

doi: 10.13241/j.cnki.pmb.2021.03.030

遂宁地区良性前列腺增生术后 LUTS 相关危险因素分析*

蔡翔¹ 陈宗平² 冉灿¹ 龚杨洋¹ 余周^{1,3,Δ}

(1 遵义医科大学研究生院 贵州 遵义 563000; 2 遵义医科大学附属医院泌尿外科 贵州 遵义 563000;

3 遂宁市中心医院泌尿外科 四川 遂宁 629000)

摘要 目的:调查与分析遂宁地区良性前列腺增生术后下尿路症状(Lower Urinary Tract Symptoms, LUTS)发生的相关危险因素。**方法:**2014年9月到2019年10月选择在遂宁市中心医院诊治的遂宁地区良性前列腺增生症患者172例,所有患者都给予手术治疗,记录术后LUTS发生情况,调查患者的临床资料并进行影响因素分析。**结果:**在172例患者中,术后平均国际前列腺症状评分量表(International prostate symptom scores, IPSS)评分为 5.67 ± 0.13 分,其中储尿期症状评分 3.01 ± 0.11 分,排尿期症状评分为 1.76 ± 0.22 分,排尿后症状评分 0.89 ± 0.14 分,发生LUTS 18例(LUTS组),发生率为10.5%。LUTS组的生活质量评分高于非LUTS组($P < 0.05$);LUTS组的年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积与非LUTS组对比差异有统计学意义($P < 0.05$);Pearson分析显示年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都与LUTS存在相关性($P < 0.05$);二元Logistic回归分析显示年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都为导致LUTS发生的主要因素($P < 0.05$)。**结论:**遂宁地区良性前列腺增生术后LUTS的发生比较常见,可严重影响患者的生活质量,年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都为导致LUTS发生的主要因素。

关键词:遂宁地区;良性前列腺增生;下尿路症状;危险因素;低密度脂蛋白

中图分类号:R697.32;R699.8 文献标识码:A 文章编号:1673-6273(2021)03-541-04

Analysis of Risk Factors Related to LUTS after Benign Prostatic Hyperplasia in Suining District*

CAI Xiang¹, CHEN Zong-ping², RAN Can¹, GONG Yang-yang¹, YU Zhou^{1,3,Δ}

(1 Graduate School of Zunyi Medical University, Zunyi, Guizhou, 563000, China;

2 Department of Urology, Affiliated Hospital of Zunyi Medical University, Zunyi, Guizhou, 563000, China;

3 Department of Urology, Suining Central Hospital, Suining, Sichuan, 629000, China)

ABSTRACT Objective: To investigate and analysis the risk factors related with the occurrence of Lower Urinary Tract Symptoms (LUTS) after benign prostatic hyperplasia in Suining district. **Methods:** From September 2014 to October 2019, 172 cases of patients with benign prostatic hyperplasia in the Suining district related diagnosed and treated in our hospital were selected as the research object. All patients were given surgical treatment, recorded the occurrence of postoperative LUTS. The clinical data of the patients were investigated and given influencing factor analysis. **Results:** The postoperative mean international prostate symptom(IPSS) scores in the 172 cases were 5.67 ± 0.13 points, of which the storage symptom scores were 3.01 ± 0.11 points, and the voiding symptom scores were 1.76 ± 0.22 scores, the symptom score after urination were 0.89 ± 0.14 points, that there were 18 cases of LUTS (LUTS group), the incidence rate were 10.5%. The quality of life score of the LUTS group were higher than that of the non-LUTS group, and compared the differences were statistically significant ($P < 0.05$). LUTS group's age, body mass index, low-density lipoprotein, total cholesterol, prostate volume compared with non-LUTS group were statistically significant ($P < 0.05$). Pearson analysis showed age, body mass index, low-density lipoprotein, total cholesterol, prostate volume were correlated with LUTS ($P < 0.05$). Binary logistic regression analysis shows that age, body mass index, low-density lipoprotein, total cholesterol, and prostate volume were the main factors that cause LUTS($P < 0.05$). **Conclusion:** The occurrence of LUTS after benign prostatic hyperplasia in Suining district are relatively common, which can seriously affect the quality of life of patients. Age, body mass index, low-density lipoprotein, total cholesterol, and prostate volume are the main factors that cause LUTS.

