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促性腺激素释放激素泵治疗成年男性特发性低促性腺激素性腺功能减退症的临床疗效与安全性观察

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【摘要】目的 探讨促性腺激素释放激素(GnRH)泵治疗成年男性特发性低促性腺激素性腺功能减退症(IHH)患者的疗效与安全性。**方法** 对确诊为 IHH 的 27 例成年男性患者进行 GnRH 泵脉冲式皮下输注治疗, 比较观察患者治疗前后性激素、第二性征、外生殖器、性功能、生育能力的变化情况和不良反应情况。**结果** 平均随访时间 13.3(2~38)个月, 治疗 1 年以上 18 例, 6 个月~1 年 2 例, 3~6 个月 3 例, 3 个月以下 4 例。患者治疗前平均睾丸体积(3.38 ± 2.03) mL, 阴茎静息长度(3.63 ± 1.10) cm, 阴茎牵长(5.73 ± 1.53) cm, 阴茎周径(5.13 ± 1.38) cm, 黄体生成素(LH)(0.67 ± 0.63) IU/L, 卵泡刺激素(FSH)(1.27 ± 0.88) IU/L, 睾酮(T)(0.50 ± 0.53) ng/mL; 用泵治疗 6 个月患者睾丸体积(6.48 ± 2.14) mL, 阴茎静息长度(4.85 ± 0.83) cm, 阴茎牵长(7.90 ± 1.27) cm, 阴茎周径(7.27 ± 1.33) cm, LH(6.72 ± 5.35) IU/L, FSH(5.48 ± 3.23) IU/L, T(2.36 ± 1.37) ng/mL, 均较治疗前显著提高($P < 0.01$)。用泵治疗 1 年以上患者睾丸体积(8.78 ± 2.24) mL, 阴茎静息长度(5.78 ± 0.75) cm, 阴茎牵长(9.31 ± 1.31) cm, 阴茎周径(7.94 ± 0.84) cm, LH(6.56 ± 3.89) IU/L, FSH(5.04 ± 2.49) IU/L, T(3.57 ± 1.08) ng/mL, 均较治疗前显著提高($P < 0.01$), 外生殖器、T 较 6 个月前有显著提高($P < 0.05$)。治疗前 25 例患者无手淫, 无遗精, 仅有 2 例患者有遗精(精液中无精子), 治疗 6 个月以上 20 例患者均相继出现遗精并伴经常性勃起, 其中 18 例患者取得精液, 13 例出现精子, 2 例已婚患者配偶自然妊娠。所有患者治疗期间未见明显不良反应, 患者依从性良好。**结论** GnRH 泵治疗成年男性 IHH 疗效显著且安全性好, 值得临床推广应用。

【关键词】 特发性低促性腺激素性腺功能减退症(IHH); 脉冲泵; 促性腺激素释放激素(GnRH)

· 临床研究 ·

Study on the efficacy and safety of pulsatile GnRH pump for the treatment of adult male idiopathic hypogonadotropic hypogonadism

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【Abstract】 Objective To explore the therapeutic effect and safety of pulsatile GnRH (gonadorelin) pump on male patients with idiopathic hypogonadotropic hypogonadism (IHH). **Methods** Pulsatile GnRH pump was used for the treatment of 27 cases of male IHH patients. The sex hormones, secondary sexual characteristics, external genitalia, changes of fertility and sexual function were observed before and after treatment, and adverse event during treatment were also observed. **Results** The mean follow-up time was 13.3 (2–38) months, 18 patients were followed up with the treatment of subcutaneous pulsive GnRH infusion for over 1 year, 2 cases were followed up for 6 months, 3 cases were followed up for 3–6 months and 4 cases were followed up under 3 months. Before treatment, the average testicular volume of IHH patients was (3.38 ± 2.03) mL, the resting length of penis was (3.63 ± 1.10) cm, stretch length of penis was (5.73 ± 1.53) cm, the circumference of penis was (5.13 ± 1.38) cm, luteinizing hormone (LH) was (0.67 ± 0.63) IU/L, follicle-stimulating hormone (FSH) was (1.27 ± 0.88) IU/L, testosterone (T) was (0.50 ± 0.53) ng/mL. After half a year consistent treatment, the average testicular volume of 20 cases of IHH patients was (6.48 ± 2.14) mL, the resting length of penis was (4.85 ± 0.83) cm, stretch length of penis was (7.90 ± 1.27) cm, the circumference of penis was (7.27 ± 1.33) cm, LH was (6.72 ± 5.35) IU/L, FSH was (5.48 ± 3.23) IU/L, T was (2.36 ± 1.37) ng/mL, which were significantly increased than those before treatment ($P < 0.01$). After 1 year consistent treatment, the average testicular volume of 18 cases of IHH patients was (8.78 ± 2.24) mL, the resting length of penis was (5.78 ± 0.75) cm, stretch length of penis was (9.31 ± 1.31) cm, the circumference of penis was (7.94 ± 0.84) cm, LH was (6.56 ± 3.89) IU/L, FSH was (5.04 ± 2.49) IU/L, T was (3.57 ± 1.08) ng/mL, which were significantly increased than those before treatment ($P < 0.01$). Externalia and T were significantly improved compared with 6 months ago ($P < 0.05$). All the 20 patients who had over 6-month treatment present ejaculations. Thirteen of the 18 patients who had over 6-month treatment present sperms in their ejaculations, 2 married patients who accepted over 1 year treatment made their wife be pregnant. No obvious adverse events were found and patients showed good adherence during treatment. **Conclusion** The GnRH pump is effective and safe in treating male IHH and worthy of clinical application.

