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办刊继承传统, 再创辉煌

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《中华生殖与避孕杂志》是《生殖与避孕》杂志在 2017 年的蜕变, 杂志创刊于 1980 年。欣逢中华医学会成立 110 周年庆, 恰值本刊纪念诞生 45 周年, 借此良机, 衷心祝愿本刊办刊继承传统, 发扬优势, 再创辉煌!



本刊是我国最早出版专门介绍生殖与避孕研究成果的杂志, 对我学术生涯产生了深刻的影响。在 1980 年, 我的老师暨南大学刘学高教授是杂志创刊编委, 他当时将创刊号送给我学习, 自此, 我知道、逐渐熟悉了杂志, 创刊号亦一直珍藏至今。在 2001 年, 我担任编委, 嗣后, 为常务编委、副主编。杂志更名为《中华生殖与避孕杂志》后, 我担任第一届、第二届编辑委员会副总编, 现为第三届编辑委员会顾问。我与本刊结缘已 45 年, 我的专业知识积累和科研历程相当一部分与本刊紧密相连, 我感恩杂志一直给予我的学术营养和学术支持。

一、通过审稿深受学术教益

“文章千古事”。现今电子科技的进步, 令每篇正式发表的学术论文可以广为传播、传世久远, 对读者、学界、社会产生相应的影响。因此, 作为投稿论文能否进入学术殿堂的“守门人”, 编委对文稿能否以高学术质量与价值公诸于社会, 起着把关作用。我进入编委会后, 深切感受到前辈编委对审稿展示出的专业性、严谨性、公正性和指导性, 深受学术教益。

在我担任编委的次年, 有 2 次稿件往来过程的印象尤为深刻, 至今记忆犹新。当时, 编辑部送审一篇关于冻存液对小鼠精子冻存效果的稿件, 该项工作做了 20 只小鼠精子冻存, 结论是使用含一定浓度甘油的冻存液, 小鼠精子冻存前后的存活率无差别。基于自己在精子冷冻的认识和研究经验, 我认为 20 只小鼠不可能都是 100% 的精子经历冷冻-解冻全部存活, 该项工作的实验结果不可靠, 加之实验设计也存在多方面缺陷, 给出了初审意见: 建议退稿。但是, 数月后, 编辑部转来了该稿的修改稿,

要求复审，表明作者陈述了不接受退稿的理由，而且另有不作退稿的审稿意见。这促使我再度审读退稿意见是否有不当之处，是否对研究水平要求过高。审读后，我考虑初审意见可能写得简略了，作者未能理解为什么被退稿。该项工作的实验条件不复杂，恰好实验室其他实验项目有小鼠精子可使用，于是，我依照该稿描述的方法做了重复实验，随即知道了问题所在：①使用的活体染料分子较大，冻后精子膜虽有损伤，但染料不易透入染色精子核，造成假阴性；②解冻精子染色后，不能用生理盐溶液洗涤冻存液再观察精子染色状态，因为该活体染料是水溶性的，洗涤很容易将精子核原染（浅染）褪色，造成假阴性，即实验方法不当导致了错误结果。根据重复实验结果和涉及概念、实验设计等问题，我写了16开3页的详细复审意见（当年的“稿件审查意见书”需手写）。该稿终审编委是一位男科学前辈，他同意我的退稿意见，并且写了肯定我审稿的评语，此次审稿，使我进一步认识对做出退稿意见须非常慎重，亦感受到前辈编委对评估审稿意见的专业性和公正性。同年，我的学生向本刊投稿，内容是用免疫组织化学分析人输卵管黏膜上皮的蛋白质表达。在退修意见中，一位编委对其中一个蛋白质的表达特征提出了不同看法。当时我的团队刚接触免疫组织化学，研究经历不深，不过，免疫组织化学实验程序简单，学生也没有操作失误，当年亦不知道会有假试剂。那么，该蛋白质的表达是客观现象还是不正确的结果，未能确定，于是，我搁置了修改。后来，更换了2个免疫组织化学试剂，添加了分子实验进一步验证，才知道先前的免疫组织化学试剂不可靠，此次的审稿意见，使我受益于前辈编委的严谨性和指导性。上述2个例子，以及后续稿件往来和与编辑部老师们的工作联系，对我向前辈老师学习治学和研究，努力写好审稿意见，以及通过审稿意见反馈提高研究水平有很大激励和促进作用。

二、充分发挥办刊优势

《中华生殖与避孕杂志》是我国生殖科学领域的重要期刊，可以接收生殖科学领域“全景式”范围的来稿，体现在：①生殖科学领域全涵盖，包括生育、不育、节育这三个方面的研究成果；②生命周期全涵盖，包括从配子发生、受精、胚胎发育，到青春前期、青春期、育龄期、更年期等，整个生命过程各个时期的研究成果；③研究对象全涵盖，包括人（男性、女性；健康者、患者）、动物、离体组织或细胞的研究成果；④研究类型全涵盖，包括实验研究、观察研究、调查研究、数理模型研究等；⑤文章体裁全涵盖，包括基础研究、临床研究、流行病学调查、病例报道、述评、综述等。因此，本刊可以发表文章的内容非常丰富，具有独特的办刊优势，是我国生殖科学工作者和临床医生学术交流的良好园地。

本刊经常结合社会热点和学科发展趋势，及时发表相关文章，引领同行参考和开展研究。在2020年1月下旬，全球范围内新型冠状病毒肺炎疫情大爆发后，本刊迅速组稿，立即在2020年3月推出“新型冠状病毒专栏”，这些文章在多个网站的下载量或点击率都很高，说明了当时读者对这些文章非常关注，也表明了这些文章对当时防控新型冠状病毒与做好辅助生殖医护和实验室日常工作有很大的参考作用。当前已经进入了令人振奋的人工智能（artificial intelligence, AI）新时代，AI技术的引入无疑将推进辅助生殖技术（assisted reproductive technology, ART）诊疗活动发生深刻变革。本刊设置了“ART与AI专栏”，连续2期刊出10篇相关文章，多角度地介绍了AI当前在辅助生殖的研究与应用概况，以及给生殖研究专家和临床医生带来的机遇与挑战，在业界产生了积极的学术影响。

三、结语

光阴似箭穿梭过，45年对一本杂志来说，时间不算长，但在本刊发展历程中则体现了几代编委和编辑部老师们的坚持、努力、奉献和成绩。回想2001年5月我到上海参加《生殖与避孕》杂志第五届编委会第一次会议时，才知晓整个编辑部仅有2台电脑，当时一位参会编委感叹地说：“编辑部应该每人有2台电脑（台式、手提）才是”，当年办刊不容易。经过45年的不懈耕耘，本刊已成为我国生殖科学领域的重要学术交流平台。新一届编委会人才辈出，充分相信，编委会和编辑部在总编辑乔杰院士的领导下，将取得骄人的办刊成就，为助力中国生殖科学的繁荣和发展做出更大的贡献。

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难忘之旅: 与杂志伴行四十余载

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20 世纪 70 年代末, 中国人口快速增长, 人口政策迈入关键转型期, 计划生育已成为国家的重要命题。避孕节育技术的研发与推广亟需科学支撑, 1980 年《生殖与避孕》这本学术期刊在上海诞生。彼时, 国内尚无专注于该领域的权威期刊, 《生殖与避孕》的创刊填补了这一空白。创刊之初, 编辑部在发刊词中写下“以科学之光, 照亮生命的尊严与选择的权利”。



我是 20 世纪 80 年代初进入武汉医学院 (现更名为华中科技大学同济医学院) 读研时在图书馆发现这本专注计划生育技术研发与应用和生殖基础研究的专业期刊, 期刊中发表的文章内容与当时我的专业和开展的课题研究紧密相关, 阅读后很有感触、很有帮助、很受启发。在众多中文专业期刊中《生殖与避孕》杂志我是每期必看, 可以称得上忠实的粉丝。那个时代没有像现在对论文发表在 SCI 收录期刊中看的如此必要和如此重要, 而是更看重国内有影响力的中文期刊, 能在《生殖与避孕》杂志上发表论著就是一种能力与一份荣耀, 特别是该刊物被列于高级职称的晋升条件。《生殖与避孕》创刊号的文章是聚焦宫内节育器 (intrauterine device, IUD) 的安全性研究, 首次系统评估了含铜 IUD 避孕的临床效果, 为全国避孕器具标准化提供了关键依据。刊载的文章对我 1986 年参加由吴熙瑞教授牵头的“七五”国家科技攻关计划即 IUD 的研究并研发新材料和含药 IUD 裨益很大。后来我开始带硕士、博士研究生, 每逢课题小组讨论时总是鼓励他们多阅读该刊物的文章并积极投稿。

2017 年《生殖与避孕》改名为《中华生殖与避孕杂志》, 成为中华医学会系列杂志, 在国内外学术地位及影响力进一步提升。我先后成为杂志的编委和顾问, 除了审稿外, 对生殖男科和与辅助生殖关联的一些焦点、重点和有争议的问题组织生殖男科学界的同道们仔细认真讨论, 近几年组织本领域专家在该刊物上先后发表了 10 余篇专家共识, 得到了同行们的重视和认可。

无论是昨天的《生殖与避孕》还是今天的《中华生殖与避孕杂志》, 始终秉承“以科学之光, 照亮生命的尊严与选择的权利”, 正如现任总编乔杰院士在本刊四十周年纪念刊中所言, “我们从不敢忘记, 每

一篇论文背后是千万家庭的生育选择权，是科学家对生命奥秘的谦卑追寻”。如今的《中华生殖与避孕杂志》已经发展成为拥有一流编委会、成熟作者队伍和稳定读者群体的高影响力精品期刊。期刊将继续秉承推动生殖医学学术进步的宗旨，紧跟国际生殖医学研究的前沿动态，不断提升自身品质，为促进我国生殖医学事业的发展做出更大的贡献，在未来的岁月里书写更加辉煌的篇章。

中华医学会 110 周年专栏

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《中华生殖与避孕杂志》是《生殖与避孕》杂志在 2017 年的蜕变，杂志创刊于 1980 年。欣逢中华医学会成立 110 周年庆，恰值本刊纪念诞生 45 周年，借此良机，衷心祝愿本刊办刊继承传统，发扬优势，再创辉煌！

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1982 年底，我大学本科毕业，进入武汉大学人民医院（当时名为“湖北医科大学第一临床学院”）的妇产科工作。作为恢复高考后的首届大学毕业生，科室的老师也很重视我们，鼓励我们多读书，看杂志，写综述。在图书馆度过的时光，让我更进一步了解妇产科领域的广阔天地。在浏览了众多杂志后，决定报考计划生育专业的硕士研究生。因此，我对《生殖与避孕》杂志读得更多，也深深欣赏该杂志的学术风格和内容质量。

1989 年 7 月，我硕士毕业，并将毕业论文投稿至《生殖与避孕》杂志。很幸运的是，我的文章《宫内节育器对宫腔内压及宫腔液中前列腺素含量的影响》被录用，并在 1991 年第 4 期正式发表，这是我人生的第一篇学术论文，能够在如此高水平又心仪的杂志上发表，当时的我感到无比兴奋与自豪。

1991 年，这篇文章被选为当年全国计划生育学术会议的大会发言论文，这使我既高兴又紧张。作为人生第一次在全国性学术会议上发言，我有些不知所措。所幸导师田孝坤教授、曹秀娟教授悉心指导我作发言准备。这次经历不仅让我开阔了眼界，还认识了许多妇产科领域的资深专家，如王一飞教授、刘棣临教授等。这次会议极大地提升了我的胆识，从此以后，我在全国学术会议上发言或主持时，都能从容应对。

