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·规范与标准·

不孕女性亚临床甲状腺功能减退诊治的中国专家共识

中华医学会生殖医学分会第四届委员会
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【摘要】 亚临床甲状腺功能减退是育龄女性的常见内分泌紊乱，对于甲状腺功能的轻度异常是否需要治疗或何时治疗存在争议，尤其是计划妊娠的不孕女性。中华医学会生殖医学分会制订了本共识，针对不孕女性的亚临床甲状腺功能减退如何诊治提供基于目前循证医学的等级推荐，以期更好地指导临床。

【关键词】 生殖技术，辅助；亚临床甲状腺功能减退；不孕

DOI：10.3760/cma.j.issn.2096-2916.2019.08.001

·规范与标准·

Chinese Society for Reproductive Medicine consensus for subclinical hypothyroidism in the infertile female population

The Forth Committee of Chinese Society of Reproduction Medicine, Chinese Medical Association

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【**Abstract**】 Subclinical hypothyroidism (SCH) is a common endocrine disorder in women of reproductive age. There is controversy regarding whether or when to treat subtle abnormalities of thyroid dysfunction in the infertile female population. The Chinese Society for Reproductive Medicine (CSRM) compiled this consensus on the diagnosis and treatment of SCH in this population, which is based on the current medical evidences and expected to be helpful for clinical practice.

【**Key words**】 Reproductive techniques, assisted; Subclinical hypothyroidism; Infertility

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·临床研究·

不同性别的染色体易位携带者种植前遗传学诊断助孕结局的分析

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【摘要】目的 分析比较不同性别染色体罗氏易位、相互易位携带者行胚胎种植前遗传学诊断 (PGD) 后对胚胎发育及助孕结局的影响。**方法** 回顾性分析行 PGD 助孕的 122 个染色体易位周期 (共 105 对夫妻)，按染色体易位类型和性别分为罗氏易位组和相互易位组，每个组又分为男性携带者亚组和女性携带者亚组。分别分析比较各组的一般情况、胚胎发育情况及解冻移植后的妊娠结局。**结果** 罗氏易位中女性携带者亚组活检结果正常率 (22.8%) 较男性携带者亚组 (35.3%) 低 (*P*=0.048)，相互易位中女性携带者亚组受精率 (78.8%) 较男性携带者亚组 (83.8%) 低 (*P*=0.038) 而每移植周期临床妊娠率 (69.0%) 较男性携带者亚组 (41.9%) 高 (*P*=0.035)。M_{II} 卵率罗氏易位组 (88.4%) 比相互易位组 (83.9%) 高 (*P*=0.008)，尤其在男性中，罗氏易位组的 M_{II} 卵率 (90.3%)、活检正常率 (35.3%) 和每取卵周期临床妊娠率 (64.7%) 均显著高于相互易位组 (85.0%，*P*=0.036；21.9%，*P*=0.018；31.7%，*P*=0.02)。**结论** 不同性别对染色体易位携带者的胚胎发育情况及助孕结局无明显影响；在男性中，罗氏易位携带者较相互易位携带者可获得更好的妊娠结局。

【关键词】 胚胎种植前遗传学诊断；罗氏易位；相互易位；携带者性别；妊娠结局
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·临床研究·

Analysis of reproductive outcomes with preimplantation genetic diagnosis in chromosomal translocation carriers of different gender

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【**Abstract**】 **Objective** To analyze and compare the effects of preimplantation genetic diagnosis (PGD) on embryonic development and reproductive outcomes in robertsonian and reciprocal translocation carriers of different gender respectively. **Methods** One hundred and twenty-two chromosomal translocation cycles (a total of 105 couples) assisted by PGD were retrospectively analyzed. They were divided into robertsonian translocation group and reciprocal translocation group, and each group was divided into male and female subgroups according to the chromosome type and carrier's gender. The clinical characteristics, embryo development and reproductive outcomes after thawing and transfer were then analyzed and compared. **Results** The normal rate of biopsy results in female subgroup (22.8%) in robertsonian translocation carriers was lower than that in male subgroup (35.3%) (P=0.048), the fertilization rate in female subgroup (78.8%) in reciprocal translocation carriers was lower than that in male subgroup (83.8%, P=0.038), while the clinical pregnancy rate per embryo transfer (ET) (69.0%) was higher than that in male subgroup (41.9%, P=0.035). The M_{II} oocyte rate in robertsonian translocation group (88.4%) was higher than that in reciprocal translocation group (83.9%, P=0.008). Especially in male translocation carriers, the frequencies of M_{II} oocyte (90.3%), normal embryos (35.3%) and the clinical pregnancy rate per oocytes pick-up (OPU) (64.7%) in robertsonian translocation group were significantly higher than those in reciprocal translocation group (85.0%, P=0.036; 21.9%, P=0.018; 31.7%, P=0.02, respectively). **Conclusion** There is no significant effect of different gender on embryo development and pregnancy outcome of chromosomal translocation carriers. In male carriers, robertsonian translocation carriers have better pregnancy outcomes compared with reciprocal translocation carriers.

