality embryo and pelvic surgery history played an important role in pregnancy outcomes. **Conclusion:** In clinic, the protocol of gonadotrophin-releasing hormone agonist (GnRH-a) combined exogenous steroid supplementation was an additional method in endometrial preparation for the patient who had pelvic surgery history and repeated unsuccessful trial of exogenous steroid supplement.

Key words: frozen-thawed embryo transfer (FET); gonadotrophin-releasing hormone agonist (GnRH-a); exogenous steroid supplement; endometrial receptivity

宫腔镜子宫中隔切除术后3种治疗方法预防宫腔粘连的疗效及生殖预后观察

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【摘要】目的: 探讨宫腔镜下子宫中隔切除(transcervical resection of septum, TCRS)术后预防宫腔粘连形成及改善妊娠结局的最佳治疗方案。方法: TCRS术后患者116例随机分为4组: A组($n=30$), 术后行人工周期; B组($n=31$), 术后宫腔放置宫内节育器(IUD); C组($n=27$), 术后放置IUD+行人工周期; D组($n=28$), 术后不采取任何干预措施。术后3个月再次行宫腔镜检查, 观察宫腔是否发生粘连及粘连分布, 随访至术后24个月, 记录月经恢复情况及妊娠结局。结果: A组排除9例(6例失访, 3例漏服药物), B组排除6例(4例失访, 2例IUD脱落), C组排除2例(1例失访, 1例IUD下移), D组排除5例(均为失访)。4组术后3个月宫腔粘连发生率依次为: 14.2%(1/7)、37.5%(3/8)、22.2%(2/9)、9.1%(1/11); 随访至术后24个月, 妊娠率分别为: 33.3%(7/21)、32.0%(8/25)、36.0%(9/25)、47.8%(11/23); 流产率分别为: 4.8%(1/21)、12.0%(3/25)、8.0%(2/25)、4.3%(1/23), 宫腔粘连发生率、妊娠率和流产率组间均无统计学差异($P>0.05$)。结论: TCRS术后进行人工周期、IUD、IUD+人工周期3种治疗方法对防止宫腔粘连形成及提高妊娠率、改善妊娠结局方面无明显益处, 且治疗效果差别不大, 术后不必将其作为常规治疗方法。

关键词: 宫腔镜; 子宫中隔; 宫腔粘连; 妊娠率; 妊娠结局

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Exploration of the Prevention and Management Strategy for Intrauterine Adhesions after Hysteroscopic Uterine Septum Resection

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【ABSTRACT】 Objective: To investigate the strategy for how to improve the pregnancy rate and prevent intrauterine adhesions after transcervical resection of septum (TCRS). **Methods:** After TCRS 116 women were divided into 4 groups randomly. Group A received hormone treatment ($n=30$), group B received an IUD treatment ($n=35$), group C received both of above ($n=27$) and group D received no treatment ($n=28$). Most were checked hysteroscopically 3 months after TCRS. All pregnancies occurring during the study period were recorded. **Results:** Of the 116 original participants, 22 were excluded: 9 in group A (6 were lost to follow-up and 3 received discontinuing treatment); 6 in group B (4 were lost to follow-up and 2 had their IUD removed because of severe bleeding and pain); 2 in group C (1 were lost to follow-up and 1 had IUD displacement); 4 in group D who were lost to follow-up. In group A, group B, group C and group D, adhesion rates at 3 months after operation were 14.2% (1/7), 37.5% (3/8), 22.2% (2/9), 9.1% (1/11), respectively; pregnancy rates at 24 months after operation were 33.3% (7/21), 32.0% (8/25), 36.0% (9/25), 47.8% (11/23), respectively; abortion rates were 4.8% (1/21), 12.0% (3/25), 8.0% (2/25), 4.3% (1/23), respectively. There were no differences in adhesion rate, pregnancy rate and abortion rate among the 4 groups ($P>0.05$). **Conclusion:** Neither hormone, nor IUD placement, or both of above were found to be different in the prevention of intrauterine adhesions or in the outcome of pregnancy after TCRS.