几年后，我受邀成为《生殖与避孕》杂志的审稿专家。在审稿过程中，我不断学习，自身的学术水平也得到了显著提升。随后几年，我的多篇文章陆续发表在《中华妇产科杂志》等权威期刊上。通过不懈地努力与学习，我在学术道路上取得了长足进步，于 1995 年破格晋升为副教授，1999 年又破格晋升为教授、主任医师，并成为硕士生导师。

2017 年，《生殖与避孕》杂志更名为《中华生殖与避孕杂志》，我担任新一届编委，并连任三届。自 2007 年成为博士生导师以来，我指导的学生在杂志上发表的论文数量不断增加，质量也显著提升。多年来，我从未缺席任何一次编委会或期刊内容讨论会，见证了杂志的不断进步与影响力的持续提升。同时，我也从审稿和编委工作中受益匪浅，成为武汉大学人民医院的高产作者之一。

《中华生殖与避孕杂志》作为国内生殖医学领域的权威期刊，始终以高水平的学术质量和严谨的编辑态度，引领学科发展，为广大学者和临床工作者提供了宝贵的学术交流平台，是生殖医学人心中的“必读期刊”。今年正值中华医学会成立 110 周年，也是《中华生殖与避孕杂志》创刊 45 周年，作为杂志的老读者、老编委，我衷心祝愿杂志在新一届编委会的引领下，继续蓬勃发展，再创辉煌！

中华医学会 110 周年专栏

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融合创新促转化，中西助孕路同行——我与《中华生殖与避孕杂志》的学术旅程

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2025 年，值此中华医学会成立 110 周年之际，亦恰逢《中华生殖与避孕杂志》（原《生殖与避孕》杂志）创刊 45 周年的重要历史节点。作为中西医结合生殖医学领域的长期从业者与研究者，我与该刊结缘已逾三十载。三十余年来，该期刊不仅为我在科研探索与临床实践中的学术积累提供了坚实平台，更作为国内生殖医学领域的重要学术载体，见证并推动了一代又一代专业人才的成长与学科的发展，成为凝聚专业共识、传承学术精神的核心阵地。



一、初识期刊：在学科空白中砥砺前行

1980年,《生殖与避孕》杂志应国家计划生育战略与生殖健康研究需求而创刊,作为国内最早聚焦于生殖医学及避孕节育研究的专业期刊之一,承载着推动该领域基础研究与临床实践同步发展的重要使命。在创刊初期,国内关于中医药与生殖健康相结合的研究尚处于探索阶段,相关理论体系与临床循证依据尚未形成系统化框架,学科发展亟待开拓与引领。1986年至1989年期间,作为南京中医药大学中医妇科学硕士研究生,我有幸投身于中医药干预女性生殖障碍的临床与科研实践之中,在国内率先开展了“活血祛瘀中药联合输卵管导管扩通术治疗输卵管阻塞”的临床研究,初步探讨了中医药治疗女性不孕症在输卵管因素干预方面的可行性与有效性。作为国内为数不多的生殖领域专业期刊,《生殖与避孕》杂志是我汲取知识的窗口,给我的研究提供了重要的学术参考与理论支持。

1995年,我带领团队在山东中医药大学附属医院创立了全国首家开展人类辅助生殖技术的中西医结合生殖与遗传中心,率先在国内中医院系统探索试管婴儿与中医药的结合,这一创新性尝试标志着我在中西医结合生殖医学领域迈出了关键的一步,为后续深入开展不孕症病因机制、中医药干预路径及个体化诊疗策略的系统研究奠定了坚实基础。在此后的学术历程中,我始终高度关注《生殖与避孕》杂志的发展动态,将其作为中西医结合生殖医学研究的重要学术平台与前沿观察窗口。该刊不仅见证了我国生殖医学特别是中医药参与生殖健康干预研究的起步与拓展,也为包括我在内的诸多研究者提供了重要的学术参考与理论支持,成为学科发展进程中不可或缺的精神灯塔与学术引擎。

二、学术首声：在临床实践中探寻理论价值

我与《生殖与避孕》杂志的深入学术交流始于2007年在该刊发表的首篇研究论文,题为《中药二至天葵颗粒对控制性超排卵周期卵泡液IL-1 β 、IL-6以及对胚胎质量的影响》。该研究以中医“肾主生殖”理论为指导,结合现代辅助生殖技术中的控制性超排卵方案,以白细胞介素为切入点,探讨了中药二至天葵颗粒在调控卵泡液炎症微环境中的作用机制,并初步评估其对卵子和胚胎质量的影响。该研究所使用的方药“二至天葵颗粒”原名“二至调经方”,是在传承国医大师夏桂成教授、全国名老中医孙宁铨教授及郑惠芳教授的“经后期滋肾水”理论思想的基础上,结合女性月经周期中“气血阴阳消长转化”之变化规律进行调整升华而成,现在也是我们医院的院内制剂。方中主要包括菟丝子、女贞子、旱莲草、枸杞子、当归、白芍、熟地等十味药物,具有滋阴补肾、养血调冲之功。

作为我长期基础研究与临床观察融合的阶段成果,该论文不仅系统展示了中医药干预辅助生殖关键环节的可能机制,也为后续在卵泡微环境优化、胚胎发育支持等方向上的研究积累了理论与方法基础。该论文的发表标志着我在中西医结合辅助生殖研究领域迈出了具有里程碑意义的一步,也开启了我在该领域逐步拓展的学术旅程。通过这一平台,我得以与全国各地的生殖医学专家建立联系,开展跨学科、跨机构的学术交流与合作,进而推动了我科研路上的深入发展。从此,《中华生殖与避孕杂志》不仅成为我科研成果传播的重要依托,也成为我持续进行学术反思与理论沉淀的重要阵地。

三、履职尽责：在编委岗位上推动学术发展

随着研究的不断深入与学术成果的持续积累，我有幸于 2020 年被聘为《中华生殖与避孕杂志》第二届编辑委员会委员，并于 2024 年连任第三届编委。这一身份的转变，不仅是学术成果受到期刊认可的体现，更赋予我推动学科发展、服务学术共同体的新职责。在从作者到编委的角色转变中，我更加全面地理解了期刊作为学术平台在促进学术交流、引领学科发展、规范学术生态中的重要价值。

作为编委，我积极参与期刊选题策划、栏目优化和重点专题的组织工作，尤其关注中西医结合在辅助生殖领域的研究进展，致力于推动该领域高质量学术成果的发表。2024 年 4 月，在该刊第 44 卷第 4 期中，我作为责任编委牵头组织了“中医药在不孕不育中的应用”专栏。中医药学作为中国重要的卫生资源，在多途径治疗生殖障碍疾病、改善不孕症患者妊娠结局方面，具有悠久的历史 and 深厚的应用基础，在临床中具有独特的优势。专家团队积极组织投稿，编辑部严格把关、层层遴选，编委认真履职、严谨审稿，确保了文章的学术质量与学科代表性。最终专栏共收录论文 7 篇，文章聚焦中医药治疗生殖障碍疾病的作用及机理、针灸治疗卵巢储备功能减退的靶标、针刺促卵泡发育和排卵的机制等，展示了中医药对于慢性子宫内膜炎、反复种植失败、复发性流产患者妊娠结局的改善作用，并探讨电针改善多囊卵巢综合征患者胚胎移植结局的作用机制及中医药干预肠道菌群影响多囊卵巢综合征临床机制，旨在为中医药改善生殖障碍疾病提供更多的应用范式。该专栏的策划与出版既充分展现了中医药与现代生殖医学交叉融合的学术深度，也彰显了期刊在引领中西医结合生殖医学发展中的平台作用。

在日常编委工作中，我始终秉持严谨、科学、公正的审稿态度，强调研究的临床实用性、方法学规范性及理论创新性，力求为期刊遴选出高质量、可推广的研究成果。同时，我主动推荐优秀稿件，联络学界同仁投身优质内容建设，协力提升期刊的专业影响力和学术话语权。

四、育才助力：在平台支撑下培养学术新苗

科研不是一人之战，教学更需代代传承。作为高校科研与临床一线工作者，我深知青年学者在早期职业发展阶段亟需优质的学术平台、严谨的科研训练和有效的学术展示机会。因此，我始终以《中华生殖与避孕杂志》这一平台为依托，主动将期刊资源优势与临床科研实践紧密结合，致力于培养和助力新一代中西医结合生殖医学人才的成长。

在具体实践中，我指导科室年轻医生及研究生团队深入参与科研选题、项目申报、课题实施与成果总结，强调问题意识、临床关联性与创新思维的培养，引导其将基础研究与临床需求紧密结合。多年来，我共培养硕博研究生百余人，其中多位已成为高校骨干、中医院临床学术带头人。在指导学生科研时，我始终鼓励和支持研究生将科研成果整理成系统规范的学术论文，在《中华生殖与避孕杂志》投稿与发表，帮助他们完成从科研构想到学术表达的完整历练与能力提升。有学生曾这样说：“连老师不仅教我们怎样写一篇好论文，更让我们明白了，学术写作是对科研工作的整理与升华，是对同行负责、对患者负责。”目前，我已指导多位研究生在该刊发表论文共计 9 篇，研究内容涵盖中药及针灸对于卵细胞质量调控，多囊卵巢综合征、卵巢储备功能减退以及子宫内膜异位症的机制研究等多个方向。这些工作不仅丰富了期刊的学科内容和理论体系，也有力提升了青年学者的科研素养和学术影响力。

在“中医药治疗不孕不育”专栏组稿过程中，我特别注重青年科研人员的参与，带领他们从文献检索、选题凝练到资料整理、文章撰写，深度融入到每一个学术环节。通过这种实践锻炼，青年学者在科研逻辑、临床思维、学术表达等方面得到了系统锤炼与快速成长。最终共有 3 篇文章收录在该专栏中，分别为《中医药干预肠道菌群影响多囊卵巢综合征机制研究进展》《基于 DNA 甲基化探讨电针改善痰湿型 PCOS 患者胰岛素抵抗及 IVF-ET 妊娠结局的作用机制》《卵巢储备功能减退的针灸治疗靶标研究进展》。

未来，我将继续以编委职责为依托，深化期刊平台与临床、科研、教学之间的互动联结，不仅为期刊持续输送高质量稿件，也为青年学者搭建成长舞台，推动中西医结合生殖医学领域新生力量的培养与学术传承，助力期刊高质量发展，服务学科可持续进步。

五、初心如磐：在科研道路上守护生命之光

回望四十余载从医从教之路，我始终坚守在临床一线，将中医药智慧应用于女性生殖健康的现代化转化与实践探索之中。一路走来，科研始终是我不懈追求的方向，而《中华生殖与避孕杂志》则成为我学术生涯中最为坚实、最为重要的见证者与同行者。从最初在该刊发表第一篇论文，到后来担任编委，参与期刊选题策划、组织专栏组稿，亲历期刊发展、见证学科进步，我深刻感受到一个优秀学术平台所能激发的，不仅是个人的成长动力，更是学科整体跃升的力量。

尤其令我欣慰的是，四十年来，我培养指导的百余位硕博研究生，已有相当一部分成为《中华生殖与避孕杂志》的作者以及审稿人。他们在各自领域继承并发展了我在期刊发表的学术理念与研究成果，不断深化理论，拓展应用，形成了鲜活而有生命力的学术传承链条。这种由点及面的成长与绵延，不仅是对个人职业生涯的最好回馈，更是中医药生殖健康事业持续进步的重要保障。