【Key words】 Idiopathic hypogonadotropic hypogonadism (IHH); Pulsatile pump; Gonadotropin-releasing hormone (GnRH)

精子线粒体膜电位与男性精液参数和体质量指数的相关性研究

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【摘要】目的 探讨精子线粒体膜电位(MMP)与精子常规参数及体质量指数(BMI)的相关性。**方法** 在本院辅助生殖科行精液分析的男性患者,禁欲 3~7 d 后,以手淫方式获取精液样本。通过计算机辅助精液分析仪检测精液常规,改良巴氏染色检查精子形态,JC-1 染色后经流式细胞仪评估 MMP。**结果** 与对照组(56.68% ± 11.13%)相比,弱精子组 MMP(41.24% ± 9.71%)显著降低。MMP 与 BMI 呈显著负相关($r=-0.25$, $P<0.01$),与精子总活力($r=0.63$, $P<0.01$)、前向运动力($r=0.64$, $P<0.01$)及正常精子形态率($r=0.37$, $P<0.01$)呈显著正相关,而与年龄、精液量、精子浓度和精子数量其余参数的相关性均无统计学意义。**结论** 精液中精子 MMP 是评估精子功能的重要指标,对临床综合分析男性不育症因素具有一定的参考意义。

【关键词】 线粒体膜电位(MMP); 精液常规; JC-1; 体质量指数(BMI)

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· 临床研究 ·

Correlation between mitochondrial membrane potential of sperm and semen parameters and male obesity Yang Ying, Fan Yong, Kuang Yanping, Lyu Qifeng

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【Abstract】 Objective To investigate the relationship among sperm mitochondrial membrane potential (MMP), semen parameters and body mass index (BMI). **Methods** Semen samples were obtained by masturbation after 3-7 d of sexual abstinence from all men in semen collect room of Shanghai Ninth People's Hospital. Conventional semen analyses were performed by computer-assisted sperm analysis (CASA), and sperm morphology was analyzed by modified Papanicolaou staining. Spermatozoa were stained by JC-1 to evaluate the MMP by flow cytometry. **Results** Sperm MMP of asthenozoospermic group ($41.24\% \pm 9.71\%$) was significantly lower than that in the control ($56.68\% \pm 11.13\%$). MMP was negatively correlated with BMI ($r = -0.25, P < 0.01$), but had instead a positive correlation with sperm total motility ($r = 0.63, P < 0.01$), progressive motility ($r = 0.64, P < 0.01$) and normal sperm morphology ($r = 0.37, P < 0.01$), respectively. And there was no statistically different correlation among MMP, age, volume of semen, sperm concentration, and sperm count. **Conclusion** Sperm MMP was an important index to evaluate the function of sperm, which has a certain reference value for clinical comprehensive analysis of male infertility.

【Key words】 Mitochondrial membrane potential (MMP); Conventional semen analyses; JC-1; body mass index (BMI)

Fund program: Youth's Project of Shanghai Municipal Commission of Health and Family Planning (20164Y0137); National Natural Science Foundation of China (81571486)

· 临床研究 ·

双侧斜疝术后输精管道损伤相关梗阻性无精子症的手术策略分析

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【摘要】目的 探讨双侧斜疝术后输精管道损伤相关梗阻性无精子症的手术策略。**方法** 回顾性分析 59 例有双侧斜疝手术史的梗阻性无精子症患者的临床资料。**结果** 根据术中探查情况行显微输精管吻合术、腹腔镜辅助的显微输精管吻合术、显微输精管附睾吻合术、交叉输精管吻合术。术中探查证实输精管损伤, 伴或不伴附睾梗阻, 14 例无法行吻合手术, 行取精手术; 45 例行显微重建手术, 其中输精管吻合术 30 例, 腹腔镜辅助的输精管吻合术 12 例, 交叉输精管吻合术 2 例, 右侧输精管附睾吻合术加左侧输精管吻合术 1 例。80.0%(36/45)的患者术后精液检查检测到精子, 31.1%(14/45)的患者术后自然妊娠。**结论** 双侧斜疝术后输精管损伤相关梗阻性无精子症, 损伤情况多样化, 手术是有效的治疗方法, 可根据个体情况选择合适的治疗的方式。

【关键词】 精子; 梗阻性无精子症; 显微镜输精管吻合术; 双侧斜疝术后

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· 临床研究 ·

The strategy of surgical treatment of obstructive azoospermia combined with injury to bilateral vas deferens after bilateral inguinal hernia repair

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【Abstract】 Objective To investigate the strategy of operation treatment to obstructive azoospermia after bilateral inguinal hernia repair. **Methods** We retrospectively analyzed 59 inpatient cases of obstructive azoospermia caused by iatrogenic injury to bilateral vas deferens after bilateral inguinal hernia repair. **Results** Intraoperative exploration of the bilateral inguinal region was performed according to the condition of vas deferens damage and whether with epididymis obstruction. The operations include vasovasostomy (VV), vastoepidystomy (VE), transseptal crossover VV, and VV following laparoscopic exploration of the abdominal cavity. Among 59 patients, 14 patients were performed testis sperm retrieval, other 45 patients had received microscopic revascularization. Of 45 patients, 30 patients were performed VV, 12 patients were performed VV following combined laparoscopic exploration of the abdominal cavity, 2 patients were performed transseptal crossover VV, 1 patient was performed left side VV and the right side VE. The patency rate was 80.0% (36/45), the natural pregnant rate was 31.1% (14/45). **Conclusion** For the obstructive azoospermia after bilateralinguinal hernia repair, the injury site of the vas deferens is multiform, and microsurgery is the first choice. It should choose proper type of microsurgery according to the concrete disease states.