【**Key words**】 Preimplantation genetic diagnosis; Robertsonian translocation; Reciprocal translocation; Gender; Pregnancy outcome

Fund program: Central Government Guided Local Special Found Program (2018080802D0081)

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·临床研究·

子宫内膜异位症生育力指数对子宫内膜异位症患者体外受精 / 卵胞质内单精子注射 - 胚胎移植助孕结局的预测价值

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【摘要】 目的 探究子宫内膜异位症生育力指数 (EFI) 评分系统对子宫内膜异位症 (EMS) 患者体外受精 / 卵胞质内单精子注射 - 胚胎移植 (IVF/ICSI-ET) 助孕结局的预测作用和影响。**方法** 回顾性分析 2011 年 1 月—2014 年 12 月期间在中山大学孙逸仙纪念医院生殖中心行 IVF/ICSI-ET 助孕的 231 例 EMS 患者的 231 个周期。对 EMS 患者进行 EFI 评分，绘制 EFI 对新鲜移植周期临床妊娠率的受试者工作特征 (ROC) 曲线，并根据截断值进行分组比较。**结果** EFI 对 EMS 患者新鲜胚胎移植周期临床妊娠率的 ROC 曲线下面积为 0.571，*P*=0.066，截断值为 7.5。当 EFI>7 时，种植率 (47.5%) 较 EFI ≤ 7 的患者 (33.1%，*P*=0.001) 显著升高，临床妊娠率有升高的趋势 (64.8% 比 52.4%，*P*=0.058)，早期流产率显著降低 (2.9% 比 12.1%，*P*=0.043)，活产率显著升高 (60.0% 比 43.7%，*P*=0.013)。超长方案降调节的患者中 EFI>7 者的胚胎种植率、临床妊娠率和活产率均显著高于 EFI ≤ 7 者；长方案降调节的患者中 EFI>7 者与 EFI ≤ 7 者的胚胎种植率、临床妊娠率和活产率差异均无统计学意义。**结论** EFI 评分对 EMS 患者新鲜移植周期妊娠结局有一定的预测作用，特别是对应用超长方案的患者。

【关键词】 子宫内膜异位症；受精，体外；子宫内膜异位症生育力指数；胚胎移植；妊娠结局
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·临床研究·

Predictive value of endometriosis fertility index on the *in vitro* fertilization/intracytoplasmic sperm injection-embryo transfer outcome of patients with endometriosis

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【**Abstract**】 **Objective** To investigate the predictive value of endometriosis fertility index (EFI) on the *in vitro* fertilization/intracytoplasmic sperm injection-embryo transfer (IVF/ICSI-ET) outcome of patients with endometriosis (EMS). **Methods** Totally 231 patients with EMS in the Reproductive Center of Sun Yat-sen Memorial Hospital accepted IVF/ICSI-ET treatment between January 2011 and December 2014 were collected and retrospectively analyzed. Only their first cycle was included. EFI score was achieved according to the operation and general situation. Receiver operating characteristic (ROC) curve was used to evaluate the predictive value of EFI for the clinical pregnancy rate of fresh transplantation. Patients were divided into two groups according to the cut-off EFI of ROC curve for further analysis. **Results** The area under ROC curve (AUC) of EFI was 0.571 (P=0.066), with a cut-off value of 7.5. Both embryo implantation rate (IR) and live birth rate (LBR) were significantly higher in the EFI>7 group when compared with the EFI ⩽ 7 group (47.5% *vs.* 33.1%, P=0.001; 60.0% *vs*. 43.7%, P=0.013, respectively), while the clinical pregnancy rate (CPR) manifested a higher tendency in the EFI>7 group (64.8% *vs.* 52.4%, P=0.058). In patients performed super-long pituitary down-regulation protocol, the index including IR, CPR and LBR were significantly increased in those EFI>7 group than those EFI ⩽ 7 group. In patients performed long pituitary down-regulation protocol, there was no significant difference of IR, CPR and LBR between those EFI>7 group and those EFI ⩽ 7 group. **Conclusion** EFI score is of a certain predicting value for the clinical pregnancy outcome in fresh transplantation, especially for patients using super-long pituitary down-regulation protocol.