展望未来，随着中西医结合辅助生殖技术日益发展，我将继续深耕细作，围绕中医药参与辅助生殖技术优化、个体化精准诊疗路径构建、生育调控新机制解析等方向，开展更具深度与广度的研究。同时，我也将继续发挥编委平台的引领作用，积极指导更多青年学者走进科研，走向发表，让更多创新思想与临床经验在《中华生殖与避孕杂志》的舞台上得以展现、碰撞与升华。科研的终极价值，在于服务人民健康、造福更多生命。而期刊，正是这一价值实现的桥梁和助力者。

六、结语

一本好期刊，不仅是知识的集散地，更是思想的孕育场、文化的传播者。对我而言，《中华生殖与避孕杂志》更像一位亦师亦友的同行人，陪伴我走过科研道路的低谷与高峰，见证我从青涩到成熟、从临床实践到理论建构、从个体探索到学科引领的每一个重要阶段。

衷心祝愿中华医学会薪火相传，续写辉煌；愿《中华生殖与避孕杂志》继续以卓越为航标，以创新为动力，在推动中国乃至全球生殖健康事业的发展中，谱写更加绚丽的篇章。

中华医学会 110 周年专栏

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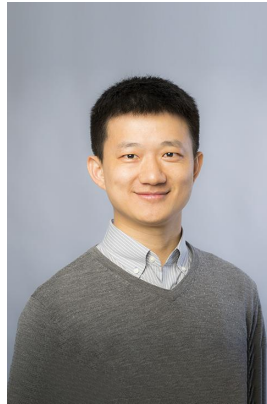
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从作者到编委：我与《中华生殖与避孕杂志》的五年同行之旅

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我叫刁梁辉，毕业于中山大学生命科学学院，现就职于深圳中山妇产医院（原深圳中山泌尿外科医院）生殖医学临床研究中心、深圳市围产期生殖免疫重点实验室。作为《中华生殖与避孕杂志》第二、第三届通讯编委，我和杂志共同走过了 5 年的学术旅程，见证了彼此的成长与蜕变。这段经历，不仅是我个人学术生涯的重要组成部分，也见证了我们共同为生殖医学尤其是生殖免疫学发展所做出的努力。

我与《中华生殖与避孕杂志》初次相识，始于 2019 年 12 月在厦门大学王海滨研究员举办的第一届母胎医学科学研究大会上。当时我刚结束德国汉堡大学附属艾本德医学中心的博士后研究，有幸就树突状细胞在早孕期免疫代谢调控方面的研究成果在分会场作报告。报告结束后，一位女士向我走来，她就是编辑部的孙敏编辑。孙老师不仅对我报告的内容很感兴趣，还向我发出邀约，希望我能为杂志撰写一篇综述。与孙老师的简短交流，让我感受到了杂志对前沿研究的敏锐嗅觉，以及对青年学者的关注和支持，也让我对这次合作充满了期待。

带着这份信任与期待，我开始了《免疫代谢调控子宫内膜微环境和母-胎免疫耐受的研究进展》一文的撰写。这不仅仅是一篇综述，也是对我多年研究成果的一次系统梳理。在长达半年的稿件反复修改过程中，双盲审稿专家们对文章的改进提出了尖锐而有建设性的意见，帮助我进一步提升了文章的严谨性和逻辑性；编辑部老师们对每一个措辞、每一个标点都精益求精，这种对学术质量的极致追求，让我由衷敬佩。最终，这篇综述得以在《中华生殖与避孕杂志》上优先发表，不仅丰富了我的学术履历，也为我后续相关的国家自然科学基金面上项目研究奠定了坚实基础。

成为通讯编委后，我积极地参与到杂志的审稿等工作中，我希望自己不仅是一名作者和审稿人，还是一个火种的传播者。因此，在审阅稿件时，我总是尽力站在国际同行的角度，去衡量每一篇稿件的创新性、临床意义、方法学可靠性及结果解读的准确性。因为我深知，一本优秀的学术期刊，离不开高质量的稿源和严格的评审。同时，我也积极鼓励我认识的同行和同事们向《中华生殖与避孕杂志》投稿，并分享我的经验，帮助他们提升科研能力和论文写作水平。在这个氛围带动下，不少同事和朋友成功发表了论文。这不仅增强了他们对科研的信心，帮助了他们的职业发展，也让我更加坚信，《中华生殖与避孕杂志》不仅是学术交流平台，更是青年人才成长的沃土。

2023 年，我院与厦门大学王海滨研究员团队联合主办了第二届母胎医学科学大会暨第六届生殖免疫新进展学术研讨会（中国·深圳）。尽管筹备工作因为疫情反复遭到挑战，《中华生殖与避孕杂志》始终给予我们全方位、坚定的支持。从会议通知的策划、发布，到会后纪要的撰写、刊登，编辑老师们全程深度参与，与我们密切合作，确保每一个环节都精益求精。在编辑部的支持下，会议前期推广覆盖面得到了保障，吸引了国内外 600 余名同行参与，成为一场具有重要影响力的学术盛会。这次成功的合作，稳健且高效，不仅加深了我与编辑部之间的伙伴关系，也让我看到了通过广泛的合作与交流，推动学科发展的可靠路径。

回首这 5 年，我深感《中华生殖与避孕杂志》不仅是我学术成长的见证者，更是我科研道路上的重要伙伴。在职业发展中，我始终秉持着严谨求实、注重临床转化的科研理念。而《中华生殖与避孕

杂志》所倡导的“严谨、务实、创新”，与此高度契合。正是这种共同的价值观，让我与杂志之间建立起了一种超越作者与期刊的深厚情谊。在此，我想借用加缪的话与大家共勉：“不要走在我后面，因为我可能不会引路；不要走在我前面，因为我可能不会跟随；请走在我的身边，做我的朋友。”

《中华生殖与避孕杂志》是专业的学术期刊，也是专业的学术交流平台，是连接生殖领域科研工作者和临床医生的纽带，也是大家的朋友圈。值此中华医学会成立 110 周年，也是《中华生殖与避孕杂志》创刊 45 周年之际，我衷心祝愿《中华生殖与避孕杂志》越办越好，不断提升国际影响力，成为中国生殖医学领域的一面旗帜！我也期待着，在未来的日子里，能够继续与杂志携手同行，与更多志同道合的伙伴一起，为中国生殖医学事业的蓬勃发展贡献自己的力量！

生殖衰老专栏

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基于卵巢颗粒细胞的 DNA 甲基化预测卵巢生物学年龄的模型

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朱博文和刘鹏对本文有同等贡献

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【摘要】 目的 开发一种全新的 DNA 甲基化卵巢生物学年龄预测模型用于卵巢衰老的评估。方法 采用前瞻性队列研究, 招募了 2024 年 3 月至 2025 年 1 月在海军军医大学第二附属医院生殖医学中心就诊的 96 例因输卵管因素或男方因素导致不孕的患者, 并收集 96 例人卵巢颗粒细胞样本, 其中 63 例作为发现队列, 33 例作为独立验证队列。通过 PCR 扩增和二代 DNA 测序进行靶向亚硫酸氢盐测序, 检测发现队列中 5 个年龄相关基因区段 (*ELOVL2*、*miR29B2C*、*TRIM59*、*KLF14*、*FHL2*) 的 DNA 甲基化模式。利用弹性网回归分析, 我们开发了一个包含 29 个甲基化位点的预测模型, 该模型随后在独立队列中进行验证。结果 基于人卵巢颗粒细胞的 DNA 甲基化建立预测卵巢生物学年龄的模型, 在发现队列中中位数绝对误差 (median absolute error, MAE) 为 2.534 ($R=0.742$, $P<0.001$); 在独立验证队列中 MAE 为 3.019 ($R=0.729$, $P<0.001$)。结论 本研究以人卵巢颗粒细胞为实验样本, 通过整合 5 个年龄相关基因片段的多个甲基化位点, 开发了一种全新的 DNA 甲基化卵巢生物学年龄预测模型, 可作为评估卵巢衰老状态的一个有效指标。

【关键词】 DNA 甲基化; 卵巢衰老; 卵巢生物学年龄预测模型; 二代 DNA 测序

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DNA methylation age prediction model based on ovarian granulosa cells

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【Abstract】 Objective To develop a novel ovarian biological age prediction model based on DNA methylation for ovarian aging assessment. **Methods** A prospective cohort study method was used. From March 2024 to January 2025, we collected 96 ovarian granulosa cell samples of infertility patients due to fallopian tube factors or male factors from the Reproductive Medicine Center of the Second Affiliated Hospital of Naval Medical University. Then we analyzed DNA methylation patterns across five age-associated gene regions (*ELOVL2*, *miR29B2C*, *TRIM59*, *KLF14* and *FHL2*) in a discovery cohort comprising 63 human ovarian granulosa cell samples. Targeted bisulfite sequencing was performed through PCR amplification followed by next-generation DNA sequencing. Leveraging elastic net regression analysis, we developed a predictive model incorporating 29 methylation sites that demonstrated strong age correlation. The model was subsequently validated using an independent cohort comprising 33 human ovarian granulosa cell samples. **Results** The DNA methylation age prediction model based on ovarian granulosa cells showed the following results in the discovery cohort as follows: median absolute error (MAE) was 2.534 ($R=0.742$, $P<0.001$). In the independent validation cohort, MAE was 3.019 ($R=0.729$, $P<0.001$). **Conclusion** In this study, we utilized human ovarian granulosa cells as experimental samples to develop a novel DNA methylation-based model for predicting ovarian biological age. By integrating multiple methylation sites across five age-related gene regions, this model serves as a robust indicator of ovarian aging status.

【Key words】 DNA methylation; Ovarian aging; Ovarian biological age prediction model; Next-generation DNA sequencing

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中国生育力保存多学科临床医生的认知调研分析

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【摘要】 目的 调查多学科医生对生育力保存的认知程度, 为进一步提高生育力保存的认知度和促进多学科发展提供参考和相关建议。**方法** 2023年11月至12月, 中国生育力保存联盟发起了这项覆盖全国20个省份23个城市88家医院的调查, 内容包括不同科室(生殖中心、肿瘤科、儿科、血液科)医生对生育力保存基本概念的了解程度、技术认知、治疗观念等, 并采用描述性统计和Fisher检验方法分析不同科室对各个调研问题的认知差异性。**结果** 不同科室医生对生育力保存相关指南的认知度, 4组间比较差异具有统计学意义($P<0.001$), 生殖中心医生对相关指南的了解程度最高[68.3% (41/60)]; 生殖中心医生对卵巢组织冷冻、卵子冷冻、精子冷冻、睾丸组织冷冻和胚胎冷冻这5种生育力保存技术知晓率均高于其他科室(均 $P<0.05$); 更多的生殖中心医生认为生育力保存及肿瘤治疗前有必要对患者进行心理咨询($P=0.016$)。血液科医生对于生育力保存治疗有着更多的担忧和顾虑; 此外, 96.7% (58/60)的生殖中心医生希望有效建立同城、同省甚至跨省的转诊机制; 55.6% (35/63)的肿瘤科医生、64.6% (31/48)的血液科医生及77.8% (7/9)的儿科医生认为治疗原发肿瘤远比生育力保存重要。**结论** 不同学科医生对生育力保存的认知程度不一

致，有必要加强对各科医生生育力保存知识的普及和培训并建立完善的转诊机制，同时推进多学科诊疗模式提高效率，以提高患者生育力保存的机会。

【关键词】 生育力保存； 多学科； 肿瘤科； 认知分析

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Cognitive analysis of multidisciplinary clinicians in fertility preservation in China

