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编 辑

中华生殖与避孕杂志编辑委员会
200237, 上海市老沪闵路 779 号
电话: 021-64438169
传真: 021-64438975
Email: randc@sippr.org.cn
http://zhszybyzz.yiigle.com

总编辑

乔 杰

编辑部主任

王黎茜

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Editorial Board of Chinese Journal of Reproduction and Contraception

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Fax: 0086-21-64438975

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Qiao Jie

Managing Director

Wang Lixi

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输卵管绝育术后育龄女性再生育的医疗决策：复通术或辅助生殖技术

马瑞玉 顾向应

天津医科大学总医院妇产科 300052

通信作者：顾向应，Email: gxy6283@163.com，电话：+86-18622186957

【摘要】 输卵管绝育术是目前全球应用最为广泛的避孕方法之一。然而，对于输卵管绝育术后因各种原因要求恢复生育能力的妇女，则面临 2 种不同的医疗选择：输卵管复通手术或体外受精 - 胚胎移植 (*in vitro* fertilization and embryo transfer, IVF-ET)。在临床实践中，目前亟待解决的难题之一就是如何进行合理正确的选择。这要求我们从妊娠结局、预后影响因素等多方面进行综合评估比较，从而帮助临床医生及广大患者做出最优的选择，对临床实践中个体化咨询提供参考意见。

【关键词】 输卵管绝育术；输卵管吻合术；受精，体外

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The decision on reversal of tubal sterilization: tubal reanastomosis or assisted reproductive technology?

Ma Ruiyu, Gu Xiangying

Department of Gynecology and Obstetrics, Tianjin Medical University General Hospital, Tianjin 300052, China

Corresponding author: Gu Xiangying, Email: gxy6283@163.com, Tel: +86-18622186957

【Abstract】 As one of the most effective contraceptive methods, tubal sterilization is widely used in the world at present. However, for women who are interested in future childbearing after tubal sterilization, they faced with two different treatment options: tubal reanastomosis or *in vitro* fertilization and embryo transfer (IVF-ET) technique. In clinical practice, one of the problems to be solved urgently is how to make a reasonable and correct choice, which requires us to make a comprehensive evaluation and comparison on the aspects of pregnancy outcome, prognostic factors and so on. So, we will help clinicians and patients to make the best choice and provide reference for individualized consultation in clinical practice.

【Key words】 Tubal sterilization; Tubal anastomosis; Fertilization *in vitro*

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卵泡期长效长方案促排卵患者发生卵巢过度刺激综合征危险因素分析及其发病风险的预测

胡琳莉 谢瑞 孙莹璞

郑州大学第一附属医院生殖中心 450052

通信作者: 孙莹璞, Email: syp2008@vip.sina.com, 电话: +86-15890619576

【摘要】目的 探索行体外受精/卵胞质内单精子注射 (IVF/ICSI) 卵泡期长效长方案促排卵助孕治疗后患者发生卵巢过度刺激综合征 (ovarian hyperstimulation syndrome, OHSS) 的相关危险因素, 并建立 OHSS 的诺曼 (Nomogram, 列线图) 预测模型。方法 回顾性分析 2016 年 1 月 1 日至 2017 年 9 月 30 日期间于郑州大学第一附属医院生殖中心行 IVF/ICSI 治疗的 6288 例患者的临床资料, 按照 4 : 1 随机分为建模组 (5044 例) 和验证组 (1244 例)。通过 logistic 回归筛选影响 OHSS 发生的独立危险因素, 即为模型入组变量, 并依据模型中的回归系数建立诺曼预测模型。通过受试者工作特征 (ROC) 曲线下面积 (AUC) 评估诺曼模型的预测准确度。结果 在建模组中多因素 logistic 回归分析显示年龄、不孕类型、体质指数 (BMI)、抗苗勒管激素 (AMH)、窦卵泡数 (AFC)、人绒毛膜促性腺激素 (hCG) 注射日雌二醇水平及直径 >10 mm 卵泡数是影响 OHSS 发生的独立危险因素。根据上述因素构建 OHSS 发生风险的预测模型, 建模组的 AUC 是 0.842(95% $CI=0.829\sim0.856$), 验证组的 AUC 是 0.798(95% $CI=0.767\sim0.830$)。结论 筛选出行 IVF/ICSI 治疗患者发生 OHSS 的风险因素, 成功建立的诺曼模型能够有效、简便和直观清晰地预测 OHSS 的发生。

【关键词】受精, 体外; 卵胞质内单精子注射; 卵泡期长效长方案; 卵巢过度刺激综合征

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Analysis of risk factors and prediction for ovarian hyperstimulation syndrome in patients with long-acting follicular phase in *in vitro* fertilization/intracytoplasm sperm injection

Hu Linli, Xie Rui, Sun Yingpu

Center for Reproductive Medicine, the First Affiliated Hospital of Zhengzhou University, Zhengzhou 450052, China

Corresponding author: Sun Yingpu, Email: syp2008@vip.sina.com, Tel: +86-15890619576

【Abstract】 Objective To explore the risk factors associated with ovarian hyperstimulation syndrome (OHSS) in patients with long-acting long-term follicular phase *in vitro* fertilization/intracytoplasmic sperm injection (IVF/ICSI), and to establish Nomogram prediction model of OHSS. **Methods** A retrospective analysis of the clinical data of 6288 patients who underwent IVF/ICSI treatment in the Reproductive Center of the First Affiliated Hospital of Zhengzhou University from January 1, 2016 to September 30, 2017 was performed and these patients were randomly divided into two groups according to 4 : 1, including 5044 cases in modeling group and 1244 cases in validation group. Logistic regression was used to screen out the independent risk factors affecting the occurrence of OHSS, which was the model enrollment variable, and the nomogram model was established according to the regression coefficient of the relevant variables. The prediction accuracy of the OHSS nomogram model was evaluated by calculating the area under the receiver operating characteristic (ROC) standard curve (AUC). **Results** Multivariate logistic regression analysis of the model group showed age, infertility type, body mass index (BMI), anti-Müllerian hormone (AMH), antral follicle number (AFC), and estrogen levels on human chronic gonadotropin hormone (hCG) injection day and the number of follicles > 10 mm in diameter were independent risk factors affecting the occurrence of OHSS. Based on the above factors, a predictive model for the risk of OHSS was constructed. The AUC of the model group was 0.842 (95% *CI*=0.829–0.856), and the AUC of the validation group was 0.798 (95% *CI*=0.767–0.830). **Conclusion** To screen out the risk factors of OHSS in patients with IVF/ICSI treatment, the successful establishment of nomogram model can effectively and easily predict the occurrence of OHSS. This study has certain clinical guiding significance for early prevention and treatment of OHSS.