【**Key words**】 Endometriosis; Fertilization *in vitro*; Embryo transfer; Endometriosis fertility index; Pregnancy outcome

Fund program: Guangdong Provincial Natural Science Foundation (2015A030313054); Sun Yat-sen University Clinical Research 5010 Program (2016004)

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·临床研究·

辅助生殖技术助孕人群卵巢妊娠高危因素的配比对照研究

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【摘要】目的 探讨辅助生殖技术 (ART) 助孕人群卵巢妊娠 (OP) 的高危因素。**方法** 以 1 ∶ 4 ∶ 4 配比病例对照研究收集并分析河北医科大学第二医院生殖科 2007 年 1 月 1 日—2018 年 6 月 1 日期间随访确诊的 7 例 OP(OP 组)、28 例正常宫内妊娠 (IUP 组)、28 例输卵管妊娠 (TP 组) 患者的病例资料。**结果** OP 组、IUP 组及 TP 组人群基本社会学特征差异无统计学意义。与 IUP 组相比，附件手术史 (调整 OR_1=10.22，95% *CI*=1.57~66.37，*P*=0.01) 和结核史 (调整 OR_1=12.85，95% *CI*=1.40~117.73，*P*=0.02) 是 OP 的高危因素。3 组间移植后 14 d 血清 β-hCG 水平差异有统计学意义 (*P*<0.001)。**结论** ART 助孕人群的基本社会学特征差异无统计学意义。附件手术史和结核史是该人群 OP 的高危因素。胚胎移植 2 周后血清 β- hCG 水平 OP 人群高于 TP 人群。

【关键词】 危险因素；卵巢；妊娠，输卵管；生殖技术，辅助

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·临床研究·

Risk factors of ovarian pregnancy following assisted reproductive technology: a matched case-control study

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【Abstract】 Objective To investigate the risk factors on ovarian pregnancy (OP) patients following assisted reproductive technology (ART). **Methods** In this retrospective matched case-control study from 1 January 2007 to 1 June 2018, 7 women diagnosed with OP were matched as the case group, women with intrauterine pregnancy (IUP) (n=28) and with tubal pregnancy (TP) (n=28) were matched as controls at the ratio of 1 ∶ 4 ∶ 4. **Results** There were no differences observed in age, body mass index (BMI), educational attainment and occupation. Compared with the IUP group, the risk factors of OP included a adnexal surgery history (adjusted OR_1=10.22, 95% CI=1.57−66.37, P=0.01) and tuberculosis (TB) history (adjusted OR_1=12.85, 95% CI=1.40−117.73, P=0.02). A significant difference was found in serum β-human chorionic gonadotropin (hCG) level among the three groups (P<0.001). **Conclusion** No significant difference is found in the baseline characteristics of OP infertile women following ART. The risk factors of OP include previous adnexal surgery and TB. β-hCG levels on the 14th day after embryo transfer are higher in OP patients than those in TP patients.

【Key words】 Risk factor; Ovary; Tubal pregnancy; Reproductive techniques, assisted

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·临床研究·

辅助生殖技术对子代神经心理发育的影响

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【摘要】 目的 探讨辅助生殖技术 (ART) 对子代神经心理发育的影响。**方法** 选取 2014 年 2 月—2015 年 5 月期间于郑州大学第三附属医院生殖医学中心接受体外受精 (IVF)/ 卵胞质内单精子注射 (ICSI)/ 冻融胚胎移植 (FET) 治疗后出生的 2 岁儿童 (ART 组，*n*=176)，按照母亲年龄、受教育程度、家庭收入及儿童性别等方面进行配对，选取同时期于本院妇产科自然受孕分娩的 2 岁儿童作为对照组 (NC 组，*n*=176)，采用发育智商 (DST) 量表及婴幼儿早期发育 (CDCC) 量表评估其神经、心理发育情况。**结果** ①儿童的出生体质量及身高、2 岁时体质量及身高等体格发育指标的组间差异均无统计学意义 (*P*>0.05)。② ART 组儿童其运动、社会适应、智力能区发育及发育智商 (DQ) 值稍低于 NC 组，但组间差异均无统计学意义 (*P*>0.05)。③ ART 组儿童与 NC 组儿童相比，其智力发育指数 (MDI)、运动发育指数 (PDI) 及能力评估异常者比例差异均无统计学意义 (*P*>0.05)。④进一步将 ART 组分为 IVF 组、ICSI 组、FET 组与 NC 组间比较，其 DQ、MDI 及 PDI 值组间差异无统计学意义 (*P*>0.05)。但 ICSI 组 DQ(94.3±9.5)、MDI(102.0±15.7) 及 PDI(100.1±18.9) 均略低于其他三组 (*P*>0.05)。**结论** ART 子代 MDI、PDI 及 DQ 指标与同年龄自然受孕子代相当，其神经心理发育未受影响。

【关键词】 生殖技术，辅助；儿童；神经心理发育
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·临床研究·