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【 Abstract 】 Objective To investigate the awareness levels of doctors from various departments regarding fertility preservation to provide reference and suggestions for further improving awareness and promoting multidisciplinary development in fertility preservation. **Methods** From November to December 2023, the China Alliance of Fertility Preservation initiated this survey covering 88 hospitals in 23 cities across 20 provinces in China. The survey focused on the degree of understanding of basic concepts, technological perceptions, treatment concepts, and related challenges regarding fertility preservation. Descriptive statistics and Fisher's exact test were used to analyze the difference in awareness levels across various departments. **Results** There was a significant difference in the awareness of fertility preservation guidelines among physicians from different departments ($P<0.001$). Reproductive center physicians had the highest level of understanding [68.3% (41/60)]. Doctors in the reproductive centers had a higher awareness rate of the five fertility preservation techniques (ovarian tissue cryopreservation, oocyte cryopreservation, sperm cryopreservation, testicular tissue cryopreservation, and embryo cryopreservation) than that in other departments (all $P<0.05$). Regarding treatment concepts, more reproductive center physicians believed that psychological counselling about fertility preservation before oncological treatment was necessary ($P=0.016$). Hematologists had more worries and concerns about fertility preservation treatment. Additionally, 96.7% (58/60) of reproductive center physicians expressed the need to establish effective referral mechanisms within the same city, province, or across provinces. However, 55.6% (35/63) of oncologists, 64.6% (31/48) of hematologists, and 77.8% (7/9) of pediatricians considered treating primary tumors far more important than fertility preservation. **Conclusion** Doctors from different departments have varying levels of understanding regarding fertility preservation. It is necessary to strengthen the dissemination and training of fertility preservation knowledge among physicians from various departments, as well as to promote a multidisciplinary treatment model to improve efficiency, to establish a comprehensive referral mechanism to improve patients' opportunities for fertility preservation.

【 Key words 】 Fertility preservation; Multidisciplinary; Oncology; Cognitive analysis

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·生殖衰老专栏·

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抗女性生殖衰老活性分子的分类及作用机制

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【摘要】 女性生殖衰老是指随着年龄增长，卵巢功能逐渐减退，导致生育能力下降及相关生理功能紊乱的过程。近年来，抗女性生殖衰老活性分子的研究成为医学领域的热点，旨在延缓卵巢衰老、改善生殖健康。本文对抗女性生殖衰老分子的主要来源进行综述，包括天然产物、内源性分子及合成小分子，重点介绍了白藜芦醇、姜黄素、大豆异黄酮、烟酰胺腺嘌呤二核苷酸前体（如烟酰胺单核苷酸）及线粒体靶向分子等具有代表性的活性分子。通过抗氧化应激、调节细胞自噬与凋亡、抗炎与免疫调节及端粒保护等多种机制，这些分子在延缓卵巢衰老、维护卵巢功能中发挥重要作用。然而，从实验室研究到临床应用仍面临生物利用度、长期安全性及个体差异等多重挑战。未来的研究需进一步优化递送系统，开展长期临床试验，并探索个体化治疗策略，以推动抗女性生殖衰老分子的临床转化和应用。

【关键词】 卵巢储备； 氧化应激； 女性生殖衰老； 活性分子

Classification and mechanism of active molecules against female reproductive aging

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【Abstract】 Female reproductive aging refers to the process that ovarian function gradually declines with age, leading to the decline of fertility and related physiological dysfunction. In recent years, the research on anti-female reproductive aging active molecules has become a hot spot in the medical field, aiming at delaying ovarian aging and improving reproductive health. In this paper, the main sources of anti-female reproductive aging molecules are reviewed, including natural products, endogenous molecules and synthetic small molecules, with emphasis on resveratrol, curcumin, soybean isoflavones, nicotinamide adenine dinucleotide precursors (such as nicotinamide mononucleotide) and mitochondrial targeting molecules. These molecules play an important role in delaying ovarian aging and maintaining ovarian function through various mechanisms such as antioxidant stress, regulating autophagy and apoptosis, anti-inflammatory and immunomodulation, and telomere protection. However, from laboratory research to clinical application, it still faces multiple challenges such as bioavailability, long-term safety and individual differences. Future research needs to further optimize the delivery system, carry out long-term clinical trials, and explore individualized treatment strategies to promote the clinical transformation and application of anti-female reproductive aging molecules.

【Key words】 Ovarian reserve; Oxidative stress; Female reproductive aging; Active molecule

·生殖衰老专栏·

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子宫内膜病理性衰老对胚胎植入的影响

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【摘要】 子宫内膜容受性降低是高龄女性生育力下降的重要因素。伴随年龄增长，衰老的子宫内膜出现激素应答减弱、炎性衰老、免疫细胞失衡等表现，阻碍子宫内膜上皮间质转化及蜕膜化进程，从而对胚胎植入产生不利影响，降低生育潜能。不良生活习惯、环境因素暴露、炎症等疾病状态、反复宫腔操作等可以导致子宫内膜与其实际年龄不同步的病理性衰老，可能与年轻女性多种

生殖障碍性疾病的发生有关。本文以此立意，旨在从胚胎植入角度探讨子宫内膜病理性衰老与生殖障碍性疾病之间的联系，以期为生殖障碍性疾病的发病机制和临床诊疗提供新思路。

【关键词】 胚胎植入； 生殖障碍性疾病； 子宫内膜容受性； 子宫内膜衰老

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Impact of pathological aging of the endometrium on embryo implantation

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【Abstract】 Decreased endometrial receptivity is a critical factor contributing to the decline in fertility among women of advanced age. With the increase of age, the endometrium exhibits diminished hormonal responsiveness, a phenomenon known as inflammaging, and an imbalance in immune cell populations. These changes impede the processes of endometrial epithelial-mesenchymal transition and decidualization, thereby negatively impacting embryo implantation and reducing overall fertility potential. Furthermore, adverse lifestyle choices, exposure to environmental factors, inflammatory conditions, and repeated interventions within the uterine cavity can result in pathological aging of the endometrium that does not align with its chronological age. This misalignment may be associated with the emergence of various reproductive disorders, even in younger women. This paper seeks to investigate the relationship between pathological aging of the endometrium and reproductive disorders, particularly in the context of embryo implantation, with the aim of providing new insights into the pathogenesis, clinical diagnosis, and treatment of reproductive disorders.

【Key words】 Embryo implantation; Reproductive disorders; Endometrial receptivity; Endometrial aging

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临床研究

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宫腔镜下子宫纵隔切除术对子宫不全纵隔患者 IVF/ICSI 累积活产率的影响

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【摘要】 目的 探讨子宫不全纵隔患者体外受精/卵胞质内单精子注射 (*in vitro* fertilization/intracytoplasmic sperm injection, IVF/ICSI) 助孕前行宫腔镜下子宫纵隔切除术 (hysteroscopic transcervical resection of uterine septum, TCRS) 能否提高其累积活产率。方法 采用回顾性队列研究, 分析 2016 年 1 月至 2022 年 8 月在郑州大学第三附属医院生殖医学中心因不孕症行 IVF/ICSI 助孕的 244 例子宫不全纵隔患者资料, 根据助孕前是否行 TCRS 分为手术组 (171 例) 和未手术组 (73 例), 分析两组人群 IVF/ICSI 助孕的临床结局, 主要观察指标为累积活产率, 并采用 Cox 回归进行影响因素分析。结果 手术组患者的年龄 [(31.20 ± 3.80) 岁] 小于未手术组 [(32.92 ± 5.34) 岁, $P=0.005$], 基础窦卵泡计数 [17.0 (11.0, 24.0)] 高于未手术组

[14.0 (8.0, 21.5), $P=0.039$], 其他基线数据差异均无统计学意义 (均 $P>0.05$)。手术组在 24 个月随访期的累积妊娠率 [79.53% (136/171)] 和累积活产率 [60.23% (103/171)] 均高于未手术组 [65.75% (48/73), $P=0.022$; 45.21% (33/73), $P=0.030$], 相较于手术组 [296.0 (260.0, 430.0) d], 未手术组从促排卵到第一次活产的时间显著延长 [379.0 (329.5, 471.5) d, $P<0.001$]。Cox 回归调整其他混杂因素后显示手术与否 ($HR=1.683$, 95% CI : 1.116~2.539, $P=0.013$) 和基础窦卵泡计数 ($HR=1.032$, 95% CI : 1.000~1.065, $P=0.048$) 是累积活产率的独立影响因素。结论 IVF/ICSI 助孕前行 TCRS 能提高子宫不全纵隔患者的累积活产率。

【关键词】 体外受精; 胚胎移植; 子宫纵隔; 宫腔镜下子宫纵隔切除术; 累积活产率

Impact of hysteroscopic transcervical resection of uterine septum on the cumulative live birth rate of IVF/ICSI in patients with partial uterine septum

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【Abstract】 **Objective** To investigate whether hysteroscopic transcervical resection of septum (TCRS) prior to *in vitro* fertilization/intracytoplasmic sperm injection (IVF/ICSI) can improve cumulative live birth rates in patients with uterine septum. **Methods** A retrospective cohort study was conducted to analyze data from 244 patients with partial uterine septum who underwent IVF/ICSI at the Reproductive Medicine Center of the Third Affiliated Hospital of Zhengzhou University between January 2016 and August 2022. The patients were divided into a surgical group ($n=171$) and a non-surgical group ($n=73$) based on whether TCRS was performed prior to IVF/ICSI. The clinical outcomes of IVF/ICSI in the two groups were analyzed, with the primary observation indicator being the cumulative live birth rate. Cox regression analysis was employed to identify determinants. **Results** The age of patients in the operated group [(31.20±3.80) years] was younger than that in the non-operated group [(32.92±5.34) years, $P=0.005$], and the basal antral follicle count [17.0 (11.0, 24.0)] was higher than that in the non-operated group [14.0 (8.0, 21.5), $P=0.039$]. There were no significant differences in other baseline data (all $P>0.05$). The cumulative pregnancy rate [79.53% (136/171)] and the cumulative live birth rate [60.23% (103/171)] in the operated group during the 24-month follow-up period were significantly higher than those in the non-operated group [65.75% (48/73), $P=0.022$; 45.21% (33/73), $P=0.030$]. Compared with the operated group [296.0 (260.0, 430.0) d], the duration from the start of ovarian stimulation to the first live birth was significantly prolonged in the non-operated group [379.0 (329.5, 471.5) d, $P<0.001$]. Adjusted Cox-regression analysis showed that whether or not surgery was performed ($HR=1.683$, 95% CI : 1.116~2.539, $P=0.013$) and the basal antral follicle count ($HR=1.032$, 95% CI : 1.000~1.065, $P=0.048$) were independent factors affecting cumulative live birth rate. **Conclusion** Performing TCRS before IVF/ICSI can improve cumulative live birth rates of patients with uterine septum.