【Key words】 Fertilization *in vitro*; Intracytoplasmic sperm injection; Follicular phase long-acting gonadotropin-releasing hormone agonist long protocol; Ovarian hyperstimulation syndrome

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早发性卵巢功能不全患者绝经症状和焦虑与抑郁状态的评估分析

刘艺璇 郎婧雯 程梦星 符圣洁 傅若金 咸睿星 高华

上海交通大学医学院附属仁济医院妇产科, 上海市妇科肿瘤重点实验室 200127

通信作者: 高华, Email: gaohua@renji.com, 电话: +86-13585603362

【摘要】目的 探讨与分析早发性卵巢功能不全患者的绝经症状和焦虑与抑郁的精神状态。**方法** 通过横断面研究, 采用问卷调查方式获取基本资料。选取 2016 年 1 月至 2018 年 5 月期间在上海交通大学医学院附属仁济医院妇科门诊确诊随访的早发性卵巢功能不全 (premature ovarian insufficiency, POI) 患者 63 例为 POI 组, 选取同时期就诊的 35~40 岁健康体检者 60 例作为正常对照组, 同时期就诊的 45~55 岁绝经期综合征 (menopausal syndrome, MPS) 患者 71 例为 MPS 组, 采用 Kupperman 绝经指数 (Kupperman menopausal index, KMI)、焦虑自评量表 (self-rating anxiety scale, SAS)、抑郁自评量表 (self-rating depression scale, SDS) 进行量化评估。**结果** ① POI 组年龄为 (37.1±3.1) 岁, 正常对照组为 (36.3±4.2) 岁, MPS 组为 (46.3±5.9) 岁。② POI 组吸烟率均高于正常对照组和 MPS 组 ($P=0.041$, $P=0.049$)。③ KMI>6 分者中 POI 组 23 例 (36.51%), 正常对照组 3 例 (5.00%), MPS 组 50 例 (70.42%), 3 组比较差异有统计学意义 ($P<0.000 1$)。④ SAS>49 分中 POI 组 30 例 (47.62%)、正常对照组 4 例 (6.67%)、MPS 组 21 例 (29.58%), 3 组比较差异有统计学意义 ($P<0.000 1$), POI 组 SAS>49 分的发生率显著高于 MPS 组 ($P=0.035$) 和正常对照组 ($P<0.000 1$)。⑤ SDS>52 分中 POI 组 29 例 (46.03%)、正常对照组 5 例 (8.33%)、MPS 组 20 例 (28.17%), 3 组比较差异有统计学意义 ($P<0.000 1$), POI 组 SDS>52 分发生率显著高于 MPS 组 ($P=0.048$) 和正常对照组 ($P<0.000 1$)。⑥ POI 组中 SAS 轻、中、重度分别为 19 例 (63.33%)、9 例 (30.00%)、2 例 (6.67%), MPS 组中 SAS 轻、中、重度分别为 12 例 (57.14%)、8 例 (38.10%)、1 例 (4.76%), 组间 SAS 分级比较差异无统计学意义。⑦ POI 组 SDS 轻中重度分别为 18 例 (62.07%)、8 例 (27.59%)、3 例 (10.34%), MPS 组 SDS 轻、中、重度分别为 11 例 (55.00%)、7 例 (35.00%)、2 例 (10.00%), 组间 SDS 分度比较差异无统计学意义。**结论** POI 患者存在明显的焦虑和抑郁倾向, 除了应该注重患者的生育问题和绝经症状的改善, 更应加强对其心理健康问题的关注和评估, 以提高该类人群的生活质量和社会心理适应能力。

【关键词】 早发性卵巢功能不全; 绝经期综合征; 焦虑; 抑郁

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Analysis and evaluation of menopause symptoms and mental status of anxiety and depression in patients with premature ovarian insufficiency

Liu Yixuan, Lang Jingwen, Cheng Mengxing, Fu Shengjie, Fu Ruojin, Xian Ruixing, Gao Hua

Department of Obstetrics and Gynecology, Shanghai Key Laboratory of Gynecologic Oncology, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200127, China

Corresponding author: Gao Hua, Email: gaohua@renji.com, Tel: +86-13585603362

【Abstract】 Objective To explore and analyze the menopause symptoms and mental state of anxiety and depression in patients with premature ovarian insufficiency (POI). **Methods** We collected patients from Department of Obstetrics and Gynecology, Renji Hospital, School of Medicine, Shanghai Jiao Tong University from January 2016 to May 2018, including 63 POI patients (POI group), 60 healthy patients aged 35–40 years as normal group (control group) and 71 patients aged 45–55 years with menopausal syndrome (MPS) as the experimental control group (MPS group) at the same time. We used Kupperman Menopausal Index (KMI), Anxiety Self Rating Scale (SAS) and Depression Self Rating Scale (SDS) for quantitative assessment. **Results** 1) A total of 194 cases were enrolled and the age of POI group, control group and MPS group was (37.1 ± 3.1) years, (36.3 ± 4.2) years and (46.3 ± 5.9) years, respectively. 2) The smoking rate of POI group was higher than that of control group and MPS group ($P=0.041$, $P=0.049$). 3) There were 23 cases (36.51%) of POI group, 3 cases of control group (5.00%) and 50 cases of MPS group (70.42%) with $KMI > 6$. There were significant differences among the three groups ($P < 0.000 1$). 4) There were 30 cases (47.62%) of POI, 4 cases (6.67%) of normal group and 21 cases (29.58%) of MPS group with $SAS > 49$, the difference was statistically significant among the three groups ($P < 0.000 1$). The incidence of $POI > 49$ was significantly higher than that of MPS group ($P=0.035$) and normal group ($P < 0.000 1$). 5) There were 29 cases (46.03%) of POI, 5 cases (8.33%) of normal group and 20 cases (28.17%) of MPS group with $SDS > 52$. The difference was statistically significant ($P < 0.000 1$). The incidence of $SDS > 52$ in POI group was significantly higher than that in MPS group ($P=0.048$) and normal group ($P < 0.000 1$). 6) The number of patients with the mild, moderate and severe SAS grade was 19 (63.33%), 9 (30.00%) and 2 (6.67%) in POI group, and 12 (57.14%), 8 (38.10%) and 1 (4.76%) in MPS group. There was no statistical difference among different SAS degrees. 7) The number of patients with the mild, moderate and severe SDS grade was 18 (62.07%), 8 (27.59%) and 3 (10.34%) in POI group, and 11 (55.00%), 7 (35.00%) and 2 (10.00%) in MPS group. There was no statistical difference among different SDS degrees. **Conclusion** POI patients have obvious anxiety and depression tendency. In addition to paying attention to ovarian fertility preservation of these patients, we should pay more attention to the evaluation of these women's mental health problems and improve their life quality and psychosocial adaptability.

【Key words】 Premature ovarian insufficiency; Perimenopausal syndrome; Anxiety; Depression

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尼古丁对小鼠精子顶体的影响

杨芳¹ 徐汪节² 杨芳³ 张东¹ 谢亦璘¹ 吴佳洁¹ 彭笑芸¹ 乔中东¹

¹上海交通大学生命科学技术学院 200240; ²上海交通大学分析测试中心实验动物中心 200240; ³深圳华大基因科技有限公司北京分公司 101300

通信作者: 乔中东, Email: zdqiao@sjtu.edu.cn, 电话: +86-13818263050

【摘要】目的 研究尼古丁对小鼠精子顶体的影响。方法 将 C57BL/6J 品系雄性小鼠随机分为尼古丁组 ($n=20$) 和对照组 ($n=20$), 尼古丁组每日腹腔注射 0.2 mg/100 g 尼古丁, 对照组注射等体积生理盐水, 连续处理 5 周; 采用转录组测序 (RNA-Seq) 方法检测尼古丁处理前、后的精子 RNA 转录组表达水平。通过实时定量聚合酶链反应 (PCR) 验证测序结果, 将测序结果进行生物信息学分析; 利用试剂盒测定顶体酶活性, 络合异硫氰酸荧光素的豌豆凝集素 (FITC-PSA) 荧光染色检测精子顶体反应率, Western blotting 测定顶体酶 (溶酶体酶) 通路蛋白变化情况。结果 对照组 reads 数为 2 089 729, 尼古丁处理组 reads 数为 1 739 093, 共获得 8699 个转录本; 实时定量 PCR 结果与 RNA-Seq 结果一致; 尼古丁处理后顶体酶活性和顶体反应率显著升高 ($P<0.05$); 顶体酶逆转运的 CLTC 蛋白表达显著低于对照组 ($P<0.05$)。结论 尼古丁提高小鼠精子顶体酶的活性和顶体反应率, 有可能增加顶体酶的合成。