Influence of assisted reproductive technology on offspring neuropsychological development

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【**Abstract**】 **Objective** To investigate the influence of assisted reproductive technology (ART) on offspring neuropsychological development. **Methods** Two-year-old children born after receiving *in vitro* fertilization (IVF)/intracytoplasmic sperm injection (ICSI)/frozen-thawed embryo transfer (FET) treatment at the Reproductive Medicine Center of the Third Affiliated Hospital of Zhengzhou University from February 2014 to May 2015 (ART group, *n*=176) were selected and grouped according to their mother's age, educational level, family income and children's gender, etc. Children who were from the same age and were born in the Obstetrics and Gynecology Department of our hospital by natural conception during the same period were selected as control group (NC group, *n*=176). The neuropsychological development of the children was evaluated by developmental screening test (DST) scale and child developmental computer capacity (CDCC) scale. **Results** 1) There were no significant differences in birth weight, birth height, body weight and height at two-year-old and other physical development indicators between the two groups ($P>0.05$). 2) The ability of exercise, social adjustment, the intelligence development and development quotient (DQ) value of ART group showed slightly lower level than that of NC group. However, there was no significant difference between the two groups ($P>0.05$). 3) There were also no significant differences in the proportion of mental development index (MDI), psychomotor development index (PDI) and children who had abnormal ability between ART group and NC group ($P>0.05$). 4) No statistical significances were found in the DQ, MDI and PDI values of IVF group, ICSI group, FET group and NC group ($P>0.05$), though the values of DQ (94.26±9.47), MDI (101.99±15.73) and PDI (100.11±18.87) in ICSI group were lower than those of the other three groups ($P>0.05$). **Conclusion** Offspring from ART presented no significance in the values of MDI, PDI and DQ indicators than whom from the same age by natural conception, indicating that the neuropsychological development of children from ART was not affected.

【**Key words**】 Reproductive techniques, assisted; Children; Neuropsychological development

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·实验研究·

诱导人脐带间充质干细胞向颗粒细胞样细胞分化的实验研究

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【摘要】目的　探讨人脐带间充质干细胞 (HUMSCs) 向卵巢颗粒细胞 (GCs) 分化的可行性。**方法**　通过骨形态发生蛋白 4 (BMP4) 预处理，联合人卵泡液和卵丘 GCs 诱导 HUMSCs 向卵巢 GCs 分化；以人 GCs 作为对照。免疫荧光法检测 HUMSCs 诱导分化前和诱导分化 12 d 卵泡刺激素受体 (FSHR) 的表达；Real-time PCR 检测 HUMSCs 诱导分化前、后 GCs 特异性基因 *FSHR*、抗苗勒管激素 (AMH)、芳香化酶 19A1 (CYP19A1) 及干细胞多能性相关基因 *OCT*4 的表达。**结果**　诱导前 HUMSCs 无绿色荧光标记的 FSHR 表达；诱导分化 12 d 后，细胞形态与贴壁生长的人 GCs 相近，可见绿色荧光标记的 FSHR 表达，但荧光信号弱于阳性对照组；OCT4 表达水平显著下调 (P<0.001)，GCs 特异性基因 *FSHR*、*AMH* 和 *CYP*19A1 基因表达水平均显著上调 (P 均 <0.001)，表明诱导分化后 HUMSCs 已失去干细胞特性，向 GCs 定向分化，并具备 GCs 的部分特性。**结论**　初步建立了 HUMSCs 向 GCs 分化的体外培养体系；HUMSCs 在体外可成功诱导分化为 GCs 样细胞。

【关键词】人脐带间充质干细胞；颗粒细胞；分化
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·实验研究·

Experimental study of mesenchymal stem cells derived from human umbilical cord on differatiation into functional granulosa-like cells

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【**Abstract**】 **Objective** To investigate whether human umbilical cord mesenchymal stem cells (HUMSCs) could be induced and differentiated into granuosa cells (GCs). **Methods** HUMSCs were pre-treated with bone morphogenetic protein 4 (BMP4), then co-cultured with human follicular fluid and cumulus oophorus GCs. The human GCs were severed as positive control. The morphology and expression of follicle-stimulating hormone receptor (FSHR), anti-Müllerian hormone (AMH) and cytochrome P450 19A1 (CYP19A1) as well as OCT4 of cultured cells were observed and detected through immunofluorescence and fluorescent real time-PCR (RT-PCR). **Results** After co-culture for 12 d, the morphology of cultured HUMSCs was similar to those human GCs and FSHR positive, although intension of the fluorescence signal did not reach to that of human cumulus GCs (positive control), while HUMSCs before co-culture (negative control) showed no green fluorescence signal of FSHR. Moreover, the expression of pluripotency-related genes *OCT*4 in co-cultured cells down-regulated significantly (all $P<0.001$), and were close to that in human GCs (positive control). Meanwhile, the expression of GCs specific gene makers such as *FSHR*, *AMH* and *CYP*19A1 in co-cultured cells up-regulated significantly ($P<0.001$). The results suggested that HUMSCs had lost its stemness and differentiated into functional GCs after co-culture with human follicular fluid and cumulus oophorus GCs. **Conclusion** HUMSCs could be successfully induced and differentiated into functional granulosa-like cells under co-culture system of human follicular fluid and GCs.