Key words: hysteroscopic; uterine septum; intrauterine adhesions; pregnancy rate; pregnancy outcome

被动吸烟和宫颈疾病的相关研究

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【摘要】目的: 探讨被动吸烟与宫颈癌、宫颈上皮内瘤变(CIN I~II)发病的相关性。方法: 回顾性研究被确诊并收治的原发性浸润性宫颈癌新发病例 192 例(宫颈癌组), CIN I~II 142 例(CIN 组), 正常对照组 254 例(对照组), 进行一对一的问卷调查, 运用 χ^2 检验和 Logistic 回归分析对被动吸烟与宫颈疾病发病的相关性进行分析。结果: 无论是距诊断或就诊前近 10 年内还是 10 年以前, 患病组和对照组是否被动吸烟、被动吸烟的持续时间、接触强度都有显著差别($P < 0.01$)。Logistic 回归分析结果显示 10 年内被动吸烟时间是宫颈癌和 CIN I~II 发病危险因素, 分娩次数和肿瘤家族史是 CIN I~II 的危险因素, 高教育程度和年龄低是保护因素。结论: 被动吸烟及接触时间、强度是宫颈疾病发病的相关危险因素。

关键词: 被动吸烟; 宫颈疾病; CIN I~II

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Passive Cigarette Smoking in Cervical Disease Risk

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【ABSTRACT】 Objective: To study the associations between passive smoking and cervical cancer, cervical intraepithelial neoplasia (CIN I-II) and its onset. **Methods:** A randomized, comparison survey was conducted on patients who visited the Obstetrics and Gynecology Hospital of Fudan University from June 2010 to October 2011. A total of 588 patients responded and were divided into 3 groups: the cervical squamous cell carcinoma group (cervical cancer group, 192 cases), CIN I-II group (CIN group, 142 cases), and control group (254 cases). The statistical methodologies of tests and conditional Logistic regressions were used to evaluate the correlation between passive smoking and cervical diseases. **Results:** No matter it's within or before the last 10 years prior to diagnosis or treatment, and regardless of occurrences and durations of passive smoking, there were significant variances between cervical cancer group/CIN group and the control ($P<0.01$). The Logistic regression analysis showed that the duration of passive smoking in the last 10 years was a risk factor for cervical cancer and CIN I-II; times of baby delivery and family history of cancer were risk factors for CIN I-II; and level of education and age were protective factors in any circumstance. **Conclusion:** Passive smoking, exposure duration and the intensity of exposure are risk factors for cervical diseases. Whether at home or in public, smoking is harmful to both smokers and the surrounding non-smokers.

Key words: passive smoking; cervical disease; CIN I-II

甘肃省不孕症患病率及其影响因素分析

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【摘要】目的: 了解甘肃省育龄夫妇不孕症(infertility)患病率现状及其可能的影响因素。方法: 运用分层整群抽样法抽取自然人群中具有代表性的2 621个已婚育龄家庭为研究对象, 采用问卷调查方式, 对甘肃省育龄夫妇不孕症患病情况进行横断面调查, 同时调查其有关的流行病学因素。采用EpiData软件建立数据库, 双人录入法进行数据录入, 数据采用SPSS 15.0软件进行统计学分析。结果: 甘肃省原发不孕的患病率为13.08%, 继发不孕的患病率为35.25%; 调查结果显示, 育龄妇女年龄、月经周期及男方的体质量指数(BMI)和吸烟情况均是原发不孕的危险因素; 继发不孕除以上因素外, 育龄夫妇的活产次数、死胎次数、自然流产数、人工流产数及药物流产史也是其危险因素。结论: 甘肃省原发不孕患病率为13.08%, 促进和帮助欠发达地区的经济发展、加大教育及医疗卫生的投入、加强宣传, 消除生殖健康隐患将有助于降低不孕率。

关键词: 不孕症; 患病率; 横断面调查; 相关因素

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Analysis on Infertility Prevalence and Its Affecting Factors in Gansu Province

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【ABSTRACT】 Objective: To identify the prevalence and correlated risk factors of infertility in childbearing age couples of Gansu Province. **Methods:** Samples were selected from the couples at the age of childbearing in Gansu Province by stratified random cluster sampling. A face to face interview was conducted to fill the unified questionnaires by trained interviewers. Altogether 2 621 qualified questionnaires were used to calculate the incidence of infertility and to analyse the risk factors related to the infertility. **Results:** The incidence of primary infertility in Gansu Province was about 13.08%, and the incidence of secondary infertility in Gansu Province was about 35.25%. The occurrence of infertility was related to the age of childbearing women, the age of marriage, occupations, the education level and reproductive system inflammation. **Conclusion:** The incidence of primary infertility in Gansu Province was about 13.08%. To promote agricultural economic development, increase input in agriculture health care and strengthen public education will be of benefit to reduce the incidence of the infertility.