【关键词】 精子; 顶体酶; 顶体反应; 转录组测序; 尼古丁

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· 实验研究 ·

Effect of nicotine on sperm acrosome in mice

Yang Fang¹, Xu Wangjie², Yang Fang³, Zhang Dong¹, Xie Yilin¹, Wu Jiajie¹, Peng Xiaoyun¹, Qiao Zhongdong¹

¹School of Life Sciences and Biotechnology, Shanghai Jiao Tong University, Shanghai 200240, China;

²Laboratory Animal Center of Instrumental Analysis Center, Shanghai Jiao Tong University, Shanghai 200240, China; ³Shenzhen Huada Gene Technology Co., Ltd. Beijing Branch, Beijing 101300, China

Corresponding author: Qiao Zhongdong, Email: zdqiao@sjtu.edu.cn, Tel: +86-13818263050

【Abstract】 Objective To study the effect of nicotine on sperm acrosome in mice. **Methods** C57BL/6J male mice were randomly divided into nicotine group ($n=20$) and control group ($n=20$). Nicotine group was intraperitoneally injected with 0.2 mg/100 g of nicotine per day for 5 weeks, and control group was injected with equal volume of normal saline. RNA-Seq was used to obtain transcriptomics of control group and nicotine group, and then bioinformatics analysis was performed. The acrosome enzyme activity was determined by kit, the acrosome reaction rate was determined by pea lectin complexed with fluorescein isothiocyanate (FITC-PSA) fluorescence staining, and the acrosome enzyme (lysosomal enzyme) pathway protein was determined by Western blotting. **Results** The number of reads was 2 089 729 in control group and 1 739 093 in nicotine-treated group. A total of 8699 transcripts were obtained. Real-time PCR results were consistent with the RNA-Seq results. The acrosome activity and acrosome reaction rate were significantly increased after nicotine treatment ($P<0.05$), and the expression of CLTC protein in the acrosomal reverse transport of nicotine-treated group was significantly lower than that of control group ($P<0.05$). **Conclusion** Nicotine increases the sperm acrosome activity and acrosome reaction rate in mice. In addition, nicotine may increase the synthesis of acrosin.

【Key words】 Sperm; Acrosome enzyme; Acrosome reaction; RNA-Seq; Nicotine

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小鼠单倍体细胞遗传性别聚合酶链式反应 方法鉴定

施长根¹ 刘淼² 施惠娟¹ 王雪梅¹ 汤佳楠¹ 顾一骅¹ 刘素英² 卢大儒³

¹ 复旦大学生殖与发育研究院 上海市计划生育科学研究所 国家卫生健康委员会计划生育药具重点实验室 200032; ² 复旦大学附属中山医院生殖医学中心, 上海 200032; ³ 复旦大学生命科学学院, 上海 200433

通信作者: 刘素英, Email: lsy6592@163.com, 电话 / 传真: +86-21-60265904; 卢大儒, Email: drlu@fudan.edu.cn, 电话 / 传真: +86-21-31246619

【摘要】目的 建立高灵敏的可鉴定单个精子细胞、卵子细胞遗传性别的聚合酶链式反应(PCR)方法。**方法** 通过对单个精子细胞、卵子细胞性染色体上的重复序列(*Rhox* 基因、*Rbmy* 基因)的 PCR 扩增,借助扩增后熔解曲线或琼脂糖凝胶电泳鉴别其遗传性别。**结果** 多重 PCR 扩增后熔解曲线和电泳结果皆显示该 PCR 体系可稳定扩增单个精子细胞、卵子细胞 DNA 并应用于遗传性别鉴定,与传统方法比较,其可扩增单个精子细胞(PCR 扩增检出率为 75%)、卵子细胞 PCR(扩增检出率为 100%)中的单倍体 DNA。**结论** 利用基因组性染色体上自身重复序列的存在,可建立高灵敏的、可扩增单倍体 DNA 的 PCR 检测方法,继而为后续研究如精子细胞遗传性别比、囊胚遗传性别鉴定等小鼠胚胎性别筛选工作建立基础。

【关键词】 遗传性别鉴定; 小鼠; 单倍体; 多重聚合酶链式反应

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· 实验研究 ·

A method for gender test of mouse haploids by polymerase chain reaction

Shi Changgen¹, Liu Miao², Shi Huijuan¹, Wang Xuemei¹, Tang Jianan¹, Gu Yihua¹, Liu Suying², Lu Daru³

¹NHC Key Lab of Reproduction Regulation (Shanghai Institute of Planned Parenthood Research), Fudan University, Shanghai 200032, China; ²Reproduction Medicine Centre, Zhongshan Hospital, Fudan University, Shanghai 200032, China; ³School of Life Sciences, Fudan University, Shanghai 200032, China

Corresponding author: Liu Suying, Email: lsy6592@163.com, Tel/Fax: +86-21-6025904; Lu Daru, Email: drlu@fudan.edu.cn, Tel/Fax: +86-21-31246619

【Abstract】 Objective To establish a polymerase chain reaction (PCR) method with a high sensitivity for gender test of single mouse sperm and oocyte. **Methods** PCR system was set up to amplify repeat sequences on *Rhox* or *Rbmy* gene of the sex chromosome in a single sperm or an oocyte, and the gender was determined by using the differences of melting curves of amplification in PCR or nucleotide bands separated by agarose gel electrophoresis. **Results** The PCR system could reliably amplify the repeat sequences on *Rhox* or *Rbmy* gene in a single sperm or an oocyte, it can amplify haploid DNA in single sperm cell (PCR detection rate was 75%) and oocyte (PCR detection rate was 100%) when compared with the traditional method, which could be used for gender test. **Conclusion** By amplifying the repeat sequences on the sex chromosomes, the PCR method is capable to be used for gender test of a single sperm with the high sensitivity, which could be also applied for early embryos, such as blastula.