【Key words】 Fertilization *in vitro*; Embryo transfer; Uterine septum; Hysteroscopic transcervical resection of uterine septum; Cumulative live birth rate

·临床研究·

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单囊胚移植中授精方式及囊胚滋养层质量可能影响子代出生性别比

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【摘要】 目的 探讨单囊胚移植周期中授精方式、囊胚内细胞团 (inner cell mass, ICM) 和滋养层细胞 (trophectoderm, TE) 的质量对子代出生性别比 (sex ratio at birth, SRB) 的影响。方法 采用回顾性队列研究, 选取 2010 年 1 月至 2022 年 12 月在湛江久和医院生殖医学中心行单囊胚移植治疗并成功妊娠分娩患者 (共 5 367 个移植周期) 为研究对象。根据移植胚胎类型分为新鲜胚胎移植组 ($n=1\ 487$; 其中 ≤ 35 岁人群, $n=1\ 258$) 和冻融胚胎移植组 ($n=3\ 880$; 其中 ≤ 35 岁人群, $n=3\ 199$); 根据授精方式的不同分为体外受精 (*in vitro* fertilization, IVF) 组 ($n=4\ 424$; 其中 ≤ 35 岁人群, $n=3\ 667$) 和卵胞质内单精子注射 (intracytoplasmic sperm injection, ICSI) 组 ($n=943$; 其中 ≤ 35 岁人群, $n=780$)。采用卡方检验分析全部纳入患者和年龄 ≤ 35 岁患者行不同移植胚胎类型、不同授精方式间 SRB 的组间差异, 并采用 logistic 回归分析各组囊胚 ICM 和 TE 评级对 SRB 的影响。结果 新鲜胚胎移植组获得男婴 917 名 (61.7%, 917/1 487), 冻融胚胎移植组中获得男婴 2 317 名 (59.7%, 2 317/3 880), 新鲜胚胎移植组的 SRB (160.9:100) 略高于冻融胚胎移植组 (148.2:100), 但差异无统计学意义 ($P=0.201$)。IVF 组获得男婴 2 732 名 (61.8%, 2 732/4 424), ICSI 组获得男婴 502 名 (53.2%, 502/943), IVF 组的 SRB (161.5:100) 显著高于 ICSI 组 (113.8:100), 差异有统计学意义 ($P<0.001$)。在年龄 ≤ 35 岁女性患者中, 不同胚胎移植方式和不同授精方式对 SRB 的影响与整体人群结果一致。单因素 logistic 回归分析结果显示, 同一囊胚质量评级除 3[~]6AA 外, 行 ICSI 助孕患者的 SRB 均低于行 IVF 助孕患者, 其中囊胚评级为 3[~]6BB、3[~]6AB 和 3[~]6BA 时, 行 ICSI 助孕患者的 SRB (88.8:100; 72.8:100; 156.1:100) 与行 IVF 助孕患者的 SRB (130.7:100; 124.8:100; 206.3:100) 之间差异均有统计学意义 ($OR=0.679$, 95% $CI: 0.516\sim 0.896$, $P=0.006$; $OR=0.583$, 95% $CI: 0.421\sim 0.809$, $P=0.001$; $OR=0.757$, 95% $CI: 0.585\sim 0.979$, $P=0.034$)。以 3[~]6BB 囊胚为参考, 3[~]6AA、3[~]6BA 囊胚的 SRB 均较高 (IVF: $OR=1.527$, 95% $CI: 1.258\sim 1.854$, $P<0.001$; $OR=1.579$, 95% $CI: 1.341\sim 1.859$, $P<0.001$; ICSI: $OR=2.566$, 95% $CI: 1.661\sim 3.966$, $P<0.001$; $OR=1.758$, 95% $CI: 1.250\sim 2.472$, $P=0.001$)。以 3[~]6BA 为参照, 3[~]6BC 囊胚的 SRB 较低 (IVF: $OR=0.621$, 95% $CI: 0.447\sim 0.862$, $P=0.004$; ICSI: $OR=0.442$, 95% $CI: 0.238\sim 0.818$, $P=0.009$)。以 3[~]6AB 为参照, 3[~]6AA 囊胚的 SRB 较高 (IVF: $OR=1.600$, 95% $CI: 1.307\sim 1.958$, $P<0.001$; ICSI: $OR=3.130$, 95% $CI: 1.964\sim 4.987$, $P<0.001$)。结论 单囊胚移植周期中新鲜胚胎移植的 SRB 略高于冻融胚胎移植, 授精方式不同会影响子代 SRB, IVF 周期的子代 SRB 高于 ICSI 周期。囊胚质量能影响子代 SRB, 囊胚拥有更高级别的 TE, 其 SRB 显著增高, 而 ICM 质量对 SRB 无明显影响。

【关键词】 生殖技术, 辅助; 出生性别比; 单囊胚移植; 授精方式; 内细胞团; 滋养层细胞

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Different fertilization methods and quality of blastocyst trophoblast may affect the sex ratio at birth in single blastocyst transfer cycles

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【Abstract】 Objective To analyze the effects of fertilization methods, quality of inner cell mass (ICM) and trophoctoderm (TE) on the sex ratio at birth (SRB) during single blastocyst transfer cycles. **Methods** 5 367 single blastocyst transfer cycles in *in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer (IVF/ICSI-ET) of patients with successful pregnancy and delivery in Reproductive Medical Center of Zhanjiang Jiuhe Hospital from January 2010 to December 2022 were included in this retrospective cohort study. According to different types of embryos, the cycles were divided into fresh embryo group ($n=1\ 487$, total population; $n=1\ 258$, ≤ 35 years old) and frozen-thawed embryo group ($n=3\ 880$, total population; $n=3\ 199$, ≤ 35 years old). According to different fertilization methods, the cycles were divided into IVF group ($n=4\ 424$, total population; $n=3\ 667$, ≤ 35 years old) and ICSI group ($n=943$, total population; $n=780$, ≤ 35 years old). Chi-square test was used to analyze the differences of SRB among all the patients and the patients aged ≤ 35 years who underwent different embryo types and fertilization methods, and logistic regression was used to analyze the effects of ICM and TE ratings on SRB in each group of blastocysts. **Results** There were 917 male infants (61.7%, 917/1 487) in the fresh embryo transfer group and 2 317 male

infants (59.7%, 2 317/3 880) in frozen-thawed embryo transfer group. The SRB of the fresh embryo transfer group (160.9 : 100) was slightly higher than that in frozen-thawed embryo transfer group (148.2 : 100), but the difference was not statistically significant ($P=0.201$). There were 2 732 male infants (61.8%, 2 732/4 424) in IVF group and 502 male infants (53.2%, 502/943) in ICSI group. The SRB of IVF group (161.5 : 100) was significantly higher than that of ICSI group (113.8 : 100), and the difference was statistically significant ($P<0.001$). In female patients aged ≤ 35 years, the effects of different embryo transfer methods and different fertilization methods on SRB were consistent with the results of total population. Univariate logistic regression analysis showed that the SRB of patients with ICSI was lower than that of patients with IVF, except for 3-6AA. There were significant differences in SRB between ICSI cycles patients (88.8 : 100; 72.8 : 100; 156.1 : 100) and IVF cycles patients (130.7 : 100; 124.8 : 100; 206.3 : 100) when the blastocyst grade was 3-6BB ($OR=0.679$, 95% CI : 0.516-0.896, $P=0.006$), 3-6AB($OR=0.583$, 95% CI : 0.421-0.809, $P=0.001$) and 3-6BA $OR=0.757$, 95% CI : 0.585-0.979, $P=0.034$). Taking 3-6BB blastocysts as reference, the SRB of 3-6AA and 3-6BA blastocysts were higher (IVF: $OR=1.527$, 95% CI : 1.258-1.854, $P<0.001$; $OR=1.579$, 95% CI : 1.341-1.859, $P<0.001$; ICSI: $OR=2.566$, 95% CI : 1.661-3.966, $P<0.001$; $OR=1.758$, 95% CI : 1.250-2.472, $P=0.001$). Compared with 3-6BA, the SRB of 3-6BC blastocysts was lower (IVF: $OR=0.621$, 95% CI : 0.447-0.862, $P=0.004$; ICSI: $OR=0.442$, 95% CI : 0.238-0.818, $P=0.009$). Taking 3-6AB as reference, the SRB of 3-6AA blastocysts was higher (IVF: $OR=1.600$, 95% CI : 1.307-1.958, $P<0.001$; ICSI: $OR=3.130$, 95% CI : 1.964-4.987, $P<0.001$). **Conclusion** The SRB of fresh embryo group is slightly higher than that of frozen-thawed group in single blastocyst transfer cycles. Different fertilization methods can affect SRB, and the SRB in IVF is significantly higher than that in ICSI group. The quality of blastocysts can affect SRB, and blastocysts with higher quality TE have significantly increased SRB, while ICM quality have no significant effect on SRB.

【Key words】 Reproductive technology, assisted; Sex ratio at birth; Single blastocyst transfer cycles; Different fertilization methods; Inner cell mass; Trophoctoderm

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小鼠卵母细胞纺锤体置换正常受精率低的原因及其优化策略

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【摘要】 目的 探讨小鼠卵母细胞纺锤体置换过程中, 容易导致卵母细胞正常受精率低的因素及应对策略。方法 获取 C57BL/6 (简称 C57) 及 ICR 品系小鼠中处于第二次减数分裂中期 (metaphase II, MII) 的卵母细胞, 进行核质置换操作观测: 显微操作取出大、中、小三种不同大小的纺锤体胞体, 在明场及偏振光下观察取出后 0 min、10 min、20 min、30 min 时的形态; 对于纺锤体小胞体, 分别在取出 10 min、20 min、30 min 后进行 2%多聚甲醛固定, 免疫荧光染色后观

察其纺锤体及染色体的形态；对卵母细胞进行卵胞质内单精子注射（intracytoplasmic sperm injection, ICSI），随即取纺锤体小胞体，然后分别在取出后 30 min（传统法置换组）、10 min（改良法 1 置换组）、0 min（改良法 2 置换组）时进行胞体融合，而只行 ICSI 未经纺锤体置换的卵母细胞作为对照组，14~16 h 后，观察重构卵母细胞受精情况并统计分析。结果 ①卵母细胞纺锤体胞体在刚取出时（0 min），胞体膜平滑完整，纺锤体呈现正常纺锤型。在取出 10 min、20 min、30 min 后，均可见胞体膜扭曲或拉长、形态不规则，纺锤体随之扭曲拉伸或散乱、亮度变弱。且胞体越小，变形越严重。②刚取出时（0 min）的纺锤体胞体，免疫荧光染色可见纺锤体呈现标准纺锤型，染色体规则整齐地排列于赤道板上。而随着放置时间的延长，纺锤体拉长变细或呈哑铃型，染色体散乱、排列不规则。③对于传统法置换的 C57BL/6 小鼠重构卵母细胞正常受精率为 63.16%（24/38），与对照组 [90.00%（36/40）] 相比，差异有统计学意义（ $P=0.002$ ）。在改良法 1 置换组的正常受精率 [68.00%（34/50）] 显著低于对照组（ $P=0.019$ ），但与传统法置换组比较，差异无统计学意义（ $P=0.260$ ）。而在改良法 2 置换组的正常受精率 [82.50%（33/40）] 与对照组比较，差异无统计学意义（ $P=0.422$ ），但显著高于传统法置换组（ $P=0.010$ ）。结论 小鼠卵母细胞纺锤体胞体取出后放置时间越久，形态变化越严重，纺锤体及染色体越不稳定，正常受精率越低；纺锤体胞体取出后立即融合为核质置换操作的最佳时机。

【关键词】 纺锤体置换； 正常受精率； 小鼠卵母细胞； 纺锤体胞体

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Factors and optimization strategies of low normal fertilization in spindle transfer of mouse oocytes