【**Key words**】 Human umbilical cord mesenchymal stem cells; Granuosa cells; Differentiation

Fund program: Nanjing Military Region Medical Science and Technology Innovation Project (14ZX06)

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·个案报道·

单核苷酸多态性微阵列在染色体异常诊断上的应用——一个威廉氏症候群家系的遗传学研究

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【摘要】目的 探讨单核苷酸多态性微阵列 (single nucleotide polymorphisms array，SNP array) 在染色体异常诊断方面的价值。**方法** 应用 SNP array 和实时定量基因扩增荧光检测系统 (qPCR) 对一对智力低下的父子的全基因组 DNA 进行高分辨率分析。分析此家系两位患者临床表现型与染色体异常的相关性，并确定患儿染色体异常片段的来源。**结果** 患儿芯片核型为 arr[hg19]7q11.23(72722981-74138121)×1；患儿父亲芯片核型为 arr[hg19]7q11.23(72722981-74138121)×1。患儿从父亲那里继承了异常的 7 号染色体，该异常与患者临床表现密切相关。**结论** 7 号染色体发生的约 1.42 Mb 的缺失导致这对父子的临床表现为威廉氏症候群 (Williams-Beuren Syndrome，WBS)。通过高分辨率的 SNP array 技术明确了患儿异常片段的来源，并且提供了详细、准确的染色体信息，有助于明确临床症状与患者基因异常的相关性，同时评估了染色体异常的再发风险。

【关键词】威廉氏症候群；核苷酸多态性微阵列；染色体异常
DOI：10.3760/cma.j.issn.2096-2916.2019.08.007

·个案报道·

Application of single nucleotide polymorphisms array in the diagnosis of chromosome abnormality–cytogenetic analysis of a family with Williams-Beuren syndrome

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【Abstract】 Objective To explore the value of single nucleotide polymorphisms array (SNP array) in diagnosing chromosomal abnormalities. **Methods** SNP array and qPCR were used to analyze the whole genome DNA of a pair of mentally retarded father and son for high-resolution analysis. The correlation between the phenotypes and chromosomal abnormalities was analyzed, and the source of chromosomal abnormalities was determined in this child. **Results** The chip karyotypes of both the father and the son are arr[hg19] 7q11.23(72722981-74138121)×1. The child inherited chromosome 7 abnormality from his father, which was closely related to the clinical manifestations of the two patients. **Conclusion** The deletion of approximately 1.42 Mb from chromosome 7 resulted in the clinical presentation of Williams-Beuren syndrome. By means of high-resolution SNP array technology, the source of abnormal fragments of the child was identified and detailed, and accurate chromosomal information was provided, which was helpful to clarify the correlation between clinical symptoms and patients' genetic abnormalities, and at the same time to assess the risk of recurrence of chromosomal abnormalities.

【Key words】 Williams-Beuren syndrome; Single nucleotide polymorphisms array; Chromosomal abnormality

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·个案报道·

垂体大腺瘤伴催乳素轻度升高致第二性征不发育 1 例报道

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【摘要】目的 探讨青少年女性患垂体腺瘤的临床表现及内分泌变化。**方法** 对 1 例垂体大腺瘤的青少年女性病例的诊断及治疗过程进行分析报道。**结果** 垂体大腺瘤可以表现为少量的垂体催乳素升高，影响儿童和青少年女性的第二性征发育，导致乳房不发育和闭经。**结论** 垂体催乳素的轻度升高，应当高度重视，尤其是对儿童和青少年，应及时行垂体核磁共振检查，早期明确诊断。

【关键词】垂体大腺瘤；催乳素；青少年女性；第二性征
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·个案报道·

Analysis of one case with secondary sexual characters not development caused by the pituitary macroadenoma with the mild elevation of prolactin

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【**Abstract**】 **Objective** To discuss the clinical manifestations and endocrine changes of pituitary adenoma in teenage female. **Methods** The diagnosis and treatment of one adolescent female with pituitary adenoma were reported, and relevant data were analyzed retrospective. **Results** Macroadenoma with children and teenage females can show a small increase in pituitary prolactin, affect the development of secondary sexual characters and lead to lack of breast and amenorrhea. **Conclusion** We should pay more attention to the mild increasing of prolactin, and be cheaked with MRI in time, in order to diagnose the disease early, especially to adolescent females.