【Key words】 Gender test; Mouse; Haploid; Multiple polymerase chain reaction

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卵巢妊娠相关高危因素分析——附 79 例报道

郑嘉华¹ 王丽丽¹ 周晓静² 马毓梅³ 郝桂敏¹ 王玮¹ 黄向华⁴

¹河北医科大学第二医院生殖科, 石家庄 050000; ²河北医科大学第二医院妇产超声与诊疗, 石家庄 050000; ³河北医科大学第二医院病理科, 石家庄 050000; ⁴河北医科大学第二医院妇科, 石家庄 050000

通信作者: 王玮, Email: wangwei_lui@163.com, 电话: +86-13832177339; 黄向华, Email: huangxh2003@163.com, 电话: +86-15803210557

【摘要】目的 探讨卵巢妊娠高危因素及辅助生殖技术后卵巢妊娠发生率。方法 回顾性分析河北医科大学第二医院 2003 年 1 月 1 日至 2018 年 1 月 1 日期间确诊的 79 例卵巢妊娠患者的病例资料, 并通过 3 个不同的时间段 (2003.01.01—2008.01.01、2008.01.02—2013.01.01、2013.01.02—2018.01.01) 观察其发展趋势。并同时收集同期输卵管妊娠患者的病例资料, 分析卵巢妊娠的影响因素。结果 该研究中 15 年共诊治异位妊娠 6943 例, 其中卵巢妊娠 79 例 (1.14%)。卵巢妊娠在本研究的 15 年中无逐年升高趋势, 不同时间段 (2003.01.01—2008.01.01、2008.01.02—2013.01.01、2013.01.02—2018.01.01) 中卵巢妊娠在异位妊娠中的占比亦无上升趋势 (1.21%、1.09%、1.14%), 且差异无统计学意义; 通过辅助生殖技术发生的卵巢妊娠在同阶段卵巢妊娠中的占比有上升趋势 (8.33%、9.52%、15.22%), 但差异无统计学意义。卵巢妊娠组与同期输卵管妊娠组相比, 腹部手术史 ($OR=0.41$, 95% $CI=0.18\sim 0.95$, $P=0.04$) 是卵巢妊娠的高危因素。卵巢妊娠患者血清 β -人绒毛膜促性腺激素 (hCG) 水平高于输卵管妊娠患者 ($P<0.001$)。术前 2 例 (2.53%) 诊断为卵巢妊娠, 70 例 (88.61%) 患者行经阴道超声时, 56 例 (80.00%) 提示盆腔积血。51 例 (64.56%) 卵巢妊娠发生在右侧, 28 例 (35.44%) 发生在左侧, 左右侧发生率差异有统计学意义 ($P=0.01$)。结论 辅助生殖技术与卵巢妊娠之间的关系还需要进一步探索。腹部手术史可能是卵巢妊娠的高危因素, 且血清 β -hCG 水平通常较高。卵巢妊娠多发生于右侧卵巢, 可能与左侧卵巢解剖结构相关。卵巢妊娠术前诊率极低, 影像学检查对其有重要意义。

【关键词】 高危因素; 卵巢妊娠; 异位妊娠; 辅助生殖技术

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Retrospective analysis of related risk factors for ovarian pregnancy in 79 cases

Zheng Jiahua¹, Wang Lili¹, Zhou Xiaojing², Ma Yumei³, Hao Guimin¹, Wang Wei¹, Huang Xianghua⁴

¹Department of Reproduction, the Second Hospital of Hebei Medical University, Shijiazhuang 050000, China;

²Department of Obstetrics & Gynecology Ultrasound Diagnosis and Treatment, the Second Hospital of Hebei Medical University, Shijiazhuang 050000, China; ³Department of Pathology, the Second Hospital of Hebei Medical University, Shijiazhuang 050000, China; ⁴Department of Gynecology, the Second Hospital of Hebei Medical University, Shijiazhuang 050000, China

Corresponding author: Wang Wei, Email: wangwei_iui@163.com, Tel:+86-13832177339; Huang Xianghua, Email: huangxh2003@163.com, Tel:+86-15803210557

【Abstract】 Objective To find the risk factors, difference between preoperative diagnosis and intraoperative findings and the ratio of ovarian pregnancy (OP) after assisted reproductive technology (ART). **Methods** In the retrospective cross-sectional study, 79 patients with OP in the period of January, 2003 to January, 2018 at the Second Hospital of Hebei Medical University were included. They were divided into three time segments (2003.01.01–2008.01.01, 2008.01.02–2013.01.01 and 2013.01.02–2018.01.01) and the time trend was observed. At the same time, the data of tubal pregnancy (TP) in the same period were collected, and the risk factors were compared with those of OP. **Results** During the entire study period (2003.01.01–2018.01.01), 6943 patients with ectopic pregnancy were diagnosed in the hospital. Of these, 79 cases were OP (1.14%). OP appeared to have no increasing trend year by year, as well as in ectopic pregnancy when compared with different time periods (2003.01.01–2008.01.01, 2008.01.02–2013.01.01 and 2013.01.02–2018.01.01) (1.21% vs. 1.09% vs. 1.14%). OP after ART had an increasing trend (8.33% vs. 9.52% vs. 15.22%) with a significant difference. Compared with TP group, the history of abdominal surgery was a high risk factor for OP ($OR=0.41$, 95% $CI=0.18-0.95$, $P=0.04$). The serum β -human chorionic gonadotropin (hCG) level in OP patients was higher than that in TP patients. Two cases (2.53%) had been diagnosed OP before treatment. Seventy cases (88.61%) underwent vagina ultrasonic, of these, 56 cases (80.00%) suggested pelvic hematocele. Fifty-one cases (64.56%) of OP occurred in right ovary, 28 cases (35.44%) occurred in left ovary. **Conclusion** The ratio of OP after ART has an increasing trend in recent years, and ART may be a risk factor of OP. The relationship between ART and OP still needs to be further explored. History of abdominal surgery may be a high risk factor for OP, and OP patients tend to have high β -hCG levels. OP maybe often occur in the right side of ovarian and may be related to the anatomical structure of the left ovary. The preoperative diagnosis rate was low, imaging examination is of significance.

【Key words】 Risk factors; Ovarian pregnancy; Ectopic pregnancy; Reproductive technology, assisted

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三氯生对女性月经及卵巢储备功能的影响

祝文婷 邢兰凤 毛愉婵 金帆

浙江大学医学院附属妇产科医院生殖医学中心, 杭州 310006

通信作者: 金帆, Email: jinfan@zju.edu.cn, 电话: +86-571-87013871

【摘要】目的 研究环境中三氯生暴露对女性月经及卵巢储备功能的影响。方法 本研究为横断面研究, 2014 年 3 月至 2015 年 12 月期间从浙江大学医学院附属妇产科医院、上海交通大学医学院附属仁济医院和山东大学附属生殖医院三家三甲医院的生殖中心招募 480 名因男性不孕或输卵管因素不孕前来就诊妇女, 检测其尿液标本中的三氯生水平, 用多元回归分析模型研究三氯生暴露与月经失调、窦卵泡数和基础内分泌激素之间的相关性, 并初步探讨三氯生的作用机制。结果 90.7% 的尿液标本中均检测出三氯生, 平均浓度为 1.65(0.63~4.98) ng/mg 肌酐。三氯生浓度与女性月经失调的发病风险增加呈正相关 (调整后 $OR=1.15$; 95% $CI=1.00\sim 1.32$), 且主要原因可能是延长了月经周期, 与窦卵泡数的减少 (调整后 $\beta=-3.13$; 95% $CI=-5.92\sim -0.35$) 和泌乳素的升高 (调整后 $\beta=0.037$; 95% $CI=0.004\sim 0.071$) 亦有显著相关性。结论 三氯生暴露与女性泌乳素分泌、月经失调及卵巢储备下降存在联系, 但因果关系仍有待进一步验证。