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【Abstract】 **Objective** To explore the factors that tend to lead to a low normal fertilization rate in spindle transfer of mouse oocytes and its strategies. **Methods** Oocytes in metaphase II (MII) of C57BL/6 and ICR strains mouse were obtained for observations of mitochondrial replacement operations. Spindle karyoplasts of three different sizes (large, medium, small) were isolated by micromanipulation, and their morphology was observed under bright field and polarized light at 0 min, 10 min, 20 min and 30 min after suction. For small spindle karyoplasts, 2% paraformaldehyde fixation was performed after 10 min, 20 min and 30 min respectively, and the morphology of spindle and chromosomes was observed after immunofluorescence staining. Intracytoplasmic sperm injection (ICSI) was performed on oocytes, followed by small spindle karyoplasts isolation, and then fusion was conducted after 30 min (traditional method), 10 min (modified method 1) and 0 min (modified method 2) respectively. ICSI-oocytes without spindle transfer were used as control group, and 14–16 h later, the fertilization of reconstructed oocytes was observed and statistically analyzed. **Results** 1) When spindle karyoplast was just retrieved (0 min), the karyoplast membrane was smooth and complete, and the spindle showed a normal spindle shape. After 10 min, 20 min and 30 min of suction, the karyoplast membrane was twisted or elongated with an irregular morphology, and the spindle was also twisted, stretched or scattered with a weaker brightness. And the smaller spindle karyoplast, the more serious the deformation was. 2) When the spindle was just taken out (0 min), immunofluorescence staining showed that the spindle was in a standard spindle shape, and the chromosomes were regularly and neatly arranged on the equatorial plate. With the prolongation of placement time, spindles were elongated and tapered or dumbbell-shaped, and chromosomes were scattered and irregularly arranged. 3) For the traditional method of spindle transfer, the normal fertilization rate of C57BL/6 mouse reconstructed oocytes was 63.16% (24/38), which was statistically different from that of control group ($P=0.002$). The normal fertilization rate [68.00% (34/50)] in the modified method 1 group was significantly lower than that in control group [90.00% (36/40), $P=0.019$], but there was no statistical difference with the traditional method ($P=0.260$). However, the normal fertilization rate [82.50% (33/40)] in the modified method 2 group was similar to control group ($P=0.422$), and was significantly higher than that of the traditional method group ($P=0.010$). **Conclusion** The longer the spindle karyoplast of mouse oocytes is stayed after retrieval, the more serious the morphological changes, the more unstable the spindles and chromosomes, and the lower normal fertilization rate. Immediate fusion of spindle karyoplast after isolation is the best time for mitochondrial replacement micromanipulation.

【Key words】 Spindle transfer; Normal fertilization rate; Mouse oocytes; Spindle karyoplast
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、孕周较长、移植 14 d 后孕激素水平升高与三体型

、妊娠孕周较长、移植 14 d 后孕激素水平

基于 IVF/ICSI 助孕的复发性流产患者胚胎染色体异常因素探究

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【摘要】 目的 探究行体外受精/卵胞质内单精子注射-胚胎移植 (*in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer, IVF/ICSI-ET) 助孕人群的复发性流产患者胚胎染色体异常相关影响因素, 并深入分析各因素与不同异常染色体类型的相关性。方法 本研究为回顾性病例对照研究, 收集 2019 年 9 月至 2024 年 10 月就诊于大连市妇女儿童医疗中心(集团)生殖与遗传实验室体育新城病区的 349 例行 IVF/ICSI 助孕后患者的流产组织, 采用拷贝数变异测序 (copy number variation sequencing, CNV-seq) 联合短串联重复序列 (short tandem repeat, STR) 技术对样本进行检测, 根据流产组织染色体是否正常分为染色体正常组和染色体异常组。通过单因素分析和多因素 logistic 回归分析影响染色体异常发生的因素。结果 ①通过 CNV-seq 联合 STR 方法, 共检出染色体异常 252 例 (72.21%, 252/349), 染色体正常 97 例。②单因素分析结果显示, 女方年龄、女方体质质量指数 (body mass index, BMI)、孕周、流产次数、移植后 14 d 后孕激素水平、卵巢储备功能、男方年龄及男方 BMI 在染色体正常组和染色体异常组间差异均有统计学意义 (均 $P < 0.05$)。③多因素 logistic 回归模型结果显示, 女方年龄 ($OR=1.261$, 95% $CI: 1.137 \sim 1.398$, $P < 0.001$)、女方 BMI ($OR=1.121$, 95% $CI: 1.038 \sim 1.227$, $P=0.004$)、孕周 ($OR=1.406$, 95% $CI: 1.155 \sim 1.711$, $P=0.001$)、移植 14 d 后孕激素水平 ($OR=1.016$, 95% $CI: 1.000 \sim 1.031$, $P=0.043$) 及男方 BMI ($OR=1.132$, 95% $CI: 1.050 \sim 1.220$, $P=0.001$) 是染色体发生异常的独立危险因素。④流产组织染色体正常和三体型染色体患者的女方年龄、女方 BMI、孕周、移植 14 d 后孕激素水平、男方 BMI 中差异均有统计学意义 (均 $P < 0.05$), 女方高龄与 22-三体的发生有关 ($P < 0.05$), 女方高龄、男方 BMI 增加与 16-三体的发生存在相关性 (均 $P < 0.05$)。结论 女方年龄及 BMI 增高、孕周较长、移植 14 d 后孕激素水平上升及男方 BMI 增高均会导致染色体异常率升高, 并会增加三体型发生率; 女方高龄增加 22-三体的发生率; 女方年龄、男方 BMI 与 16-三体异常率呈正相关。

【关键词】 染色体异常; 复发性流产; 体外受精; 精子注射, 细胞质内

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Exploration of embryonic chromosomal abnormalities in patients with recurrent miscarriage in the population undergoing IVF/ICSI-assisted pregnancy

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【 Abstract 】 **Objective** To investigate the factors associated with chromosomal abnormalities in embryos of patients with recurrent miscarriage in the *in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer (IVF/ICSI-ET) population, and to establish a prediction model for chromosomal abnormalities. **Methods** This was a retrospective case-control study, aborted tissues were collected from 349 patients who attended the Reproductive and Genetic Laboratory Sports New Town Ward of Dalian Women's and Children's Medical Center (Group) after IVF/ICSI from September 2019 to October 2024, and the samples were examined by copy number variation sequencing (CNV-seq) combined with short tandem repeat (STR) technology. According to the test results, the aborted tissues were divided into chromosome normal and chromosome abnormal groups. Factors affecting the occurrence of chromosomal abnormalities were analyzed by univariate analysis and multifactorial logistic regression. **Results** 1) By CNV-seq combined with STR method, a total of 252 cases (72.21%, 252/349) of chromosomal abnormalities were detected, while 97 cases had normal chromosomes. 2) The results of univariate analysis showed that the differences in female age, female body mass index (BMI), gestational week, number of miscarriages, progesterone level after 14 d post-transplantation, ovarian reserve function, male age, and male BMI were statistically significant between the chromosome normal group and the chromosome abnormal group (all $P < 0.05$). 3) The results of the multifactorial logistic regression model showed that female age ($OR = 1.261$, 95% CI : 1.137–1.398, $P < 0.001$), female BMI ($OR = 1.121$, 95% CI : 1.038–1.227, $P = 0.004$), gestational week ($OR = 1.406$, 95% CI : 1.155–1.711, $P = 0.001$), progesterone level 14 d after transplantation ($OR = 1.016$, 95% CI : 1.000–1.031, $P = 0.043$), and BMI of the male partner ($OR = 1.132$, 95% CI : 1.050–1.220, $P = 0.001$) were the independent risk factors of chromosomal abnormalities. 4) There were statistically significant differences in female age, female BMI, gestational week, progesterone level 14 d after transplantation, and male BMI between patients with normal chromosomes and those with trisomy chromosomes in aborted tissues (all $P < 0.05$). Advanced female age was correlated with the occurrence of trisomy 22 ($P < 0.05$), and there was a correlation between advanced female age and increased male BMI and the occurrence of trisomy 16 (all $P < 0.05$). **Conclusion** The increase in maternal age, BMI, gestational age, progesterone levels 14 d after transplantation, and male BMI can all lead to an increase in the rate of chromosomal abnormalities and an increase in the incidence of trisomy. The advanced age of the female, can lead to the occurrence of trisomy 22. The age of the female and the BMI of the male are positively correlated with the abnormality rate of trisomy 16.

【 Key words 】 Chromosomal abnormality; Recurrent miscarriage; Fertilization *in vitro*; Sperm injections, intracytoplasmic

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PGT-A 与传统 IVF/ICSI 技术对 RSA 患者的妊娠结局影响:
基于年龄、流产次数及流产组织染色体分析的队列研究

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【摘要】 目的 分析复发性流产 (recurrent spontaneous abortion, RSA) 患者行胚胎植入前非整倍体检测 (preimplantation genetic testing for aneuploidies, PGT-A) 技术与常规体外受精/卵胞质内单精子注射-胚胎移植 (*in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer, IVF/ICSI-ET) 的生殖结局是否存在差异。方法 采用回顾性队列研究, 分析 2018 年 1 月至 2023 年 6 月在中山大学孙逸仙纪念医院生殖中心进行辅助生殖技术助孕的 RSA 患者的资料, 将患者按照不同的助孕技术分为 PGT-A 组 ($n=78$, 100 个移植周期) 和 IVF/ICSI 组 ($n=95$, 105 个移植周期)。采用多重 logistic 回归进行统计分析, 比较两种技术对生殖结局的影响。进一步分析不同女方年龄、流产次数、既往流产胚胎染色体是否异常对助孕结局的影响。主要研究指标为活产率, 次要研究指标为妊娠率和流产率。结果 PGT-A 组的活产率 [50.0% (50/100)] 高于 IVF/ICSI 组 [37.1% (39/105)], 流产率 [20.6% (13/63)] 低于 IVF/ICSI 组 [39.1% (25/64)], 差异均有统计学意义 ($P=0.043$, $P=0.023$)。流产次数 ≥ 3 次且 37~45 岁的 RSA 患者, PGT-A 组流产率 (0%) 低于 IVF/ICSI 组 [46.2% (6/13)], 差异有统计学意义 ($P=0.017$), 而两组间活产率和妊娠率差异均无统计学意义 (均 $P>0.05$)。既往流产组织染色体异常的 RSA 患者, PGT-A 组的流产率 [21.1% (12/57)] 低于 IVF/ICSI 组 [71.4% (5/7)], $P=0.012$, 妊娠率 [66.3% (57/86)] 和活产率 [52.3% (45/86)] 高于 IVF/ICSI 组 [33.3% (7/21)], $P=0.006$; 9.5% (2/21), $P<0.001$, 差异均有统计学意义。在 37~45 岁患者中, PGT-A 组的流产率 [5.9% (1/17)] 低于 IVF/ICSI 组 [38.7% (12/31)], $P=0.035$, 活产率 [57.1% (16/28)] 高于 IVF/ICSI 组 [31.7% (19/60)], $P=0.023$, 差异均有统计学意义。结论 对比常规 IVF/ICSI 技术助孕, 对年龄小于 37 岁伴或不伴有流产组织染色体未见异常的 RSA 患者使用 PGT-A 助孕, 生殖结局无明显改善, 无论其自然流产次数是否超过 3 次; 对于有流产组织染色体异常的 RSA 患者, 在 26~45 岁的年龄区间中, PGT-A 均能显著降低流产率; 而在 37~45 岁的 RSA 患者中, PGT-A 显著提高了生殖结局。但对于流产次数为 2 次、既往流产组织染色体未见异常的患者而言, PGT-A 的治疗作用有限。