【Key words】 Sperm; Obstructive azoospermia; Vasovasostomy; Bilateral inguinal hernia repair

Fund program: The Frontier Technology Project of Shanghai (SHDC12015122); Shanghai Municipal ShenKang Appropriate Technology (SHDC12014236)

· 临床研究 ·

先天性输精管缺如患者的临床与遗传特点: 附 41 例报道

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【摘要】目的 探讨先天性输精管缺如(CAVD)者的临床特点, 分析囊性纤维跨膜转运调节因子(CFTR)国内外已知高频突变位点 5T 剪接变体(IVS8-5T)和 F508 位点遗传突变特征, 旨在建立 CAVD 的诊治策略。**方法** 收集 41 例 CAVD 病例临床资料, 总结其分型、诊断和治疗特点, 从 21 例患者血样中提取基因组 DNA, 利用聚合酶链反应(PCR)扩增 5T 和 F508 位点片段, 并直接测序。**结果** 41 例患者中 20 例双侧缺如患者, 14 例节段性缺如, 7 例单侧缺如。40 例患者通过外科取精方式获取精子, 1 例取精失败患者睾丸组织病理为生精阻滞, 总体取精成功率约 97.6%(40/41); 4 例单侧缺如患者要求行对侧输精管-附睾吻合术或交叉吻合术, 术后随访精液 1~6 个月无精子; 12 例取精后行卵胞质内单精子注射(ICSI), 7 例成功生育, 2 例正常妊娠中(4~8 个月)。21 例测序显示 9 例存在 5T 位点突变(42.9%), 未见 F508 位点突变。**结论** CAVD 需综合查体、检验和超声等影像资料诊断; 取精结合 ICSI 的辅助生殖技术(ART)是 CAVD 有效的治疗手段; 汉族 CAVD 患者近半数存在 5T 剪接变体突变, 未见白人高加索人存在的 Δ F508del 突变。

【关键词】 先天性输精管缺如(CAVD); 输精管附睾吻合术(VE); 辅助生殖技术(ART); 囊性纤维化转运调节因子(CFTR)

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· 临床研究 ·

Clinical and genetic features of congenital absence of the vas deferens: 41 cases report Li Xiangping,

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【Abstract】Objective To investigate the diagnostic and therapeutic strategies of congenital absence of the vas deferens (CAVD) and the cystic fibrosis transmembrane conductance regulator (CFTR) mutations in the Chinese Han patients. **Methods** Forty-one cases of CAVD were recruited and analyzed. Genomic DNA from 21 patients' blood samples was extracted. 5T and F508 alleles polymorphism were detected by polymerase chain reaction (PCR), and the PCR products were sequenced. **Results** Twenty cases of CAVD were congenital bilateral absence of the vas deferens (CBAVD), while 14 were congenital bilateral partial aplasia of the vas deferens (CPAVD) and 7 were congenital bilateral partial aplasia of the vas deferens (CUAVD). Forty patients obtained sperm by epididymal fluid, testicular biopsy or M-TESE, while 1 failed in sperm extraction was diagnosed as spermatogenic maturation arrest by testicular biopsy. Four CUAVD patients who had strong demand of natural pregnancy underwent microvasoepididymostomy (VE) or transseptal crossover VE treatments, all of which found no sperm after 1-6 months follow-up. Twelve cases were treated with ICSI, 7 of which fathered their children, and 2 wives of which were pregnant. About 42.9% (9/21) patients were detected 5T allele in the polythymidine tract of intron 8, while delta F508del mutation was not detected in any patients. **Conclusion** The combination of clinical features, laboratory tests, ultrasound and other imaging examinations was crucial to diagnose CAVD. Sperm retrieval combined with ICSI was an efficient approach for CAVD. 5T allele mutation was observed in almost half of Chinese Han patients with CAVD. Delta F508del mutation which was common in Caucasian patients was not found.

【Key words】 Congenital absence of the vas deferens (CAVD); Vasoepididymostomy (VE); Assisted reproductive technology (ART); Cystic fibrosis transmembrane conductance regulator (CFTR)

Fund programme: Shanghai Newly Emerging Technology Joint Research Program (SHDC12015122); National Hi-Tech Research and Development Program of China (2015AA020404); National Natural Science Foundation of China (81671512)

超低温冷冻对人精子糖被的影响

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【摘要】目的 研究超低温冷冻对人精子糖被的损伤。方法 利用凝集素芯片比较精子冷冻前、后的凝集素结合谱。结果 通过比较冷冻保护剂和冷冻方法对精子复苏率的影响, 确定了 CryoSperm™ 以及一步熏蒸法为最佳精子冷冻试剂和方法; 通过凝集素芯片比较精子冷冻前、后的凝集素结合谱观察到在 91 种凝集素中, 有 33 种发生了显著变化, 其中, 冷冻后显著下调的有 9 种, 显著上调的有 24 种, 并且显著下调的 MAA 及显著上调的 PSA、ABA 和 AIA 经流式验证, 结果与芯片一致。结论 精子糖被经过冷冻之后发生了显著变化, 对精子起保护作用的唾液酸大量丢失, 同时也暴露糖链内部的糖基, 因此精子糖被的冷冻损伤可能是由于低温冷冻引起精子生育力低下的原因之一。

【关键词】 精子; 糖被; 冷冻损伤; 凝集素芯片

基金项目: 国家青年科学基金项目(81401252); 默克雪兰诺中国生殖医学研究基金

· 实验研究 ·

Effects of cryopreservation on human sperm glycocalyx Wu Yancheng, Xin Aijie, Lu Hui, Diao Hua,

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【Abstract】Objective To study the effects of cryopreservation on human sperm glycocalyx. **Methods** The lectin binding profilings of sperm after frozen-thawed were compared by lectin microarray. **Results** CryoSperm™ and direct fumigation were confirmed to be the optimized cryoprotectant and method by comparing the sperm recovery rate. In 91 lectins, 33 lectins were significantly changed after sperm cryopreservation. Among them, 9 lectins were greatly decreased and 24 lectins were mainly increased in frozen-thawed sperm. The binding signals of MAA, PSA, ABA and AIA were verified by FACS, and the results were consistent with that of lectin microarray. **Conclusion** Sperm glycocalyx occurred significant changes after cryopreservation. The sialic acid, playing an important role on protecting sperm, was seriously lost, which made the inner carbohydrates exposed. So the glycocalyx impairment might be one reason of low sperm fertility due to the cryopreservation.