【**Key words**】 Pituitary macroadenoma; Prolactin; Adolescent female; Secondary sexual characters

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·综　述·

累积活产率——评估辅助生殖技术疗效新指标

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【摘要】 随着胚胎冷冻复苏技术的广泛应用，以累积活产率作为评价辅助生育技术有效性和安全性的新指标，其认可度和应用度近年来持续增加。使用累积活产率进行评估包括了新鲜胚胎移植以及后续冻融胚胎移植的整体治疗结局，反映了整个治疗过程获得活产的机会，使得评估更准确、更全面，对患者及临床医生的意义也更大。但是，目前关于累积活产率的定义和计算方法没有一个统一的标准，本文总结了不同累积活产率的计算方法并分析讨论了其临床意义和相关的影响因素。

【关键词】 累积活产率；生殖技术，辅助；评估指标
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·综　述·

Cumulative live birth rate: a new index for evaluating the efficacy of assisted reproductive technology

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【**Abstract**】As a new assessment for measuring the effectiveness and safety of assisted reproductive technology, the recognition and application of cumulative live birth rate (CLBR) have increased in recent years, especially after the widespread use of embryo cryopreservation technology. The evaluation of CLBR includes the outcomes of overall treatment in both fresh embryo transfer cycles and subsequent frozen-thawed embryo transfer cycles. It reflects the opportunity for live birth throughout the treatment process, which is more accurate, comprehensive and of greater significance both to patients and clinicians. However, at present, there is no unified standard for the calculation of CLBR. This article summarizes the different calculation methods of CLBR and discusses their clinical significance and related influencing factors.

【**Key words**】Cumulative live birth rate; Reproductive techniques, assisted; Evaluation index

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·综　述·

体外受精 - 胚胎移植术中宫腔积液的病因及治疗策略

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【摘要】 子宫内膜容受性是决定胚胎能否成功种植的关键之一，宫腔积液是子宫内膜容受性障碍的一项原因。宫腔积液作为一种妇产科疾病常见的伴随症状，病因众多。尽管在体外受精 - 胚胎移植 (IVF-ET) 中发生率较低，病因不明确，但其对胚胎种植可能产生不利影响。IVF-ET 中宫腔积液主要见于输卵管因素、多囊卵巢综合征、宫腔因素等。而且宫腔积液的出现时机及积液量对于妊娠结局也有重大影响，如输卵管积水引起的宫腔积液建议行手术处理；移植前出现的大量宫腔积液建议阴道超声下抽吸术或促子宫收缩药物；移植日出现的大量积液建议推迟移植。因此，我们在临床中处理宫腔积液的需遵循个体化策略。本文旨在对 IVF-ET 周期中宫腔积液的研究进展做一综述，特别是在病因及治疗方面。

【关键词】 受精，体外；胚胎移植；宫腔积液；病因；治疗策略
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·综　述·

Etiology and treatment protocol of endometrial cavity fluid during *in vitro* fertilization and embryo transfer

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【Abstract】The endometrial receptivity is one of the keys to embryo implantation, the endometrial cavity fluid (ECF) is a cause of endometrial receptivity disorder. The ECF, as a common associated symptoms of obstetrical and gynecological diseases, has numerous causes. Although the incidence of ECF in the *in vitro* fertilization and embryo transfer (IVF-ET) is less and its etiology is controversy, its presence is detrimental to embryo implantation. The cause of ECF during in IVF-ET were mainly seen in tubal factor, polycystic ovary syndrome, uterine factor, and so on. The appearance time and accumulation amount of ECF also have a significant impact on pregnancy outcome, for example, surgical treatment was recommended for ECF caused by hydrosalpinx; transvaginal sonographic ECF aspiration or uterine contraction drug was recommended for the treatment of patients with a large amount of ECF before embryo transfer; the large amount of ECF on the day of embryo transfer was suggested postponing embryo transfer. Thus, the treatment of ECF should be individual in clinic. This paper aims to review the research development of ECF during IVF-ET cycle, especially in the aspects of etiology and treatment.