Key words: Suining district; Benign prostatic hyperplasia; Lower urinary tract symptoms; Risk factors; Low density lipoprotein

Chinese Library Classification(CLC): R697.32; R699.8 **Document code:** A

Article ID: 1673-6273(2021)03-541-04

* 基金项目:四川省卫生和计划生育委员会科研课题项目(150087)

作者简介:蔡翔(1992-),男,硕士研究生,住院医师,研究方向:结石、前列腺增生,电话:13824123684, E-mail: caixiang_199210@163.com

Δ 通讯作者:余周(1979-),男,博士研究生,副主任医师,研究方向:前列腺癌,电话:18008258250, E-mail: yuzhou0736@gmail.com

(收稿日期:2020-07-06 接受日期:2020-07-30)

前言

良性前列腺增生症(Benign prostatic hyperplasia, BPH)是中老年男性常见病,也是导致男性排尿障碍的主要病因之一^[1]。该病的发病机制比较复杂,尚未有一致的结论,不过其发生受到毗邻器官病变、物理与化学因素刺激、免疫学因素、病原体感染等多种因素的影响^[2]。手术为良性前列腺增生症的主要治疗方法,特别是经尿道前列腺电切术具有成功率高、并发症少、患者恢复等特点。但仍有 10% 的患者可在术后出现下尿路症状(Lower Urinary Tract Symptoms, LUTS^[3,4])。LUTS 是排尿障碍的总称,是指下尿路功能、结构改变所引起的排尿周期中各种异常表现,比如尿频、尿急、压力性尿失禁等^[5,6]。LUTS 不仅影响患者日常生活及工作,还与男性患者的勃起功能障碍、心理障碍存在相关性,导致其生活质量的下降^[7,8]。不过很多轻症 LUTS 患者通过增强自我管理,能减轻症状,提高其生活质量,因此加强 LUTS 危险因素的调查研究显得尤为重要。目前 LUTS 的评估主要是依据调查对象的主观感受,多使用国际前列腺症状评分量表(International prostate symptom scores, IPSS)进行判定^[9-11]。遂宁地区作为四川省的重要城市,还未发现有涉及遂宁地区 LUTS 现状及其危险因素的文獻报道。本文为此具体调查与分析了遂宁地区良性前列腺增生术后 LUTS 发生的相关危险因素,希望为今后制定专业化、针对性的临床防护措施与预防指导提供一定的基础。现总结报道如下。

1 资料与方法

1.1 研究对象

研究时间为 2014 年 9 月到 2019 年 10 月,选择在本院诊治的遂宁地区良性前列腺增生症患者 172 例作为研究对象,纳入标准:居住在遂宁地区年限 ≥ 10 年或具有遂宁地区户籍;肛指指诊及 B 超检查证实为良性前列腺增生症,具有手术指征;年龄 40~70 岁;能正常沟通,具有良好的认知能力;愿意并配合此次研究;本院伦理委员会批准了此次研究。排除标准:既往有前列腺手术史者;调查资料不完整者;妊娠与哺乳其妇女;调查期间死亡的患者;合并精神疾病患者。

1.2 手术方法

所有患者都给予经尿道前列腺电切术,采用硬膜外麻醉,患者取用截石位。通过经尿道插入电切镜,以精阜为标志,在 6 点处切取纵行标志沟,近端与远端位置为膀胱颈、精阜,深度达外科包膜。然后依次标志沟处理中叶、两侧叶,切除两标志沟之间的腺体,分侧切除两侧叶腺体,电切功率 160 W,电凝功率 80 W。术后持续进行膀胱冲洗与导尿管牵引。

1.3 调查内容

本研究调查的内容包括年龄、体重指数、手术时间、术中出血量、前列腺体积、IPSS 评分、生活质量评分、血脂、前列腺特异性抗原等。其中 IPSS 评分是诊断 LUTS 及判断其严重程度^[12]的主要参考标准,总分为 35 分,IPSS 评分 ≥ 8 分者视为存在 LUTS。同时采用生活质量(Quality of life, QOL)评分进行判定,评分为 0~6 分,选项为"非常好"至"很痛苦",分数越高,生活质量越差。

1.4 调查方法

在知情告知的前提下,调查人员(均为中级及以上职称)从患者的病历系统中获取数据。各问卷调查表的内容由调查人员负责向患者解释其含义,直到患者明白各项目含义后才开始自行填写,确保调查的有效率为 100.0%。

1.5 统计方法

结果数据用 SPSS 22.00 软件程序进行分析,计量数据以均数 \pm 标准差表示(对比为 t 检验),计数数据以百分比表示(对比为卡方 χ^2 检验),影响因素分析采用二元 Logistic 回归分析法与 Pearson 分析,检验水准为 $\alpha=0.05$, $P<0.05$ 时表示差异具有统计学意义。

2 结果

2.1 LUTS 发生情况

在 172 例患者中,术后平均 IPSS 评分为 5.67 ± 0.13 分,其中储尿期症状评分 3.01 ± 0.11 分,排尿期症状评分为 1.76 ± 0.22 分,排尿后症状评分 0.89 ± 0.14 分,发生 LUTS 18 例(LUTS 组),发生率为 10.5%。