【Key words】 Sperm; Glycocalyx; Cryopreservation damage; Lectin microarray

Fund program: National Natural Science Foundation of China (81401252); MerckSerono China Research Fund for Fertility Experts

· 实验研究 ·

钾离子通道 Slo 及其调节亚基 *LRRC* mRNA 在不同活力男性精子中的水平差异

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【摘要】目的 探讨电压调控的钾离子(K^+)通道 Slo1、Slo3 与其 γ 调节亚基 LRRC26、LRRC52 在不同活力男性精子中的 mRNA 水平。**方法** 收集精液参数正常者与特发性弱精子症患者的精子提取物, 采用实时荧光定量 PCR 技术测定电压调控的 K^+ 通道 Slo1、Slo3 和其 γ 调节亚基 LRRC26、LRRC52 mRNA 相对表达量, 并分析其与精子活力的相关性。**结果** Slo1、LRRC26、LRRC52 mRNA 在特发性弱精子症患者精子中的表达水平(0.47 ± 0.14 , 0.56 ± 0.08 , 0.55 ± 0.14)明显低于参数正常男性(0.99 ± 0.21 , 1.16 ± 0.24 , 1.00 ± 0.21), 差异均具有统计学意义($P < 0.05$); Slo3 的表达在参数正常男性精子中(1.03 ± 0.18)亦高于特发性弱精子症患者(0.71 ± 0.19), 但差异无统计学意义($P > 0.05$)。**结论** 电压调控的 K^+ 通道中 Slo1 与 γ 调节亚基 LRRC26、LRRC52 mRNA 的低表达与精子活力低下相关。

【关键词】 K^+ 通道; 精子活力; 男性不育; 弱精子症

基金项目: 湖北省卫生和计划生育委员会资助项目(WJ2015Q013)

· 实验研究 ·

The levels of potassium channel Slo and the γ regulating subunit *LRRC* mRNA in the human sperm with different motility Cheng Dan, Li Jie, Long Wen, Luo Jin, Zou Yujie, Liu Qian

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【Abstract】Objective To explore levels of potassium channel Slo (Slo1 and Slo3) and their γ regulating subunit (LRRC26 and LRRC52) in human sperm, and their relationship with sperm motility. **Methods** Collected semen samples from men with asthenospermia or normal semen parameters, relative mRNA expression of Slo1, Slo3, LRRC26 and LRRC52 were detected by real-time qPCR, and its association with sperm motility was analysed. **Results** Slo1, LRRC26 and LRRC52 mRNA were statistically lowly expressed in sperm of asthenospermia patients (0.47 ± 0.14 , 0.56 ± 0.08 , 0.55 ± 0.14), compared with that of normal male (0.99 ± 0.21 , 1.16 ± 0.24 , 1.00 ± 0.21), the expression of Slo3 in asthenospermia patients is also decreased, but the difference was not significant (0.71 ± 0.19 , 1.03 ± 0.18 ; $P > 0.05$). **Conclusion** The low expression of Electric volume regulated Slo1 and its γ regulating subunit (LRRC26 and LRRC52 mRNA) are related with poor sperm motility in human.

【Key words】 Potassium channel; Sperm motility; Male infertility; Asthenospermia

Fund program: Health and Family Planning Commission of Hubei province project (WJ2015Q013)

· 实验研究 ·

SEPT11 基因在小鼠睾丸精子发生过程中的表达特征

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【摘要】目的 初步探讨 *Septin11*(*SEPT11*)基因在精子发生中的作用。**方法** 通过实时定量 PCR、蛋白免疫印迹及免疫荧光等方法检测 *SEPT11* 在不同周龄野生型小鼠以及成年睾丸支持细胞激素受体 (*Ar*) 特异性敲除小鼠 (SCARKO) 和 *Ar* 全敲除 (ARKO) 小鼠睾丸中的表达特征。**结果** *SEPT11* 基因小鼠出生 2 周内高表达, 随后表达水平降低, 出生 6 周后出现并与未释放的成熟精子共定位且高表达。与野生型小鼠相比, *SEPTIN11* 在 SCARKO 小鼠和 ARKO 小鼠睾丸中表达降低 ($P < 0.01$), mRNA 水平显著升高 ($P < 0.01$); *SEPTIN11* 在成熟精子中定位于尾部。**结论** *SEPT11* 基因在小鼠出生时表达最高; *SEPTIN11* 在小鼠成熟精子中定位于尾部; *Ar* 的敲减提高了 *SEPT11* 的表达。

【关键词】 *Septin11*(*SEPT11*)基因; 精子发生; 睾丸; 小鼠

基金项目: 深圳市科技计划项目(JCYJ20130402113131202; JCYJ20140415162543017)

· 实验研究 ·

Expression characteristics of the *SEPT11* gene in the mouse testis during spermatogenesis Wu Yong,

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【Abstract】 Objective To investigate the expression characteristic of *SEPT11* in mouse testis and its role in spermatogenesis. **Methods** Real-time PCR, Western blotting and immunofluorescence were applied to study the expression characteristics of gene *SEPT11* in mouse testis at different postnatal week and from Sertoli cell-selected Ar knockout mice (SCARKO) and Ar knockout (ARKO) adult mice. **Results** The expression of *SEPT11* was highest during postnatal 2 weeks, and then fall down. *SEPTIN11* colocalized with mature sperm attached with Sertoli cells in the testis from mice at postnatal 6 weeks. The expression of *SEPTIN11* in SCARKO and ARKO mice testis were much lower compared with the wild type ($P<0.01$), the mRNA level was significantly higher ($P<0.01$). *SEPTIN11* localized to the tail of mature sperm collected from epididymis. **Conclusion** The new born mice had the highest expression level of *SEPT11*. *SEPTIN11* localized to the tail of mature sperm. Knock-down of Ar increased the expression of *SEPT11*.