【Key words】 Fertilization *in vitro*; Embryo transfer; Endometrial cavity fluid; Etiology; Treatment protocol

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·综　述·

白藜芦醇对卵巢功能及卵母细胞和胚胎体外发育影响的研究进展

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【摘要】 白藜芦醇是一种抗氧化剂，能产生许多有益的生物学效应。本文总结白藜芦醇对卵巢功能和卵母细胞及胚胎体外发育的影响，为白藜芦醇应用于改善卵巢生殖功能、提高卵母细胞和胚胎的体外发育潜能提供参考。

【关键词】 白藜芦醇；卵巢储备；卵母细胞；胚胎；体外发育
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·综　述·

Progress of the effects of resveratrol on ovarian function and *in vitro* development of oocytes and embryos

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【Abstract】 Resveratrol, an antioxidant, has many beneficial biological effects. In the present review, we summarized the current progress of the effects of resveratrol on ovarian function and *in vitro* development of oocytes and embryos. It will enhance the evidence of the potential application of resveratrol to improve the ovarian function and *in vitro* development of oocytes and embryos.

【Key words】 Resveratrol; Ovarian reserve; Oocytes; Embryos; *In vitro* development

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·综　述·

干细胞因子在女性生殖发育及相关生殖疾病中的研究进展

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【摘要】 干细胞因子 (stem cell factor，SCF) 又称肥大细胞生长因子或酪氨酸激酶受体 (c-Kit) 配体，属于白细胞介素超家族。SCF 是一种可与 c-Kit 结合的酸性糖蛋白类上皮细胞生长因子。SCF 在女性卵巢中主要由颗粒细胞合成及分泌，其主要作用是通过与 c-Kit 结合，在调节颗粒细胞、卵泡膜细胞、间质细胞、子宫内膜上皮细胞、胚胎滋养细胞增殖分化以及卵泡募集、生长发育，卵子成熟等过程中发挥重要作用。本文主要阐述 SCF 在女性生殖发育中的作用，及其与相关生殖疾病的联系，以期更好地指导相关临床工作。

【关键词】 干细胞因子；子宫内膜异位症；多囊卵巢综合征

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·综　述·

Research progress of stem cell factor in female reproductive development and related diseases

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【Abstract】Stem cell factor (SCF), also called as mast cell growth factor or tyrosine kinase receptor (c-Kit) ligand, is an acidic glycoprotein epithelial growth factor in interleukin superfamily that can bind to c-Kit. It is mainly synthesized and secreted by granulosa cells in female ovaries. SCF plays important roles in the regulation of the proliferation and differentiation of granulosa cells, follicular membrane cells, stromal cells and endometrial epithelial cells as well as follicular recruitment, growth, development and maturation by binding to c-Kit. Meanwhile, it also participated in some certain diseases in female reproductive system. In this paper, it describes the role of SCF in female reproductive development and its relationship with related reproductive diseases in order to guide the clinical work better.

【Key words】 Stem cell factor; Endometriosis; Polycystic ovary syndrome

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·综　述·

长链非编码 RNA 与雄性生殖

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【摘要】 长链非编码 RNA(long non-coding RNAs，lncRNAs) 是指一类长度大于 200 个核苷酸的非编码 RNA，具有特定的二级结构和时空表达特异性，在物种间的同源性普遍很低。随着测序技术和生物信息学技术的不断发展以及研究的不断深入，先前被认为是基因组“噪音”的 lncRNAs 被证实参与了 X 染色体失活、基因组印记以及胚胎发育等众多生物学过程，并且与一些疾病的发生、发展有着密切的联系。近年来，一些研究表明 lncRNAs 在雄性生殖方面也发挥着独特的作用。本文主要论述 lncRNAs 的起源、作用机制，并总结其参与调控的雄性生殖过程及在男性不育相关疾病中的作用。

【关键词】 长链非编码 RNA；雄性生殖；精子发生；男性不育
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·综　述·

Long non-coding RNA and male reproduction

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【Abstract】 Long non-coding RNAs (lncRNAs) are a group of non-protein-coding RNAs with a length of more than 200 nucleotides. They have a specific secondary structure and spatiotemporal specificity of expression, and most of lncRNAs have little homology among species. With the continuous development of sequencing and bioinformatics, lncRNAs, previously considered to be the "noise" of the genome, have been proved to be involved in many biological processes, such as the inactivation of X chromosome, the imprinting of genome, and the development of embryo, and they are also closely related to the occurrence and development of some diseases. In recent years, some studies have found that they also play unique roles in male reproduction. This paper mainly reviews the origin and mechanism of lncRNAs, and summarizes the male reproductive process involved in the regulation of lncRNAs and its role in male infertility related diseases.