Key words: infertility; prevalence; cross-sectional study; related factor

RNA结合蛋白 Lin28 在生殖细胞发育和性成熟过程中的作用

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【摘要】作为一个关键的异时性基因(heterochronic gene)家族成员蛋白, Lin28及其同源分子Lin28B在原始生殖细胞(PGCs)发生、生殖细胞肿瘤(GCTs)恶化和性发育成熟过程中发挥着重要的调控作用。Lin28不但可与 let-7 miRNA 家族的前体终末环相结合, 从而阻断 let-7miRNA 的成熟过程, 而且可诱导 let-7 前体尿苷化和降解。同时, Lin28 也可选择性地结合 mRNA 靶基因, 从而直接刺激该基因的翻译过程。Lin28 对于 PGCs 的发育分化至关重要, 其表达在小鼠 PGCs 发育过程中具有时空限制性, 还可通过正、负双向途径调节 PGC 池内生殖细胞数。LIN28 的异常表达可能是恶性 GCTs 发生的早期信号。Lin28 还可能是 Oct3/4 和 Nanog 途径的上游调控因子, 高度调控精原细胞、胚胎癌细胞的分化状态和正常生殖细胞的发育过程; Lin28B 基因与青春期女童乳腺发育、男童变声和阴毛发育以及青春期生长高峰密切相关。

关键词: Lin28; 生殖细胞发育; 性成熟; let-7 miRNA; 调节机制

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Function of RNA-binding Protein Lin28 in Germ Cell Development and Sex Maturation

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【ABSTRACT】As a critical heterochronic gene family protein, RNA-binding protein Lin28 and its homologue Lin28B play an important role in primordial germ cells (PGCs) development, germ cell tumors(GCTs) malignancy and sex maturation. Lin28 binds to the terminal loops of let-7 miRNA precursors, leading to inhibition of let-7 miRNA processing and the induction of uridylation and precursor degradation. Lin28 also selectively binds to the target mRNAs and stimulates their translation. *Lin28* is essential for proper PGCs development and has temporal and spatial expression pattern during PGC development in mouse embryo. Lin28 can both positively and negatively regulate the pool of germ cell numbers. Aberrant expression of LIN28 may be an early lesion in germ cell tumorigenesis. Lin28 regulates the differentiation status of seminoma, embryonal carcinoma likely upstream of Oct3/4 and Nanog, and is likely to play a related role in normal human germ cell development. In addition, Lin28B gene is associated with earlier breast development in girls, earlier voice breaking and more advanced pubic hair development in boys and faster tempo of height growth in both of them. This review summarizes Lin28-mediated regulation and possible mechanisms on germ cell development and sex maturation.

Key words: Lin28; germ cell development; sex maturation; let-7 miRNA; regulation

睾丸支持细胞连接结构在精子发生过程的作用

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【摘要】 睾丸支持细胞(Sertoli cell)是曲细精管内唯一与生精细胞直接接触的体细胞, 在生精过程中起免疫屏障、支持、营养和调节作用。相邻支持细胞、支持细胞与生精细胞之间的连接类型包括紧密连接、锚定连接和缝隙连接。这些连接结构与精子发生过程紧密联系, 连接结构紊乱或异常, 会干扰精子发生过程中的信号通路、生精细胞迁移、精子形态形成和精子极性维持等, 引起生精功能障碍, 导致男性生育力下降, 甚至不育。

关键词: 支持细胞; 紧密连接; 锚定连接; 缝隙连接; 精子发生

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Role of Sertoli Cell Junctions in Spermatogenesis

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【ABSTRACT】 Sertoli cells are the only somatic cells which contact with the germ cells directly in the seminiferous tubules. They play an important role in forming immunological barrier, supporting and nourishing the germ cells as well as regulating spermatogenesis. The junction types between adjacent Sertoli cells and Sertoli-germ cells include tight junction, anchoring connection and gap junction. These junctions are involved in spermatogenesis. The destructive effect on these junctions may cause anomalies of signaling pathway, germ cell migration, spermatid morphology and polarity during spermatogenesis, which can induce spermatogenesis dysfunction, decrease male fertility and even lead to infertility. This review mainly summarizes the structure of Sertoli cell junctions and their influence on spermatogenesis.