【Key words】 *SEPT11*; Spermatogenesis; Testis; Mouse

Fund program: The Science and Technology Planning Project of Shenzhen Municipality (JCYJ20130402113131202; JCYJ20140415162543017)

男性继发不育患者临床特点分析

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【摘要】目的 调查二胎生育男性不育症患者的基本临床特点。**方法** 选取北京协和医院和北京市仁和医院男科门诊就诊的男性不育患者 410 例, 其中一胎不育患者(A 组)264 例, 二胎不育患者(B 组)146 例, 采用门诊问卷收集患者的一般信息和精液分析数据, 并采用勃起功能国际问卷 5(IIEF-5)调查患者的勃起功能状况。**结果** 在调查的 410 例男性不育患者中, A 组、B 组患者的年龄分别是(31.3 ± 5.4)岁和(39.5 ± 4.8)岁($P < 0.01$); 合并一种以上慢性疾病(糖尿病、高血压、前列腺疾病)的发生率分别是 14.8%(39/264)和 24.7%(36/146)($P < 0.05$); 每月性交次数分别为(9.7 ± 1.2)次和(6.5 ± 1.4)次($P < 0.01$); 勃起功能障碍(ED)的发生率分别为 50.8%(134/264)和 70.5%(103/146)($P < 0.01$), 其中 B 组不育者的重度 ED 发生率为 10.3%, 明显高于 A 组不育者的 1.1%($P < 0.01$); A 组的精子浓度[(39.7 ± 10.6) × 10⁶/mL]高于 B 组[(34.6 ± 8.5) × 10⁶/mL]($P < 0.01$), 但 A 组的精子总数[(114.3 ± 33.4) × 10⁶]少于 B 组[(150.4 ± 41.1) × 10⁶]($P < 0.01$); A 组的 a 级精子活力 12.6% ± 5.5% 高于 B 组的 8.5% ± 3.2% ($P < 0.01$), 两者在前向运动精子(a+b)及精子总活动(a+b+c)率方面没有统计学差异。**结论** 二胎生育男性不育患者具有年龄大、合并慢性疾病多、性交次数少、易发生 ED、精子质量尚可的特点, 临床诊疗工作要给予必要的关注和进行相应的调整。

【关键词】 二胎; 男性不育; 临床特点; 勃起功能障碍; 精液

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· 临床报道 ·

Research on clinical characteristics of secondary male infertile patients Wang Hai, Qi Yuxia,

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【Abstract】Objective To investigate the clinical characteristics of male infertile patients planning for the second baby. **Methods** Four hundred and ten male infertile outpatients attended andrological clinic of Peking Union Medical College Hospital and Beijing Renhe Hospital were studied. There were 264 patients planning first pregnancy (group A) and 146 patients planning second pregnancy (group B), respectively. A questionnaire was used for collecting the general information and sperm analysis data. Erectile dysfunction (ED) was measured by International Index of Erectile Function-5 (IIEF-5). **Results** Average age of the male infertility planning first and second pregnancy was (31.3 ± 5.4) years and (39.5 ± 4.8) years ($P < 0.01$). The incidence of concomitant diseases (diabetes, hypertension, prostatic diseases) was 14.8% (39/264) and 24.7% (36/146) ($P < 0.05$). Frequency of sexual intercourse per month was 9.7 ± 1.2 and 6.5 ± 1.4 ($P < 0.01$). The incidence of ED was 50.8% (134/264) and 70.5% (103/146) ($P < 0.01$). Among male patients planning second pregnancy, the incidence of severe ED was 10.3%, significantly higher than that in group B (1.1%) ($P < 0.01$). The sperm concentration in group A was $(39.7 \pm 10.6) \times 10^6/\text{mL}$ and significantly higher than that in group B [$(34.6 \pm 8.5) \times 10^6/\text{mL}$], while the total sperm number in group A [$(114.3 \pm 33.4) \times 10^6$] was lower than that in group B [$(150.4 \pm 41.1) \times 10^6$] ($P < 0.01$). Fast forward movement sperm was $(12.6\% \pm 5.5\%)$ in group A and $(8.5\% \pm 3.2\%)$ in group B, respectively ($P < 0.01$). In terms of total sperm motility and grade a and b sperm, there was no statistical difference between two groups. **Conclusion** There are some clinical characteristics among male infertile patients planning the second pregnancy, such as older age, higher incidence of concomitant diseases and ED, lower intercourse frequency and moderate sperm quality. We should pay more attention to these patients and properly adjust clinical decision.

【Key words】 The second baby; Male infertility; Clinical feature; Erectile dysfunction; Semen

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睾丸固定钳固定法在经皮附睾穿刺取精术中的应用价值

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【摘要】目的 评价睾丸固定钳固定法在经皮附睾穿刺取精术(PESA)中的应用价值。**方法** 选取初步诊断为梗阻性无精子症患者 532 例, 将其随机分为三指固定法组(249 例)和睾丸固定钳组(283 例), 比较两组 PESA 穿刺精子获取率差异。另根据经阴囊超声附睾头有无扩张以及扩张特征将病例分为附睾头细网状扩张亚组、附睾头管状/多囊管状扩张亚组和附睾头无扩张亚组, 比较两种 PESA 方法对不同附睾头病变穿刺精子获取率的差异。**结果** 三指固定法组穿刺精子获取率为 60.64%(151/249), 睾丸固定钳组为 74.56%(211/283), 显著高于三指固定法组($P<0.05$)。睾丸固定钳组穿刺精子获取率的优势主要由细网状扩张组贡献, 该组三指固定法穿刺精子获取率为 72.67%(125/172), 而睾丸固定钳法为 89.90%(178/198), 显著高于三指固定法组($P<0.05$)。管状/多囊管状扩张亚组以及附睾头无扩张亚组 2 种 PESA 法穿刺精子获取率都偏低, 差异无统计学意义($P>0.05$)。**结论** 使用睾丸固定钳固定法对附睾头细网状扩张的患者进行 PESA 穿刺能提高精子获取率。

【关键词】 睾丸固定; 睾丸固定钳; 经皮附睾穿刺取精术(PESA); 无精子症; 附睾扩张

· 临床报道 ·

Application value of testis fixing forceps in percutaneous epididymal sperm aspiration