【Key words】 Long non-coding RNAs; Male reproduction; Spermatogenesis; Male infertility

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·综　述·

辅助生殖技术子代神经发育障碍发病风险的研究进展

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【摘要】 近 30 年来，辅助生殖技术 (assisted reproductive technology，ART) 得到了迅猛发展，随之而来的子代安全性问题一直引起广泛关注。其中，神经发育障碍是儿童期常见的神经精神障碍性疾病。当前，ART 是否会影响子代神经发育尚存在较大争议。本文对既往观察性研究及系统评价进行综述，以期分类评价不同 ART 技术与子代神经发育障碍是否存在关联，并进一步对 ART 与神经发育障碍不同分支 (智力发育障碍、注意缺陷多动障碍及自闭症谱系障碍) 之间是否存在关联展开初探，为评估 ART 是否对子代长期的神经精神发育造成影响奠定基础。

【关键词】 生殖技术，辅助；神经发育障碍；智力发育障碍；注意力缺陷多动障碍；自闭症谱系障碍
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·综　述·

Advances in research on the risk of neurodevelopmental disorders in the offspring of assisted reproductive technology

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【Abstract】During the past 30 years, assisted reproductive technology (ART) has been developing rapidly, and the safety of offspring has been paid more and more attention. Neurodevelopmental disorder is a common neuropsychiatric disorder happened in childhood. At present, whether ART affect the neural development of offspring is still controversial. In this paper, previous observational studies and systematic reviews have been summarized in order to evaluate the relationship between different kinds of ART techniques and neurodevelopmental disorders in offspring. Further, the relationship between ART and different branches of neurodevelopmental disorders (including mental development disorder, attention deficit hyperactivity disorder and autism spectrum disorder) was explored in order to provide a basis for assessing whether ART has bad influence on long-term neuropsychiatric development in offspring.

【Key words】 Reproductive techniques, assisted; Neurodevelopmental disorders; Mental retardation; Attention deficit hyperactivity disorder; Autistic spectrum disorder

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·综　述·

不孕女性的情绪障碍及相关因素分析

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【摘要】 在全球范围内，不孕女性的人数呈上升趋势，且不孕人群相比正常人群更容易出现心理健康状况的改变，其中焦虑和抑郁是最常见的情绪障碍。中国由于特殊的社会和文化背景，不孕女性面临的压力更大，焦虑和抑郁的发生率也更高。本文将论述不孕女性情绪改变带来的影响及其相关因素。

【关键词】 不孕；情绪障碍；焦虑；抑郁；相关因素
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·综　述·

Emotional disorders and related factors in infertile women

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【**Abstract**】Globally, the number of infertile women is on the rise, and infertile people are more likely to have changes in mental health than normal people. Among them, anxiety and depression are the most common emotional disorders. Due to the special social and cultural background, infertile women in China face greater pressure and the incidence of anxiety and depression is higher. This article will discuss the effects of emotional changes in infertile women and their related factors.

【**Key words**】 Infertility; Emotional disorder; Anxiety; Depression; Related factors

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·综　述·

美国辅助生殖技术监控系统对我国辅助生殖技术管理信息系统建设的启示

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【摘要】 截至 2018 年 12 月 31 日，我国已有 497 家能够开展辅助生殖技术 (assisted reproductive techonology，ART) 和 26 家设置人类精子库的医疗机构，ART 相关临床和实验室技术飞速发展。为了引导中国 ART 沿着健康、实用的轨道发展，对 ART 中心的监管和相关操作的质量控制极其重要且势在必行。本文通过对我国 ART 管理现状分析和美国疾病预防控制中心 (the Centers for Disease Control and Prevention，CDC) 定期发布的国家 ART 监控系统 (National ART surveillance system，NASS) 报告的分析和启示，提出以“规划 - 立法 - 审批 - 监管 - 防控”为指导思想，借鉴美国 ART 信息系统建设的经验，建设中国的 ART 管理信息系统，防控不良事件发生，把生殖健康和生殖医学纳入慢性疾病管理的有机整体，以加强 ART 管理。

【关键词】 生殖技术，辅助；信息管理系统；美国辅助生殖技术监控系统

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·综　述·

Indication to the construction of assisted reproductive technology management information system of China from the National Assisted Reproductive Techonology Surveillance System of USA

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【**Abstract**】By December 31, 2018, there were 497 medical institutions that had assisted reproductive techonology (ART) and 23 institutions that set human sperm banks in China. It can be seen from this that ART-related clinical and laboratory technologies are developing rapidly. To lead in the development of Chinese ART along a healthy and practical track, the supervision over the ART Center and the quality control of the related operations are extremely important and imperative. This paper analyzes Chinese ART management status and the reports of the national ART surveillance system (NASS) published by the Centers for Disease Control and Prevention (CDC). Here we put forward a guiding ideology: "Projection, Legislation, Approval, Regulation, Control". Drawing on the experiences of the construction from American ART information system, we hope to prevent the occurrence of adverse events through building a Chinese ART management information system. And we expect to strengthen ART regulation by integrating reproductive health and reproductive medicine into chronic disease management.

【**Key words**】 Reproductive techniques, assisted; Information management system; National assisted reproductive technology surveillance system

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