Key words: Sertoli cells; tight junction; anchoring junction; gap junction; spermatogenesis

高通量基因芯片技术在男性生殖医学研究中的应用

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【摘要】 无精子症、少精子症、弱精子症、畸形精子症是男性生殖医学的重要课题, 致病因素极其复杂。由基因异常引起精子发生异常导致男性不育的占30%以上。利用基因芯片技术迅速、高通量、大规模等优点, 可以深入研究精子发生、精子功能异常以及生殖毒理学机制, 为男性不育的预防、诊断与治疗提供更加明确的理论依据。

关键词: 基因芯片; 无精子症; 少精子症; 弱精子症; 畸形精子症; 生殖毒理

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Application of Genechips Technology in Male Reproductive Medicine

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【ABSTRACT】 Azoospermia, oligozoospermia, asthenozoospermia and teratozoospermia are the important subjects of the male reproductive medicine. Although the causes are complicated, the abnormal spermatogenesis caused by genetic abnormalities accounted for more than 30% in male infertility. Because of their particular advantages in fast and quick gene analysis, genechips have been fully used in spermatogenesis, sperm dysfunction and reproductive toxicology. In this way, genechips bring solid support for the prevention, diagnosis and treatment of the male infertility.

Key words: genechips; azoospermia; oligozoospermia; asthenozoospermia; teratozoospermia; reproductive toxicology

TGF- β 1在早孕妇女外周血和蜕膜组织中 诱导生成T调节性(Treg)细胞

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【摘要】目的: 研究 TGF- β 1 是否能在人母-胎界面诱导生成 T 调节性(Treg)细胞。方法: 早孕妇女外周血和蜕膜 CD4⁺CD25⁻ T 细胞中加入不同浓度的 TGF- β 1 (0 ng/ml、2 ng/ml、5 ng/ml、10 ng/ml) 分别于培养后第 2 日、第 4 日和第 6 日用流式细胞仪检测培养 Foxp3 的表达情况, 随后将诱导生成的 CD4⁺Foxp3⁺T 细胞与 CD8⁺ T 细胞混合培养, 观察后者凋亡因子 CD95 配体(CD95L)的表达情况。结果: 体外培养中, TGF- β 1 可诱导早孕妇女的外周血和蜕膜 CD4⁺CD25⁻ T 细胞生成诱导性 Treg 细胞, 随着培养时间增加而增强诱导效应, 且在 TGF- β 1 浓度为 5 ng/ml 时诱导功能最强; 诱导生成的 CD4⁺Foxp3⁺T 细胞具有促进效应细胞 CD8⁺ T 细胞凋亡的功能。结论: 体外培养中, TGF- β 1 能将人外周血和蜕膜诱导生成 Treg 细胞, 且具有免疫抑制功能, 有良好的免疫治疗前景。

关键词: TGF- β ; CD4⁺CD25⁻ T 细胞; 诱导性 T 调节细胞(Treg 细胞)

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TGF- β 1-mediated Conversion of Regulatory T Cells in Peripheral Blood and Decidua of Early Pregnant Women

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【ABSTRACT】 Objective: To investigate whether TGF- β 1-mediated conversion of Foxp3⁺ regulatory T (Treg) cells occurred at the human feto-maternal interface, and whether induced Treg cells exhibited immunosuppressive functions similar to naive CD4⁺CD25⁺ Treg cells. **Methods:** CD4⁺CD25⁻ T cells in peripheral blood and decidua were separated from early pregnant women and were stimulated with increasing concentrations of TGF- β 1 (0 ng/ml; 2 ng/ml; 5 ng/ml; 10 ng/ml), and changes in Foxp3 expression were determined by flow cytometry on the 2nd, 4th and 6th day after cell culture. Levels of responder T cell apoptosis were measured when TGF- β 1-induced CD4⁺CD25⁻ T cells were cocultured with CD8⁺ T cells. **Results:** Foxp3 expression in TGF- β 1-induced CD4⁺CD25⁻ T cells increased in a time-dependent manner, reaching maximal level after 6 d in medium containing 5 ng/ml TGF- β 1. TGF- β 1-induced Treg cells suppressed cytotoxic effects by promoting apoptosis of CD8⁺ T cells. **Conclusion:** TGF- β 1 mediated the conversion of CD4⁺CD25⁻ T cells into suppressive Treg cells, which may be a potential immunotherapy.

Key words: TGF- β 1; CD4⁺CD25⁻ T cells; regulatory T cells (Treg cell)