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【Abstract】 Objective To evaluate the application value of testis fixing forceps in percutaneous epididymal sperm aspiration (PESA). **Methods** Totally 532 cases with the initial diagnosis of obstructive azoospermia (OA) were selected and randomly divided into three fingers fixed method PESA group (249 cases) and testicular fixation forceps PESA group (283 cases), the difference of the sperm retrieval rate was calculated between the two groups. In addition, according to the different epididymis head ultrasonic manifestations through scrotal ultrasonography, the cases were divided into the epididymis head of fine mesh expansion group, the epididymis head tubular / polycystic tubular expansion group and the epididymis head without expansion group, the difference of the sperm retrieval rate in different epididymis lesions groups by the two PESA methods was compared. **Results** The sperm retrieval rate in the testicular fixation forceps PESA group [74.56% (211/283)] was significantly higher than that in the three fingers fixation PESA group [60.64% (151/249)] ($P<0.05$). The advantages of the successful sperm retrieval rate in the PESA group with testicular fixation forceps were mainly contributed by the fine mesh expansion group, the sperm retrieval rate in the three fingers fixed PESA group [72.67% (125/172)] was significantly lower than that in the testicular fixation forceps PESA group [89.90% (178/198)] ($P<0.05$). The sperm retrieval rate of the two PESA methods in the tubular /polycystic tubular expansion group and the non dilated group was low, the difference was not statistically significant ($P>0.05$). **Conclusion** The use of testis fixing forceps for PESA can improve sperm retrieval rate.

【Key words】 Testis fixation method; Testis fixing forceps; Percutaneous epididymal sperm aspiration (PESA); Azoospermia; Expansion of epididymis

非典型 *CFTR* 基因突变的先天性双侧输精管缺如致不育： 2 例个案报道与文献复习

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【摘要】目的 探讨拟行辅助生殖技术(ART)的非典型囊性纤维化跨膜传导调节因子(*CFTR*)基因突变的先天性双侧输精管缺如(CBAVD)患者的诊断与治疗。**方法** 回顾分析 2 例非典型 *CFTR* 基因突变的双侧输精管缺如致不育病例行体外受精(IVF)时的诊治经过并进行文献复习。**结果** 2 例患者在男科查体时因双侧输精管未触及而进一步对 2 对夫妇行 *CFTR* 基因检测, 2 例患者在 *CFTR* 编码区各发现 1 个杂合型突变, 分别为 C.263T>G、C.869+5G>A, 女方均未检测到突变。经遗传咨询并充分告知夫妇双方相应风险后对该夫妇采取经皮附睾精子抽吸(percutaneous epididymal sperm aspiration, PESA)+ 卵胞质内单精子注射(intracytoplasmic sperm injection, ICSI)助孕。**结论** 因囊性纤维化(cysticfibrosis, CF)是一种可致死性遗传病, 故夫妇双方都应行 *CFTR* 基因检测。在进行遗传咨询时应充分考虑 *CFTR* 突变类型多样且临床表型多变等特点以协助患者做出利于子代安全的选择。

【关键词】 非典型 *CFTR* 基因突变; 双侧输精管缺如(CBAVD); 遗传咨询

· 个案报道 ·

Atypical *CFTR* gene mutation associated with congenital bilateral absence of the vas deferens cause infertility: two cases report and literature review Fang Qi, Liu Li, Cao Xiaomin, Di Jianyong,

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【Abstract】 Objective To discuss diagnosis and treatment of the patients undergoing assisted reproductive technology (ART) who had atypical cystic fibrosis transmembrane conductance regulator (*CFTR*) gene mutation associated with congenital bilateral absence of the vas deferens (CBAVD). **Methods** A retrospective clinical study and literature review were performed to analyze 2 cases with atypical *CFTR* gene mutation associated with CBAVD. **Results** After congenital bilateral absence of the vas deferens was diagnosed with impalpable scrotal vas by physical examination, *CFTR* mutation was detected on the 2 couple patients. In *CFTR* coding region, 2 patients had each heterogeneous mutation: C.263T>G, C.869+5G>A, no mutation was detected in their wives. After genetic counseling and full disclosure of all risk to these couples, we offered percutaneous epididymal sperm aspiration (PESA)+intra-cytoplasmic sperm injection (ICSI) for them. **Conclusion** Accounting for that cystic fibrosis (CF) disease is lethal genetic disease, both spouses should receive *CFTR* mutation screening. The variability of *CFTR* mutation type and clinical significance should be taken into full consideration when we do genetic counseling to help couples make choice which be beneficial to the security of their offspring.

【Key words】 Atypical cystic fibrosis transmembrane conductance regulator (*CFTR*) gene mutation; Congenital bilateral absence of the vas deferens (CBAVD); Genetic counseling

真空负压勃起装置联合 PDE5 抑制剂治疗勃起功能障碍患者的疗效和安全性 Meta 分析

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【摘要】目的 观察真空负压勃起装置(VED)联合 PDE5 抑制剂治疗男性勃起功能障碍(ED)的疗效。**方法** 检索 Cochrane Library、Medline、中国生物医学文献数据库、中国知网、维普以及万方数据库。检索时间从建库至 2016 年 12 月, 纳入 VED 联合 PDE5 抑制剂治疗 ED 的随机对照治疗(RCTs)并进行方法学的质量评估。文献数据采用 RevMan5.3 软件进行统计学分析, 并根据异质性进行敏感性分析和发表偏倚风险评估。**结果** 10 篇 RCT 文献纳入本研究, 累计病例 1 327 例。Meta 分析结果显示: 联合治疗组在改善患者满意度方面[RR=1.34, 95% CI(1.17, 1.54), $P<0.01$]具有明显优势且差异具有统计学意义, 并且单独应用 VED 亦可改善患者满意度[RR=1.27, 95% CI(1.11, 1.46), $P<0.01$]。联合治疗组可明显提高患者的 IIEF 评分[WMD=4.52, 95% CI(2.54, 6.50), $P<0.01$], 而在单独应用 VED 提高患者 IIEF 评分方面[WMD=-2.07, 95% CI(-6.17, 2.03), $P>0.05$], 与对照组相比差异并无统计学意义。研究报道 VED 使用过程中未发生严重的不良反应, 患者耐受性好。**结论** VED 联合 PDE5 抑制剂可更有效地改善 ED 患者的满意度, 并显著提高 IIEF-5 评分, 是治疗男性 ED 的有效方式, 但仍需更多的大样本、高质量、多中心的随机对照实验加以远期验证。