【关键词】 生殖技术, 辅助; 复发性流产; 胚胎植入前非整倍体检测; 生殖结局

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Impact of PGT-A versus conventional IVF/ICSI on pregnancy outcomes in recurrent spontaneous abortion patients: a cohort study stratified by age, number of miscarriages, and previous chromosomal abnormalities in miscarried embryos

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【Abstract】 Objective To analyze whether there are differences in reproductive outcomes between preimplantation genetic testing for aneuploidies (PGT-A) and conventional *in vitro* fertilization/intracytoplasmic sperm injection and embryo transfer (IVF/ICSI-ET) in patients with recurrent spontaneous abortion (RSA). **Methods** A retrospective cohort study was conducted at the Reproductive Center of Sun Yat-sen Memorial Hospital, Sun Yat-sen University, including RSA patients who underwent assisted reproductive technology (ART) between January 2018 and June 2023. Patients were categorized into two groups based on the type of ART, the PGT-A group (78 patients, 100 embryo transfer cycles) and the IVF/ICSI group (95 patients, 105 embryo transfer cycles). Multivariate logistic regression analysis was performed to compare the impact of these two techniques on reproductive outcomes. Further analysis was conducted to evaluate the effects of maternal age, number of miscarriages, and previous chromosomal abnormalities in miscarried embryos on pregnancy outcomes. The primary outcome measure was the live birth rate, while secondary outcomes included the pregnancy rate and the miscarriage rate. **Results** The live birth rate in the PGT-A group [50.0% (50/100)] was higher than that in the IVF/ICSI group [37.1% (39/105)], while the miscarriage rate [20.6% (13/63)] was lower than that in the IVF/ICSI group [39.1% (25/64)], with both differences being statistically significant ($P=0.043$, $P=0.023$). Among RSA

patients aged 37-45 years with ≥ 3 miscarriages, the miscarriage rate in the PGT-A group (0%) was significantly lower than that in the IVF/ICSI group [46.2%(6/13), $P=0.017$], whereas the differences in live birth rate and pregnancy rate between the two groups were not statistically significant (all $P>0.05$). For RSA patients with previous chromosomal abnormalities in miscarried embryos, the miscarriage rate in the PGT-A group [21.1% (12/57)] was significantly lower than that in the IVF/ICSI group [71.4% (5/7), $P=0.012$]. Additionally, the pregnancy rate [66.3% (57/86)] and the live birth rate [52.3% (45/86)] in the PGT-A group were significantly higher than those in the IVF/ICSI group [33.3% (7/21), $P=0.006$; 9.5% (2/21), $P<0.001$]. Among 37-45 years patients, the miscarriage rate in the PGT-A group [5.9% (1/17)] was significantly lower than that in the IVF/ICSI group [38.7% (12/31), $P=0.035$], and the live birth rate [57.1% (16/28)] was significantly higher than that in the IVF/ICSI group [31.7% (19/60), $P=0.023$]. These differences were statistically significant. **Conclusion** Compared with conventional IVF/ICSI-assisted reproduction, the use of PGT-A in RSA patients younger than 37 years, with or without a history of chromosomally normal miscarried embryos, did not significantly improve reproductive outcomes, regardless of whether they had experienced more than three miscarriages. However, for RSA patients with chromosomal abnormalities in miscarried embryos, PGT-A significantly reduced the miscarriage rate across the age range of 26-45 years. In RSA patients aged 37-45 years, PGT-A significantly improved reproductive outcomes. However, for patients with two miscarriages and a history of chromosomally normal miscarried embryos, the therapeutic benefit of PGT-A was limited.

【 Key words 】 Reproductive technologies, assisted; Recurrent spontaneous abortion; Preimplantation genetic testing for aneuploidies; Reproductive outcome

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宫腔镜预处理联合 LNG-IUS 治疗子宫腺肌病的临床疗效观察

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【摘要】 目的 探究宫腔镜预处理联合宫腔内放置左炔诺孕酮宫内缓释系统 (levonorgestrel-releasing intrauterine system, LNG-IUS) 治疗子宫腺肌病 (adenomyosis, AM) 的效果。方法 通过队列研究分析河北医科大学第二医院妇产科 2022 年 3 月至 2023 年 2 月治疗的 AM 患者 219 例, 其中因存在异常子宫出血或妇科超声提示宫腔异常回声的患者, 实施宫腔镜治疗后放置 LNG-IUS 共 112 例, 记为宫腔镜+LNG-IUS 组; 无上述表现者单纯宫内放置 LNG-IUS 共 107 例, 记为 LNG-IUS 组。观察两组治疗前及治疗后 1、3、6、12 个月的痛经程度、月经量、子宫内膜厚度、贫血情况、血清 CA125 水平、子宫体积及阴道不规则出血和节育器下移或脱落等不良反应。结果 ①宫腔镜+LNG-IUS 组宫腔镜术后病理包括子宫内膜息肉 [39.3% (44/112)]、增殖期子宫内膜 [16.1% (18/112)]、子宫平滑肌瘤 [11.6% (13/112)]、分泌期子宫内膜 [8.9% (10/112)]、内膜不规则增殖 [6.2% (7/112)]、单纯性增生 [5.4% (6/112)]、AM 病灶 [4.5% (5/112)]

和其他[8.0% (9/112)];②两组治疗后的痛经程度、月经量等观察指标均较治疗前改善(均 $P<0.001$);③两组间比较,痛经程度、月经量、子宫内膜厚度、贫血情况、血清CA125在治疗1、3、6、12个月时,宫腔镜+LNG-IUS组均明显优于LNG-IUS组(均 $P<0.05$),而子宫体积在治疗12个月时宫腔镜+LNG-IUS组[(109.76±32.90) cm³]与LNG-IUS组[(120.84±31.30) cm³]组间差异具有统计学意义($P=0.011$);④两组不良反应的累积发生率宫腔镜+LNG-IUS组[24.1% (27/112)]显著低于LNG-IUS组[52.3% (56/107), $P=0.001$],宫腔镜+LNG-IUS组的阴道不规则出血率[8.0% (9/112)]和环下移、脱落率[3.6% (4/112)]显著少于LNG-IUS组[23.4% (25/107), $P=0.002$; 11.2% (12/107), $P=0.030$]。结论 经宫腔镜治疗后放置LNG-IUS与单纯宫内放置LNG-IUS两种方法治疗AM对痛经程度、子宫内膜厚度、贫血、月经量、CA125、子宫体积均有明显改善,宫腔镜术后放置LNG-IUS组的治疗效果更好且不良反应更轻,有望成为AM保守治疗长期管理的优选方案。

【关键词】 子宫腺肌病; 宫腔镜; 左炔诺孕酮宫内缓释系统; 长期管理

Clinical effect of hysteroscopic pretreatment combined with LNG-IUS in the treatment of adenomyosis

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【Abstract】 **Objective** To explore the effect of levonorgestrel-releasing intrauterine system (LNG-IUS) placed in the uterine cavity after transcervical preparation for the treatment of adenomyosis (AM). **Methods** A retrospective study analyzed 219 cases of AM patients treated at Department of Obstetrics and Gynaecology, the Second Hospital of Hebei Medical University from March 2022 to February 2023. Among them, 112 cases were treated with LNG-IUS after hysteroscopy due to abnormal uterine bleeding or abnormal uterine echo suggested by gynecological ultrasound, and were recorded as the hysteroscopy+LNG-IUS group; 107 cases without the above manifestations were treated with LNG-IUS alone, and were recorded as the LNG-IUS group. The two groups were observed for dysmenorrhea severity, menstrual volume, endometrial thickness, anemia, serum CA125 levels, uterine volume, and adverse reactions such as abnormal vaginal bleeding and intrauterine contraceptive device displacement or shedding before and 1, 3, 6, and 12 months after treatment. **Results** 1) Postoperative pathology of hysteroscopy+LNG-IUS group after hysteroscopy included endometrial polyps [39.3% (44/112)], proliferative endometrium [16.1% (18/112)], uterine leiomyoma [11.6% (13/112)], secretory endometrium [8.9% (10/112)], irregular endometrial hyperplasia [6.2% (7/112)], simple hyperplasia [5.4% (6/112)], AM lesions [4.5% (5/112)], and others [8.0% (9/112)]. 2) The degree of dysmenorrhea and menstrual volume, as well as other indicators, improved after treatment in both groups (all $P<0.001$). 3) When comparing the two groups, the degree of dysmenorrhea, menstrual volume, endometrial thickness, anemia, and serum CA125 at 1, 3, 6, and 12 months of treatment, the hysteroscopy+LNG-IUS group was significantly better than those in the LNG-IUS group (all $P<0.05$), the difference of uterine volume at 12 months of treatment between the hysteroscopy+LNG-IUS group [(109.76±32.90) cm³] and the LNG-IUS group [(120.84±31.30) cm³] was statistically significant ($P=0.011$). 4) The cumulative incidence of adverse reactions of the two groups was statistically significant ($P=0.001$) between the hysteroscopy+LNG-IUS group [24.1% (27/112)] and the LNG-IUS group [52.3% (56/107), $P=0.001$]. The hysteroscopy+LNG-IUS group had lower rates of vaginal irregular bleeding [8.0% (9/112)] and ring displacement or shedding [3.6% (4/112)] than those in the LNG-IUS group [23.4% (25/107), $P=0.002$; 11.2% (12/107), $P=0.030$]. **Conclusion** After treatment with hysteroscopy, the placement of LNG-IUS and the simple intrauterine placement of LNG-IUS both significantly improve the severity of dysmenorrhea, endometrial thickness, anemia, menstrual volume, CA125, and uterine volume. The treatment effect of the LNG-IUS group after hysteroscopy is better and adverse reactions are milder, and it is expected to become the preferred option for the long-term management of conservative treatment of AM.

【Key words】 Adenomyosis; Hysteroscopy; Levonorgestrel-releasing intrauterine system; Long-term management

·现场调查·

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from July 2022 to June 2024, using a convenience sampling method

妊娠丢失患者心理创伤相关症状的潜在类别分析

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【摘要】 目的 探讨妊娠丢失患者心理创伤相关症状的潜在类别及其特征差异, 分析其相关影响因素。方法 2022年7月至2024年6月, 采取便利抽样法选取就诊于郑州大学第一附属医院产科的709例妊娠丢失患者作为调查对象, 采用一般资料调查表、创伤后应激障碍自评量表、医院焦虑抑郁量表和匹兹堡睡眠指数量表进行调查。使用Mplus8.3软件对心理创伤相关症状进行潜在类别分析, 采用多分类logistic回归分析确定潜在类别的影响因素。结果 最终共调查691例妊娠丢失患者, 创伤后应激障碍总分为24.00(19.00, 33.00)分, 焦虑总分为6.00(3.00, 9.00)分, 抑郁总分为6.00(3.00, 9.00)分, 睡眠障碍总分为7.00(4.00, 9.00)分。心理创伤相关症状可分为3个潜在类别, 分别为高症状组[20.4%(141/691)]、焦虑抑郁组[15.3%(106/691)]和低症状组[64.3%(444/691)]。多分类logistic回归分析显示, 家庭人均月收入>8 000元($OR=0.477$, 95% CI : 0.272~0.835, $P=0.010$)和入院时有配偶陪伴($OR=0.352$, 95% CI : 0.234~0.532, $P<0.001$)是高症状组的保护因素, 孕周 ≥ 28 周($OR=3.192$, 95% CI : 1.619~6.292, $P=0.001$)和辅助生殖妊娠($OR=1.877$, 95% CI : 1.075~3.277, $P=0.027$)是高症状组的危险因素。结论 妊娠丢失患者心理创伤相关症状具有明显的分类特征, 住院期间医护人员应该重点关注高症状组的妊娠丢失患者, 根据不同类别妊娠丢失患者心理创伤相关症状采取针对性的干预措施以避免其出现严重的心理问题。