【关键词】三氯生; 月经; 窦卵泡数; 泌乳素

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Effects of triclosan exposure on menstruation and ovarian reserve in women

Zhu Wenting, Xing Lanfeng, Mao Yuchan, Jin Fan

Medical Center for Human Reproduction, Women's Hospital, Zhejiang University School of Medicine, Hangzhou 310006, China

Corresponding author: Jin Fan, Email: jinfan@zju.edu.cn, Tel: +86-571-87013871

【Abstract】 Objective To investigate the potential effects of triclosan (TCS) on menstruation and ovarian reserve in women. **Methods** A total of 480 women who sought fertility treatment for male factors or tubal obstruction were recruited from three reproductive centers in three provinces in China (Women's Hospital School of Medicine Zhejiang University, Renji Hospital Affiliated to Shanghai Jiao Tong University School of Medicine, Hospital for Reproductive Affiliated to Shandong University). TCS concentrations were quantified in urine. Baseline reproductive hormones and antral follicle count (AFC) were measured on the 2nd–3rd day of menstruation. **Results** The concentration of TCS was 1.65 (0.63–4.98) ng/mg creatinine detected in 90.7% of women. TCS concentrations were associated with increased risk of abnormal menstrual cycle (adjust-OR=1.15; 95% CI=1.00–1.32), mainly due to prolonged menstrual cycle. TCS concentration was positively associated with prolactin level but negatively with antral follicle count. **Conclusion** TCS concentration was positively associated with secretion of prolactin, increased risk of menstruation abnormality and decreased antral follicle count. But further epidemiological studies are needed to confirm the causal relationship.

【Key words】 Triclosan; Menstruation; Antral follicle count; Prolactin

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阴道超声和磁共振在剖宫产术后子宫瘢痕憩室中的联合应用价值

杨清¹ 陈萍¹ 朱家樑² 洪向丽¹ 吕小利¹

¹ 同济大学附属第一妇婴保健院超声室, 上海 200040; ² 同济大学附属第一妇婴保健院放射科, 上海 200040

通信作者: 陈萍, Email: mellonping@51mch.com, 电话: +86-15301673029

【摘要】 目的 探讨阴道超声适当联合磁共振在剖宫产术后子宫瘢痕憩室 (cesarean scar diverticulum, CSD) 中的应用价值。方法 回顾性分析 2014 年 1 月至 2016 年 2 月期间在同济大学附属第一妇婴保健院因 CSD 行经阴道子宫憩室修补术的 199 例患者的临床资料。分析比较这些患者的超声和磁共振的影像学特征, 测量 CSD 长度、宽度、深度、残留肌层厚度、深度 / 残留肌层厚度。结果 199 例患者术前超声检查有 7 例漏诊; 而术前磁共振检查均诊断有憩室。155 例患者术前超声和磁共振测量的长度 [(7.74±3.14) mm, (8.57±3.70) mm; $P=0.007$], 宽度 [(13.18±5.66) mm, (16.62±4.12) mm; $P<0.001$] 组间差异均有统计学意义。155 例患者术前超声和磁共振测量的深度 [(7.55±3.32) mm, (7.17±2.84) mm; $P=0.173$], 残留肌层厚度 [(2.56±1.09) mm, (2.46±0.92) mm; $P=0.232$]、深度 / 残留肌层厚度 (3.61±2.71, 3.36±2.00; $P=0.229$) 组间差异均无统计学意义。187 例术前超声显示 CSD 形状以三角形和楔形多见; 子宫位置以后位子宫多见。175 例患者术后 3 个月超声随访检查, 其中 82 例仍存在憩室, 憩室大小较术前明显缩小 ($P<0.001$), 术后残留肌层厚度 [(5.53±1.96) mm] 较术前明显增厚 [(2.43±1.10) mm, $P<0.001$]。结论 阴道超声检查未见憩室, 仍高度怀疑憩室的患者需行磁共振检查。预行经阴道憩室修补术, 考虑盆腔粘连的患者需行磁共振检查。阴道超声联合磁共振在剖宫产术后 CSD 中起着重要的作用。

【关键词】 超声检查; 磁共振成像; 剖宫产术; 子宫瘢痕憩室

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Application value of transvaginal ultrasound combined appropriately magnetic resonance imaging in cesarean scar diverticulum

Yang Qing¹, Chen Ping¹, Zhu Jialiang², Hong Xiangli¹, Lyu Xiaoli¹

¹Department of Ultrasound, Shanghai First Maternity and Infant Hospital, Tongji University School of Medicine, Shanghai 200040, China; ²Department of Radiology, Shanghai First Maternity and Infant Hospital, Tongji University School of Medicine, Shanghai 200040, China

Corresponding author: Chen Ping, Email: mellonping@51mch.com, Tel: +86-15301673029

【Abstract】 Objective To evaluate application value of transvaginal ultrasound (TVU) properly combined magnetic resonance imaging (MRI) in cesarean scar diverticulum (CSD). **Methods** From January 2014 to February 2016, 199 patients underwent vaginal Repair of CSD in Shanghai First Maternity and infant Hospital, Tongji University School of Medicine. Imaging features of ultrasound and magnetic resonance of these patients were retrospectively analyzed. The measurement parameters of CSD were length, width, depth and thickness of the remaining muscular layer (TRM), depth/TRM. **Results** There were 7 patients missed diagnosis among 199 patients enrolled preoperative ultrasound examination and 199 patients were all diagnosed with CSD by magnetic resonance imaging. Totally 155 patients underwent both ultrasound and magnetic resonance examination before operation. The length [(7.74±3.14) mm, (8.57±3.70) mm, $P=0.007$], width [(13.18±5.66) mm, (16.62±4.12) mm, $P<0.001$] detected by ultrasound and magnetic resonance examination had statistical significance. In these patients, the depth [(7.55±3.32) mm, (7.17±2.84) mm; $P=0.173$], the thickness of residual muscular layer [(2.56±1.09) mm, (2.46±0.92) mm; $P=0.232$], the depth/thickness of residual muscular layer (3.61±2.71, 3.36±2.00; $P=0.229$) detected by ultrasound and magnetic resonance examination had no statistical significance. There were no statistically significant differences between the depth [(7.55±3.32) mm], residual muscular layer thickness [(2.56±1.09) mm], depth/residual muscular layer thickness (3.61±2.71) measured by ultrasound and depth [(7.17±2.84) mm], residual muscular layer thickness [(2.46±0.92) mm], and depth/residual muscular layer thickness (3.36±2.00) measured by magnetic resonance imaging ($P>0.05$). The morphology of CSD was usually triangular and wedge-shape. The position of uterus with CSD was usually retroflexed uterus. After operation, there were still 82 cases had CSD, but diverticulum were smaller than pre-operation ($P<0.05$) and the thickness of residual muscular layer after operation (5.53±1.96) mm was significantly thicker than that before operation [(2.43±1.10) mm, $P<0.01$]. **Conclusion** Patients with diverticulum not found by vaginal ultrasound should undergo MRI. Pre-operative transvaginal repair, considering pelvic adhesion patients need MRI. The appropriate combination between ultrasound and MRI plays an important role in diagnosis of CSD and evaluation of operation.