【关键词】 真空负压勃起装置(VED); PDE5 抑制剂; 西地那非; 勃起功能障碍(ED); 循证医学; Meta 分析

· 循证医学 ·

Vacuum erection device and Phosphodiesterase-5 inhibitors for the treatment of erectile dysfunction: a systematic review and Meta-analysis of randomized controlled trials An Qi, Liang Xiaowei,

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【Abstract】 Objective To explore efficacy and tolerability of vacuum erection device (VED) combined with Phosphodiesterase-5 inhibitions (PDE5i) in the treatment of male erectile dysfunction (ED). **Methods** All the studies regarding the combination of vacuum erection device and PDE5i were collected from the databases, including PubMed, Embase, CBM, CNKI, VIP and Wanfang as well. Meta-analysis was performed by Revman 5.3 software. Effect sizes were computed using Cohen's D, and I^2 test was used to assess heterogeneity. **Results** A total of 10 studies were included, involving 1 327 cases. The results of Meta-analysis showed that combination treatment group [$RR=1.34$, 95% CI (1.17, 1.54), $P<0.01$] and VED group [$RR=1.27$, 95% CI (1.11, 1.46), $P<0.01$] had significant differences when compared with PDE5i group. Moreover, combination treatment group had great improvement in IIEF-5 scores [$WMD=4.52$, 95% CI (2.54, 6.50), $P<0.01$] while VED group [$WMD=-2.07$, 95% CI (-6.17, 2.03), $P>0.05$] did not. **Conclusion** Current evidence indicates that the combination of PDE5i and VED are effective and safe for the treatment of sexual dysfunction in patients experiencing ED. The conclusion still needs more large-scale, high quality and multi-center studies to be validated.

【Key words】 Vacuum erection device (VED); Phosphodiesterase-5 inhibitors (PDE5i); Sildenafil; Erectile dysfunction (ED); Systematic review; Meta-analysis

心理压力与男性精液质量相关性 Meta 分析

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【摘要】目的 评价心理因素与精液质量的相关性。方法 采用 Meta 分析的方法,利用网络数据库检索 Cochrane Library、Pubmed、Medline、Springerlink、中国生物医学文献数据库(CMB)、中国知网全文数据库(CNKI)和万方数据库,查找关于心理因素与精液质量相关的研究,按照纳入、排除标准对文献进行筛选、资料提取和质量评价后,由 R 语言对数据进行统计学处理。结果 共纳入 13 篇研究,总样本量为 4 936 例。Meta 分析结果显示:心理压力与男性精子总数、精子浓度、a+b 级精子呈显著负相关($r=-0.312$, $r=-0.317$, $r=-0.486$, $P<0.001$),心理压力与 a 级精子呈负相关($r=-0.545$, $P=0.028$),心理压力与精子形态无相关性($r=-0.218$, $P=0.117$)。亚组分析结果显示,2010 年至今较 1999—2009 年,男性的心理压力与精液质量相关性更大。结论 心理压力与男性精液质量呈负相关。重视男性的心理健康将有助于其生殖健康。

【关键词】 男性; 压力; 精液质量; Meta 分析

· 循证医学 ·

Association between psychological stress and male semen quality: a Meta-analysis Cai Yanna,

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【Abstract】 Objective To evaluate the correlation between psychological stress and semen quality by Meta-analysis. **Methods** Cochrane Library, Pubmed, Medline, Springerlink, Chinese Biomedical Literature Database (CMB), CNKI and Wanfang Database were searched by network database to find out the relationship between psychological stress and semen quality. The included studies were screened according to the inclusion and exclusion criteria. After data extraction and quality evaluation, the data were statistically processed by R language. **Results** Thirteen studies were included, with a total sample size of 4 936 patients. The results of Meta-analysis showed that the psychological stress was significantly negative correlated with sperm count ($r=-0.312$), sperm density ($r=-0.327$) and progress motility ($r=-0.496, P<0.001$). The psychological stress was negatively correlated with rapid progress motility ($r=-0.545, P=0.028$), and psychological stress had no correlation with sperm morphology ($r=-0.218, P=0.117$). Subgroup analysis showed that the association between psychological stress and male semen quality was greater in 2010 to now than in 1999 to 2009. **Conclusion** The psychological stress is negatively related to the semen quality of male. Attention to men's psychological health will contribute to their reproductive health.

【Key words】 Male; Stress; Semen quality; Meta-analysis

· 现场调查 ·

青岛地区男性肿瘤患者生殖损伤保护意识现状调查及分析

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【摘要】目的 调查并分析青岛地区医患双方对男性肿瘤患者生殖损伤保护意识。方法 随机对肿瘤科、血液科医生及 15~40 岁男性肿瘤患者进行关于生殖保护的问卷调查; 对在本院行精子冷冻保存的患者的资料进行分析。结果 医生关于生殖损伤的告知率较高, 患者对生殖保护具体方法的认知度偏低; 冻存者主要为恶性肿瘤及血液病患者, 精液总利用率偏低。结论 生殖损伤保护应用的人群及方法较少, 医患双方对其临床应用有待进一步提高。

【关键词】 生殖保护; 生殖损伤; 男性; 肿瘤; 精子冻存

· 现场调查 ·

Investigation and analysis about protection awareness of fertility injury in male cancer patients in

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【Abstract】 Objective To investigate and analyze the protection awareness of male tumor patients' fertility injury among doctors and patients in Qingdao. **Methods** Oncologists, hematologists and male patients (15 to 40 years old) were investigated by randomized questionnaires about reproductive protection, and the data of patients who cryopreserved semen in our hospital were analyzed. **Results** The informing rate of reproductive injury by doctors was high, while patients' awareness of specific methods of reproductive protection was on low. The main disease of patients who cryopreserved semen were malignancies and hematomosis. And the utilization rate of cryopreserved semen was low. **Conclusion** People and methods which apply the fertility preservation are still few, therefore, the clinical application of fertility preservation need to be further improved by doctors and patients.