【关键词】 心理创伤; 创伤后应激障碍; 焦虑; 抑郁; 潜在类别分析; 影响因素分析; 妊娠丢失

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Latent class analysis of symptoms related to psychological trauma in patients with pregnancy loss

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【Abstract】 **Objective** To explore latent class of symptoms related to psychological trauma and characteristics in patients with pregnancy loss, and to analyze the related influencing factors. **Methods** From July 2022 to June 2024, a convenience sampling method was used to select 709 cases of pregnancy loss patients who visited the Maternity Department of the First Affiliated Hospital of Zhengzhou University as the survey subjects. The survey was conducted using the general information questionnaire, the post-traumatic stress disorder (PTSD) self-assessment scale, the hospital anxiety and depression scale, and the pittsburgh sleep index scale. Exploratory latent class analysis (LCA) of symptoms related to psychological trauma was performed by Mplus8.3, and then multivariate logistic regression was used to identify the factors influencing the latent classes. **Results** A total of 691 patients with pregnancy loss were eventually investigated, with a total PTSD score of 24.00 (19.00, 33.00), a total anxiety score of 6.00 (3.00, 9.00), a total depression score of 6.00 (3.00, 9.00), and a total sleep disorder score of 7.00 (4.00, 9.00). Symptoms related to psychological trauma could be classified into 3 potential categories named high symptom group [20.4% (141/691)], anxiety-depression group [15.3% (106/691)] and low symptom group [64.3% (444/691)]. The result of multivariate logistic regression analysis showed that per capita monthly household income >8 000 yuan ($OR=0.477$, 95% CI : 0.272–0.835, $P=0.010$) and having a spouse accompanying the patient at the time of admission ($OR=0.352$, 95% CI : 0.234–0.532, $P<0.001$) were protective factors for the high symptom group, and gestational week ≥ 28 weeks ($OR=3.192$, 95% CI :

1.619–6.292, $P=0.001$) and assisted reproductive pregnancy ($OR=1.877$, 95% CI : 1.075–3.277, $P=0.027$) were risk factors for the high symptom group. **Conclusion** Symptoms associated with psychological trauma in patients with pregnancy loss have distinct categorical characteristics, and healthcare professionals should focus on patients with pregnancy loss in the high symptom group during hospitalization, and adopt targeted interventions according to the symptoms related to psychological trauma in different categories of patients with pregnancy loss in order to avoid serious psychological problems.

【Key words】 Psychological trauma; Stress disorders, post-traumatic; Anxiety; Depression; Latent class analysis; Root cause analysis; Pregnancy loss

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个案报道

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宫腹腔镜联合特殊完全双角子宫成形术 1 例并文献复习

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【摘要】 双角子宫可引起流产、早产及分娩异常或不孕等, 子宫成形术可能改善患者妊娠结局, 但可能会发生子宫破裂、胎盘植入、早产及产后出血等严重并发症。本文报道 1 例宫腹腔镜联合完全双角子宫成形术患者, 术后成功妊娠, 但发生宫颈机能不全、胎盘植入及极度早产等并发症, 并复习相关文献报道。完全双角子宫伴有反复妊娠丢失的女性, 宫腹腔镜联合子宫成形术安全可行, 可能改善生殖预后, 然而潜在的妊娠及产时并发症不容忽视。

【关键词】 双角子宫; 腹腔镜; 宫腔镜; 子宫成形术

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Metroplasty by laparoscopy combined with hysteroscopy for a special case of complete bicornuate uterus and literature review

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【Abstract】 Bicornuate uterus can cause miscarriage, premature birth, abnormal delivery or infertility. Strassman metroplasty may improve pregnancy outcomes for patients, but uterine rupture, placental implantation, premature birth, and postpartum hemorrhage may occur. The paper presents a case of a complete bicornuate uterus with spontaneous conception after Strassman metroplasty. However, complications such as cervical insufficiency, placenta implantation and premature birth occurred, and the relevant literatures were reviewed. Strassman metroplasty by laparoscopy combined with hysteroscopy for complete bicornuate uterus with adverse pregnancy outcomes is safe and feasible, and may improve reproductive outcomes. However, potential pregnancy and labor complications cannot be ignored.

【Key words】 Bicornuate uterus; Laparoscopes; Hysteroscopes; Metroplasty

Fund program: Chongqing Science and Health Joint Key Project (2022ZDXM009)

综述

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子宫内膜异位症相关预测模型研究进展

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【摘要】 子宫内膜异位症是一种多因素全身性疾病, 显著降低女性生活质量, 对育龄期生殖健康产生特殊影响。预测模型作为临床研究新焦点, 为疾病早期识别和治疗效果评估提供重要工具。本文系统阐述预测模型在诊断评估、术后复发监测、恶变预警、不孕相关因素分析和妊娠结局预测等多领域的应用进展, 为临床决策和诊疗策略优化提供新见解。

【关键词】 子宫内膜异位症; 机器学习; 预测模型; 独立预测因素; 不孕症

Research progress on predictive models for endometriosis

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【 Abstract 】 Endometriosis is a multifactorial systemic disorder that significantly compromises women's quality of life, with particular implications for reproductive health in those of childbearing age. Predictive models have recently emerged as a critical focus on clinical research, offering valuable tools for early disease detection and evaluation of anticipated therapeutic outcomes. This comprehensive review examines current applications of predictive models in multiple clinical domains: diagnostic assessment, postoperative recurrence surveillance, malignant transformation prediction, infertility-associated factor analysis, and pregnancy outcome projection. The synthesis of these findings provides novel insights to inform clinical decision-making and advance therapeutic strategies for endometriosis management.

【 Key words 】 Endometriosis; Machine learning; Prediction model; Independent prognostic factor; Infertility

综 述

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多囊卵巢综合征种族差异的研究进展

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【摘要】 多囊卵巢综合征 (polycystic ovary syndrome, PCOS) 是一种多因素、多基因导致的高度异质性的生殖内分泌代谢紊乱疾病。2022 年一项全球性的大型流行病学研究提示, 近 30 年几乎所有国家的 PCOS 发病率都在增加。许多国家针对国内大多数种族人群的 PCOS 表型和特点, 制定了适合国民的 PCOS 指南或共识。PCOS 国际指南中也提到关注 PCOS 种族差异并予以针对性诊疗。由于全球地域广博、种族繁多且历史悠久、混杂因素多等原因, 目前对 PCOS 的种族差异没有定论, 很难制定全面且有针对性的国际性指南。故本文将对 PCOS 患病率、遗传基础、高雄激素表现、代谢紊乱、心理并发症的种族差异进行综述, 以为不同种族 PCOS 患者开展个体化的预防、筛查和诊疗工作提供参考。

【关键词】 多囊卵巢综合征; 种族差异; 民族

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Research progress of racial differences in polycystic ovary syndrome

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【Abstract】 Polycystic ovary syndrome (PCOS) is a highly heterogeneous reproductive endocrine and metabolic disorder caused by multiple factors and multiple genes. A large global epidemiological study in 2022 suggested that the incidence of PCOS has increased in almost all countries over the past 30 years. Many countries have developed PCOS guidelines or consensus that are appropriate for the PCOS phenotypes and characteristics of most ethnic groups in the country. International guidelines for PCOS also address racial differences in PCOS and provide targeted treatment. Due to the vast geographical area, diverse ethnic groups, long history and many confounding factors in the world, there is no conclusion on the racial differences of PCOS at present. It is difficult to develop comprehensive and targeted international guidelines. Therefore, this article will review the racial differences in prevalence, genetic basis, hyperandrogen expression, metabolic disorders, and psychological complications of PCOS, in order to provide reference for the individual prevention, screening, diagnosis and treatment of PCOS patients of different races.

【Key words】 Polycystic ovary syndrome; Racial differences; Nation

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综述

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多囊卵巢综合征患者生活方式干预研究进展

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【摘要】 多囊卵巢综合征 (polycystic ovary syndrome, PCOS) 是育龄女性常见的慢性疾病, 主要威胁女性的生殖健康与代谢。根据不同的诊断标准, 全球有 5%~20% 的育龄女性受到影响。

目前尚无有效的治疗方法，因此早期和长期管理至关重要。PCOS 评估和管理国际循证指南建议将生活方式干预，如单独运动或多元膳食结合运动和行为习惯策略，作为 PCOS 患者的一线管理选择，以改善代谢健康。本综述从不同膳食模式、运动干预、行为管理方面展开，归纳总结生活方式干预在 PCOS 患者中应用的新进展，以期提高我国医护人员对 PCOS 女性群体的关注，并为今后在 PCOS 患者健康管理实践中的应用提供技术参考。

【关键词】 多囊卵巢综合征； 运动； 生活方式干预； 膳食模式

Research progress on lifestyle intervention in patients with polycystic ovary syndrome

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【Abstract】 Polycystic ovary syndrome (PCOS) is a common chronic disease in women of childbearing age, which mainly threatens women's reproductive health and metabolism. Globally, 5%-20% of women of childbearing age are affected, depending on the diagnostic criteria. There is currently no effective treatment, so early and long-term management is crucial. International evidence-based guidelines for the assessment and management of PCOS recommend lifestyle interventions, such as exercise alone or a variety of diets combined with exercise and behavioral strategies, as first-line management options for women with PCOS to improve metabolic health. This review summarizes the new progress in the application of lifestyle interventions in PCOS patients from different dietary patterns, exercise interventions and action management in order to improve the attention of medical staff in China to the female population of PCOS and provide technical reference for the future application in the health management practice of PCOS patients.

【Key words】 Polycystic ovary syndrome; Sport; Lifestyle interventions; Dietary patterns

综述

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受精障碍的病因及治疗研究进展

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【摘要】 不孕不育是影响生殖健康的重要病因。随着辅助生殖技术的日益发展，每年有上百万人选择借助辅助生殖技术助孕，然而临床中仍然有许多患者在助孕过程中可能会发生受精障碍。受精障碍的病因复杂多样。近年来，有关受精障碍的研究虽然有了一定的进展，但如何提高患者的受精率和卵母细胞的利用率仍是一个焦点问题。本综述旨在就受孕过程中引起受精障碍的可能病因及治疗的最新研究进展进行总结，为受精障碍人群的临床诊疗和管理提供更为全面的理论参考。

【关键词】 精子注射，细胞质内； 精子； 卵母细胞； 基因突变； 受精障碍

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Progress in research on the etiology and treatment of fertilization disorders

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【 Abstract 】 Infertility is an important cause of reproductive health. With the increasing development of assisted reproductive technology, millions of people choose to use assisted reproductive technology to assist pregnancy every year. However, there are still many patients in the clinic who may have fertilization disorders during the assisted pregnancy. The causes of fertilization disorders are complex and varied. Although research on fertilization disorders has progressed in recent years, the question of how to improve the fertilization rate and oocyte utilization in patients remains a focal issue. The aim of this review is to summarize the latest research progress on the possible etiology and treatment of fertilization disorders in the process of conception, so as to provide a more comprehensive theoretical reference for the clinical diagnosis and management of people with fertilization disorders.

【 Key words 】 Sperm injections, intracytoplasmic; Sperm; Oocytes; Genetic mutation; Fertilization disorders

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