【Key words】 Ultrasonography; Magnetic resonance imaging; Cesarean section; Cesarean scar diverticulum

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辅助生殖中心护理质量指标构建研究

吕欢 常琼 高云 李萌 岳松芳

河南省人民医院生殖中心, 郑州 450003

通信作者: 岳松芳, Email: yuesongfang@126.com, 电话: +86-13949101084

【摘要】 **目的** 探讨辅助生殖中心的护理质量评价指标, 为建立本辅助生殖中心的护理管理评价体系提供具体的评价与监测项目的依据。**方法** 通过头脑风暴、专家咨询及问卷调查法对各护理质量指标进行统计分析并整理。**结果** 根据护理质量指标名称、定义, 进行归纳整理, 其结果分为 3 个维度(结构-过程-结果), 16 项护理质量指标, 其中包括结构指标 2 项, 过程指标 9 项, 结果指标 5 项。过程指标在整个维度中得分最高, 其次为结果指标。**结论** 建立辅助生殖中心护理质量指标, 有利于对护理质量的监控, 提高护理质量, 规范辅助生殖护理的操作流程, 并能更好地为患者服务, 提高患者满意度。

【关键词】 辅助生殖; 门诊; 护理质量指标

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Study on the construction of nursing quality index of assisted reproduction center

Lyu Huan, Chang Qiong, Gao Yun, Li Meng, Yue Songfang

Reproductive Hospital of Henan Provincial People's Hospital, Zhengzhou 450003, China

Corresponding author: Yue Songfang, Email: yuesongfang@126.com, Tel: +86-13949101084

【Abstract】 Objective To explore the nursing quality evaluation index of the assisted reproductive center, and to provide specific evaluation and monitoring basis for the establishment of the nursing management evaluation system of the assisted reproductive center. **Methods** The nursing quality indexes were statistically analyzed and sorted out by brainstorming, expert consultation and questionnaire survey. **Results** According to the name and definition of nursing quality indicators, the results were classified into 3 dimensions structure-process-result, 16 nursing quality indicators, including 2 structural indicators, 9 process indicators and 5 outcome indicators. The process index scores the highest in the whole dimension, and the next is the result index. **Conclusion** The establishment of nursing quality indicators of assisted reproductive center is conducive to the monitoring of nursing quality, improving nursing quality, standardizing the operation process of assisted reproductive nursing, and can better serve patients and improve patients' satisfaction.

【Key words】 Assisted reproduction; Outpatient service; Nursing quality index

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Hippo 信号通路在宫腔粘连纤维化中的研究进展

丁媛 刘莹 武露明 张学红 王一青

兰州大学第一医院生殖医学专科医院 730000

通信作者: 王一青, Email: 511508864@qq.com, 电话: +86-18993195097

【摘要】 宫腔粘连纤维化的研究大多集中在转化生长因子- β (TGF- β) 和 Wnt 信号通路, 但这不能全面说明宫腔粘连纤维化复杂的分子机制。随着 Hippo 信号通路研究的不断跟进, 研究表明该通路在纤维化的形成、干细胞的自我更新和分化、细胞增殖与分化的调节等方面均起到重要的作用。本文主要综述 Hippo 信号通路在宫腔粘连纤维化的研究现状。

【关键词】 宫腔粘连; 子宫内膜纤维化病变; Hippo 信号通路

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Research progress of Hippo signaling pathway in intrauterine adhesion fibrosis

Ding Yuan, Liu Ying, Wu Luming, Zhang Xuehong, Wang Yiqing

The Reproductive Medicine Special Hospital of the First Hospital of Lanzhou University, Lanzhou 730000, China

Corresponding author: Wang Yiqing, Email: 511508864@qq.com, Tel: +86-18993195097

【Abstract】 Most studies on intrauterine adhesion fibrosis focus on transforming growth factor- β (TGF- β) and Wnt signaling pathways, but this does not fully explain the complex molecular mechanism of intrauterine adhesion fibrosis. With the continuous follow-up of Hippo signaling pathway, it has been shown that this pathway plays an important role in the formation of fibrosis, self-renewal and differentiation of stem cells, and regulation of cell proliferation and differentiation. This article mainly describes the research status of Hippo signaling pathway in intrauterine adhesion fibrosis.

【Key words】 Intrauterine adhesion; Endometrial fibrosis; Hippo signaling

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MicroRNAs 在复发性流产病理过程中作用的研究进展

孟楠 张璇

国家卫生健康委员会计划生育药具重点实验室, 上海市计划生育科学研究所, 复旦大学上海医学院 200032

通信作者: 张璇, Email: zhangxuancw@outlook.com, 电话: +86-13816980361

【摘要】 MicroRNAs(miRNAs) 是一种非编码小 RNA 分子, 其十分稳定, 可以通过影响靶蛋白编码基因的转录后翻译过程而调节大部分蛋白的表达水平。越来越多的研究表明, miRNAs 可能参与了复发性流产的病理过程。本文主要对 miRNAs 与复发性流产病理过程的相关性及其可能的分子机制进行综述, 以为从事相关研究和临床的专业人员提供参考。

【关键词】 MicroRNAs; 复发性流产; 母-胎界面

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Roles of microRNAs in the pathological process of recurrent miscarriage

Meng Nan, Zhang Xuan

Key Lab. of Reproduction Regulation of NHFPC (Shanghai Institute of Planned Parenthood Research), Shanghai Medical college of Fudan University, Shanghai 200032, China

Corresponding author: Zhang Xuan, Email: zhangxuancw@outlook.com, Tel: +86-13816980361

【Abstract】 MicroRNAs (miRNAs), a kind of small but stable non-coding RNA, are involved in the regulation of the expression levels of most proteins by influencing their post-transcriptional translation process. An accumulated research data have shown that miRNAs may play critical roles in the pathological process of recurrent miscarriage. This review mainly concludes the correlation between miRNAs and the pathological process of recurrent miscarriage, as well as the underlying molecular mechanism, so as to provide reference for professionals engaged in relevant research and clinical practice.

【Key words】 MicroRNAs; Recurrent miscarriage; Maternal-fetal interface

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***Beclin1* 在子宫内膜异位症中作用的研究进展**

丁莹 孙贇

上海交通大学医学院附属仁济医院生殖医学中心, 上海市辅助生殖与优生重点实验室
200135

通信作者: 孙贇, Email: syun163@163.com, 电话: +86-21-20284501

【摘要】 子宫内膜异位症 (EMS) 是一种常见的妇科疾病, 可导致痛经、慢性盆腔痛和不孕等症状, 严重影响育龄期女性的生活质量及生命健康。近年来 EMS 的发病率日益上升, 但其发病机制至今仍未完全阐明。随着对自噬与 EMS 关系的不断深入了解, 研究显示参与自噬调控的重要基因 *Beclin1* 与 EMS 之间存在密切的联系。本文就 *Beclin1* 基因在 EMS 发生、发展中的作用进行综述, 为探索 EMS 的发病机制及治疗策略提供线索。

【关键词】 子宫内膜异位症; 自噬; 细胞凋亡; *Beclin1* 基因

基金项目: 国家自然科学基金面上项目 (81771648、81571499); 上海市教育委员会高峰高原学科建设计划 (20161413); 科技部重点专项子课题 (2017YFC1001403); 上海市卫生系统优秀人才培养计划 (2017BR015); 上海市科学技术委员会 (17DZ2271100)

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Research progress on the role of *Beclin1* in endometriosis

Ding Ying, Sun Yun

Shanghai Key Laboratory for Assisted Reproduction and Reproductive Genetics, Center for Reproductive Medicine, Renji Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200135, China

Corresponding author: Sun Yun, Email: syun163@163.com, Tel: +86-21-20284501

【Abstract】 Endometriosis (EMS) is a common gynecological disease in women of reproductive age that causes dysmenorrhea, chronic pelvic pain and infertility, resulting in a major reduction in health-related quality of life. The incidence rate of EMS has increased in recent years. However, the underlying etiology of EMS remains to be fully elucidated. At present, autophagy has become a hotspot of research, and extensive studies have been focused on the involvement of autophagy in EMS. Emerging evidence suggests that there is a close relationship between *Beclin1* gene, an essential mediator of autophagy, and EMS. This article reviews the role of *Beclin1* in the development and progression of EMS, exploring the potential value of *Beclin1* as a therapeutic target for EMS.