【Key words】 Fertility preservation; Fertility injury; Male; Tumor; Sperm cryopreservation

DNA 甲基化对男性精液质量影响的研究进展

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【摘要】 DNA 甲基化是表观遗传学修饰的主要形式之一, 对个体发育具有至关重要的作用。近年来, 大量研究表明不育男性的精子中存在不同基因异常甲基化。本文主要阐述了印记基因(*H19*、*FAM50B*、*GNAS*、*MEST*、*KCNQ1OT1*、*SNRPN*)和其他相关基因(*P16*、*LINE-1*、*MTHFR*、*SLC9B1*、*DDR1*)异常甲基化会对精液质量(包括精子数目、活力和形态)产生不同程度的影响, 从而导致男性不育。因此, 检测精子特定基因的 DNA 甲基化程度有可能成为针对男性不育的新型辅助诊断手段。

【关键词】 精液质量; DNA 甲基化; 男性不育症; 表观遗传学

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• 综述 •

Advance research on association between DNA methylation and male semen quality Shen Jiacheng,

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【Abstract】 DNA methylation, one of the main forms of epigenetics, plays an essential role in ontogeny. Recently, a large quantity of reviews have reported that aberrant DNA methylation exists in different genes of infertile male. This review mainly introduces aberrant DNA methylation on imprinted genes (including *H19*, *FAM50B*, *GNAS*, *MEST*, *KCNQ1OT1*, *SNRPN*) and other related genes (including *P16*, *LINE-1*, *MTHFR*, *SLC9B1*, *DDR1*) which influence sperm quality (including sperm count, motility and morphology) in different degrees, leading to male infertility. Thus, the detection on DNA methylation of sperm specific genes might become a new methods for assistant diagnosis on male infertility.

【Key words】 Semen quality; DNA methylation; Male infertility; Epigenetics

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电离辐射对精子质量影响的研究进展

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【摘要】随着电离辐射渗入到人们生活中的各个领域, 其对人体健康的影响也愈发显著。研究表明增殖分化旺盛的系统对电离辐射的敏感程度较高, 比如男性生殖系统, 其作为易受电离辐射影响的系统之一, 与后代健康水平息息相关。本文就电离辐射对精子浓度、活动度、形态以及对精子细胞 DNA 和染色体结构的影响及可能的损伤机制的研究进展进行综述, 为电离辐射造成男性生殖系统损伤的治疗及防护提供新的策略。

【关键词】电离辐射; 精子; 生殖健康

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· 综述 ·

Advances in effects of ionizing radiation on sperm quality Yang Wenjun, Huang Jinfeng, Liu Yan,

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【Abstract】 With increasingly scopes of ionizing radiation in life, the influence of ionizing radiation on human health is rising. It has been found that the system of proliferation and differentiation is highly sensitive to ionizing radiation, such as the male reproductive system, which is one of the systems susceptible to ionizing radiation and is closely related to the health of future generations. In this paper, the effects of ionizing radiation on sperm concentration, activity, morphology, and the influence of DNA and chromosome structure on sperm cells and possible damage mechanisms were reviewed, which provided a new strategy for the treatment and protection of male reproductive system injury caused by ionizing radiation.

【Key words】 Ionizing radiation; Sperm; Reproductive health

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维生素 D 与男性生殖关系的研究进展

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【摘要】 维生素 D 为人们所熟知的, 其生理功能是参与钙磷代谢与骨盐沉积。近年来研究表明, 维生素 D 受体在男性生殖器官中广泛表达, 相关研究还证实了维生素 D 缺乏或不足与男性生育力下降存在相关性。本文主要从维生素 D 生物和代谢特点及其在男性生殖各方面的作用进行综述, 以便加深对维生素 D 在男性生殖中作用的认识, 为男性不育的治疗提供理论依据。

【关键词】 维生素 D; 男性生殖; 精子

· 综述 ·

Research progress on the relationship between vitamin D and male reproduction Yan Yi, Li Yanping,

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【Abstract】 As we all know, the main physiological role of vitamin D is to regulate the body's calcium and phosphorus metabolism as well as bone mineralization. Recent studies have showed that vitamin D receptors were expressed widely in the male reproductive system. Relative researches also found that the deficiency and insufficient of vitamin D was related to the declined male reproduction. The present study is to review both the biology and metabolism of vitamin D, and the effect of vitamin D on the male reproduction. The present review would be useful for further understanding the effect of vitamin D on the male reproduction, and would provide theoretical basis for the treatment of male infertility.

【Key words】 Vitamin D; Male reproduction; Spermatozoa

辅助生殖技术前应重视男性不育患者的常规处理

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【摘要】 辅助生殖技术(assisted reproductive technique, ART)给男性不育症的治疗和预后带来了巨大改变, 但 ART 前期是否有必要对男性不育开展常规处理存在广泛争议。本文介绍了 ART 前对男性不育症患者进行常规处理的意义, 包括对男性不育常规治疗研究的深化和有助于 ART 的顺利开展。系统介绍了 ART 前男性不育常规治疗技术, 包括药物、手术和实验室技术; 常规药物治疗的可能环节与目的, 包括确保有足够的精子用于 ART, 改善 ART 治疗结局、困难病例及 ART 失败后的再努力以及对男性不育症中性功能障碍的处理。

【关键词】 辅助生殖技术(ART); 男性不育; 药物; 手术

· 综述 ·

More attention should be paid to routine management for male infertility before assisted reproductive technique Li Hongjun

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【Abstract】 Assisted reproductive technique (ART) changes the status for the treatment and prognosis of male infertility significantly, but whether it is necessary to offer routine management for male infertility before ART is still contradictory. The review introduces the significance of routine management for male infertility before ART, including intensify the research for the routine management of male infertility and help ART smoothly and successfully. The article introduces systematically methods for the routine management of male infertility, including drugs, operations and experimental techniques; possible procedure for routine treatment and the purposes of routine treatment before ART which includes sufficient qualified sperm for ART, improve ART outcomes, try again for difficult and ART failure cases, and management of male sexual dysfunction.

【Key words】 Assisted reproductive technique (ART); Male infertility; Drugs; Operation