【Key words】 Endometriosis; Autophagy; Apoptosis; *Beclin1* gene

Fund program: National Natural Science Foundation of China (81571499, 81771648); Shanghai Municipal Education Commission-Gaofeng Clinical Medicine Grant Support (20161413); National Key R&D Program of China (2017YFC1001403); Program of Shanghai Academic Research Leader in Shanghai Municipal Commission of Health and Family Planning (2017BR015); Shanghai Commission of Science and Technology (17DZ2271100)

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宫颈锥切术后切缘阳性的相关因素及其处理的研究进展

张珺¹ 杨菁¹ 张燕¹ 李星¹ 彭亚琴¹ 张瑜²

¹ 武汉大学人民医院妇产科 430060; ² 湖北省崇阳县中医院妇产科, 咸宁 437500

通信作者: 张珺, Email: zhangjunxiangcai@163.com, 电话: +86-18207116436

【摘要】 宫颈上皮内瘤变 (cervical intraepithelial neoplasia, CIN) 发病率逐年升高, 日益年轻化。高级别 CIN 为宫颈癌明确的癌前期病变, 宫颈癌是最常见的妇科恶性肿瘤。据统计, 宫颈癌每年新发病例约 50 万, 其中中国占比约 1/3, 约 5 万女性死于此病。根据目前的医疗环境, CIN 可被早诊断、早治疗, 并能尽早预防其演变为宫颈癌。宫颈锥切术是治疗高级别 CIN 的主要手段, 具有诊断和治疗的双重作用, 但仍有一部分病例存在切缘阳性, 本文旨在探讨宫颈锥切术后切缘阳性的相关影响因素及处理意见。

【关键词】 宫颈上皮内瘤变; 宫颈锥切术; 切缘阳性; 影响因素; 处理

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Research progress on the related factors and treatment of positive margin after cervical conization

Zhang Jun¹, Yang Jing¹, Zhang Yan¹, Li Xing¹, Peng Yaqin¹, Zhang Yu²

¹Renmin Hospital of Wuhan University, Wuhan 430060, China; ²Obstetrics and Gynecology Department, Chinese Traditional Medicine Hospital of Chongyang Country, Xianning 437500, China

Corresponding author: Zhang Jun, Email: zhangjunxiangcai@163.com, Tel: +86-18207116436

【Abstract】 In recent years, the incidence of cervical intraepithelial neoplasia (CIN) has gradually increased and is becoming younger. High-grade CIN is a clear precancerous lesion of cervical cancer, which is the most common gynecological malignant tumor. According to statistics, China accounts for one-third of the annual number of about 500 000 new cases of cervical cancer, of which about 50 000 women die of this disease. According to the current medical environment, CIN can be diagnosed early, treated early, and prevented from developing into cervical cancer as soon as possible. Cervical conization is the main method for the treatment of high-grade CIN. It has the dual role of diagnosis and treatment. However, there are still some cases where the margin is positive. This article aims to investigate the related influencing factors and treatment opinions of positive margin after cervical conization.

【Key words】 Cervical intraepithelial neoplasia; Cervical conization; Positive margin; Influencing factors; Treatment

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围孕期叶酸补充时段、剂量与子代孤独症的关系

房宇航¹ 杨智曦² 刘俊² 周维谨³ 毛燕燕³

¹ 复旦大学公共卫生学院, 上海 200032; ² 重庆市人口和计划生育科学技术研究院, 国家卫生计生委出生缺陷与生殖健康重点实验室 400020; ³ 复旦大学生殖与发育研究院上海市计划生育科学研究所, 国家人口和计划生育委员会计划生育药具重点实验室 200237
通信作者: 毛燕燕, Email: maoyanyan@sippr.org.cn, 电话: +86-21-64771580

【摘要】 近年来的研究显示围孕期和孕早期的叶酸营养状况对孤独症的发生有重要影响, 表现为母亲孕期叶酸摄入量不足可增加其子代孤独症发病风险, 而叶酸代谢效率低下的孕妇围孕期补充叶酸可以降低其生育孤独症患儿的风险。本文对 2013 年至 2018 年国内外有关母亲补充叶酸与儿童孤独症谱系障碍 (autism spectrum disorder, ASD) 相关文献进行了梳理。以其中的流行病学研究为主, 从叶酸补充的时段、剂量以及与大气污染物、农药、疾病、吸烟等环境行为因素的交互作用对儿童 ASD 发生的影响进行了论述, 并对这些研究的优势特点和局限性进行了总结, 进而启示今后的研究重点。围绕环境化学因素多级别暴露、遗传聚集性和 ASD 亚型异质性等方面, 以中国饮食情况为基础的叶酸最佳摄入量有待探究。

【关键词】 孤独症谱系障碍; 叶酸; 维生素 B9; 围孕期; 儿童

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Advances in research on relationship between folic acid supplementation period, dosage and offspring autism during perinatal period

Fang Yuhang¹, Yang Zhixi², Liu Jun², Zhou Weijin³, Mao Yanyan³

¹Public Health School, Fudan University, Shanghai 200032, China; ²Key Laboratory of Birth Defects and Reproductive Health of National Health and Family Planning Commission (Chongqing Population and Family Planning Science and Technology Research Institute), Chongqing 400020, China; ³NHC Key Lab. of Reproduction Regulation (Shanghai Institute of Planned Parenthood Research), Public Health School, Fudan University, Shanghai 200032, China

Corresponding author: Mao Yanyan, Email: maoyanyan@sippr.org.cn, Tel: +86-21-64771580

【Abstract】 Recent studies have found that folic acid nutrition during perinatal and early pregnancy has an important impact on the occurrence of autism. Insufficient folate intake during pregnancy can increase the risk of autism in offspring. Folic acid supplementation during pregnancy with low folate metabolism can reduce the risk of children with reproductive autism. This paper reviews the literatures on maternal supplementation of folic acid and childhood autism spectrum disorders (ASD) from 2013 to 2018. Based on epidemiological studies, the effects of folic acid supplementation time, dosage and interaction with environmental pollutants such as air pollutants, pesticides, diseases and smoking on children's ASD were discussed, the advantages and limitations of these studies were summarized, and then future research priorities were inspired. Regarding the multi-level exposure of environmental chemical factors, genetic aggregation and ASD subtype heterogeneity, the optimal intake of folic acid based on the Chinese diet is yet to be explored.

【Key words】 Autism spectrum disorders; Folic acid; Vitamin B9; Perinatal period; Child

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滋养层细胞表面糖相关分子调控胚胎植入的研究进展

张悦¹ 冯颖² 马芳¹

¹ 四川大学华西第二医院教育部妇儿疾病与出生缺陷重点实验室, 四川大学华西第二医院妇产科, 成都 610041; ² 四川大学华西基础医学与法医学院, 成都 610041

通信作者: 马芳, Email: mafangmed@126.com, 电话: +86-18981792516

【摘要】 蛋白质糖基化修饰是普遍存在于生物体内的翻译后修饰方式之一, 经修饰后的蛋白质、脂类参与受体激活、信号传递等生命过程。而胚胎植入是一个复杂的过程, 需要胚泡和母体蜕膜细胞表面众多糖相关分子与配体相互结合, 并需要各种激素以及众多细胞因子等在母-胎界面相互影响、调节从而完成正常的胚胎植入。目前已知, 滋养层细胞表面糖基化修饰异常可导致胚胎植入失败。综上, 本文将对滋养层细胞表面糖相关分子调控胚胎植入的研究进展进行简要综述。

【关键词】 滋养层; 糖基化; 胚胎植入

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Research progress of trophoblast-cell-surface sugar-related molecules regulating embryo implantation

Zhang Yue¹, Feng Ying², Ma Fang¹

¹Key Laboratory of Birth Defects and Related Diseases of Women and Children (Sichuan University), Ministry of Education, Sichuan University, Department of Obstetrics and Gynecology, West China Second University Hospital, Sichuan University, Chengdu 610041, China; ²West China School of Basic Medical Sciences & Forensic Medicine, Chengdu 610041, China

Corresponding author: Ma Fang, Email: mafangmed@126.com, Tel: +86-18981792516

【Abstract】 Glycosylation is one of the protein post-translational modifications commonly existing in the organisms. Glycosylated proteins and lipids are involved in many life processes, such as activated receptor and signal transmission. Embryo implantation is a complicated process, which requires the combination of many sugar-related molecules and ligands on the surface of blastocyst and decidual cells. And it is involved in interactions among different hormones and many cytokines at the maternal-fetal interface. It is reported that abnormality of trophoblast-cell-surface glycosylation can cause embryo implantation failure. Therefore, this review focuses on the research progress of the regulation of trophoblast cell surface glycosylation on embryo implantation.

【Key words】 Trophoblast; Glycosylation; Embryo implantation

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多能性干细胞向原始生殖细胞诱导分化的研究进展

马禹佳 孙博 孙莹璞

郑州大学第一附属医院生殖医学中心, 河南省生殖与遗传重点实验室, 河南省妇产疾病(生殖医学)临床医学研究中心, 胚胎植入前遗传学诊断与筛查河南省工程实验室 450052

通信作者: 孙莹璞, Email: syp2008@vip.sina.com, 电话: +86-371-67966169

【摘要】 原始生殖细胞 (primordial germ cells, PGCs) 是哺乳动物卵子与精子的前体细胞, 在生殖系统早期发育过程中至关重要。配子生成障碍是辅助生殖技术面临的巨大挑战。由于伦理及技术受限, PGCs 在人类胚胎中的起源及特化机制仍不清楚。多能性干细胞体外培养技术的逐步建立与成熟, 使体外诱导生成原始生殖细胞样细胞 (primordial germ cell like cells, PGCLCs) 并深入研究其发生发展机制成为可能, 同时也为配子生成障碍的临床治疗带来了希望。本文将从 PGCs 的体内发生过程、多能性干细胞体外分化形成 PGCLCs 及其进而分化形成配子的主要诱导分化方案及特异性标记因子等相关研究进展进行综述。

【关键词】 原始生殖细胞; 胚胎干细胞; 诱导多能性干细胞; 原始生殖细胞样细胞

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Review of the differentiation of pluripotent stem cells into primordial germ cells

Ma Yujia, Sun Bo, Sun Yingpu

Department of Reproductive Medicine, the First Affiliated Hospital of Zhengzhou University, Henan Key Laboratory of Reproduction and Genetics, Henan Provincial Obstetrical and Gynecological Diseases (Reproductive Medicine) Clinical Research Center, Henan Engineering Laboratory of Preimplantation Genetic Diagnosis and Screening, Zhengzhou 450052, China

Corresponding author: Sun Yingpu, Email: syp2008@vip.sina.com, Tel: +86-371-67966169

【Abstract】 Primordial germ cells (PGCs), which are the precursors of mammalian eggs and sperm, are essential for early development of the reproductive system. The gametogenic disorder is a great challenge for assisted reproductive technology. Due to ethical and technical limitations, the origin and specialization mechanisms of PGCs in human embryos remain unclear. Differentiation of the primordial germ cell like cells (PGCLCs) *in vitro* and further study of mechanisms of their development become possible, with the establishment and improvement of the *in vitro* culture technology for pluripotent stem cells, which also bring hope for the clinical treatment of the gametogenic disorders. The *in vivo* development of PGCs, the differentiation process of pluripotent stem cells into PGCLCs *in vitro*, the main differentiation methods and specific markers of PGCLCs will be reviewed in this paper.

【Key words】 Primordial germ cells; Embryonic stem cells; Induced pluripotent stem cells; Primordial germ cell like cells

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时差成像技术在人类胚胎评估中的临床应用

陈龙彬¹ 顾亦凡² 林戈²

¹中南大学基础医学院生殖与干细胞研究所, 长沙 410000; ²中信湘雅生殖与遗传专科医院, 长沙 410000

通信作者: 林戈, Email: linggf@hotmail.com, 电话: +86-13187057355

【摘要】近年来兴起的时差成像技术在为胚胎发育提供稳定培养环境的同时可通过拍摄系统全程记录植入前胚胎的动态发育过程, 从而获得更加全面准确的胚胎发育信息。这些信息能够显示人类胚胎行为学及动力学指标, 建立胚胎评估模型, 能有效地克服形态学评估主观性大、所提供信息有限的弊端, 成为胚胎评估更为有利的手段。本文总结了时差成像技术建立的参数与模型, 及其在胚胎评估中的临床应用。

【关键词】受精, 体外; 时差成像; 胚胎评估; 体外培养

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Clinical application of time-lapse imaging in human embryo evaluation

Chen Longbin¹, Gu Yifan², Lin Ge²

¹Institute of Reproductive and Stem Cells, School of Basic Medicine, Central South University, Changsha 410000, China; ²CITIC Xiangya Reproductive and Genetic Hospital, Changsha 410000, China

Corresponding author: Lin Ge, Email: linggf@hotmail.com, Tel: +86-13187057355

【Abstract】 Time-lapse imaging technology developed in recent years can provide a more stable culture environment for embryos and record the dynamic development of preimplantation embryos through a camera system, thus providing more comprehensive and accurate information on embryonic development. Through this information, we can obtain human embryonic behavioral and kinetic parameters, and set up an embryo evaluation model, which can effectively overcome the disadvantages of the subjectivity of morphological evaluation and the limited information provided, and become a more favorable means for embryo evaluation. This paper summarizes the parameters and models of time difference imaging and its application in embryos and its clinical application in embryo evaluation.

【Key words】 Fertilization *in vitro*; Time-lapse imaging; Embryo evaluation; *In vitro* culture

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