2.2 生活质量评分对比

LUTS 组的生活质量评分高于非 LUTS 组,对比差异都有统计学意义($P<0.05$),见表 1。

表 1 两组生活质量评分对比(分, $\bar{x}\pm s$)

Table 1 Comparison of quality of life scores between the two groups (scores, $\bar{x}\pm s$)

Groups	n	Quality of Life Score
LUTS group	18	4.55 \pm 0.13*
Non-LUTS group	154	1.88 \pm 0.15

Note: * $P<0.05$ compared with the Non-LUTS group.

2.3 单因素分析

两组的手术时间、术中出血量、前列腺特异性抗原、高密度脂蛋白、甘油三酯等对比差异无统计学意义($P>0.05$),LUTS 组的年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积与非 LUTS 组对比差异有统计学意义($P<0.05$),见表 2 和表 3。

2.4 相关性分析

在 172 例患者中, Pearson 分析显示年龄、体重指数、低密

度脂蛋白、总胆固醇、前列腺体积都与 LUTS 存在相关性($P<0.05$),见表 4。

2.5 多因素分析

在 172 例患者中,以 LUTS 发生作为因变量,以年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积作为自变量,二元 Logistic 回归分析显示年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都为导致 LUTS 发生的主要因素($P<0.05$),见表 5。

表 2 遂宁地区良性前列腺增生术后 LUTS 发生的单因素分析(n=172)

Table 2 Univariate analysis of the occurrence of LUTS after benign prostatic hyperplasia in Suining area (n=172)

Groups	n	Operation time (min)	Intraoperative bleeding volume (mL)	Prostate-specific antigen (ng/mL)	High density lipoprotein (mmol/L)	Triglyceride (mmol/L)
LUTS group	18	48.25± 0.44	62.47± 2.19	3.48± 0.11	2.34± 0.14	1.82± 0.14
Non-LUTS group	154	49.09± 0.32	63.02± 1.44	3.41± 0.09	2.38± 0.13	1.83± 0.11

表 3 遂宁地区良性前列腺增生术后 LUTS 发生的单因素分析(n=172)

Table 3 Univariate analysis of the occurrence of LUTS after benign prostatic hyperplasia in Suining area (n=172)

Groups	n	Age (years)	BMI (kg/m ²)	Low density lipoprotein (mmol/L)	Total cholesterol (mmol/L)	Prostate volume (mL)
LUTS group	18	67.20± 3.11*	27.87± 1.11*	3.78± 0.14*	6.78± 0.11*	27.22± 1.10*
Non-LUTS group	154	56.20± 2.11	22.10± 1.84	3.11± 0.22	6.11± 0.31	21.88± 0.82

表 4 遂宁地区良性前列腺增生术后 LUTS 发生与其他指标的相关性(n=172)

Table 4 Correlation between LUTS and other indicators after benign prostatic hyperplasia in Suining area (n=172)

Index	Age	MBI	Low density lipoprotein	Total cholesterol	Prostate volume
r	0.655	0.713	0.543	0.455	0.398
P	0.000	0.000	0.014	0.021	0.037

表 5 遂宁地区良性前列腺增生术后 LUTS 发生的危险因素(n=172)

Table 5 Risk factors for LUTS after benign prostatic hyperplasia in Suining area (n=172)

Factors	β	SE	Wald	P	OR	95%CI
Age	0.455	0.145	8.376	0.004	1.633	1.145-2.842
MBI	0.584	0.198	9.001	0.001	1.794	1.184-7.821
Low density lipoprotein	0.358	0.129	7.642	0.006	1.444	1.034-4.636
Total cholesterol	0.324	0.277	5.399	0.021	1.392	1.113-7.195
Prostate volume	0.581	0.178	11.842	0.000	1.575	1.294-6.114

3 讨论

良性前列腺增生是中老年男性患者的常见病和多发病,随着人口结构的老龄化,前列腺增生症的发病人数越来越多。该病治疗目的是防止和延缓增生的进展,减轻症状,提高生活质量^[11,12]。经尿道前列腺电切术治疗该病具有很好的效果,但是由于很多患者因脏器功能老化,各项生理功能退化,在术后也伴随有 LUTS 发生^[13,14]。LUTS 病因多样,除了良性前列腺增生外,还包括泌尿系统梗阻、泌尿系统炎症、经源性因素等^[15]。有研究显示交感神经信号通路障碍、雄激素与雌激素分泌异常,可导致膀胱壁缺氧及逼尿肌功能异常,从而可参与 LUTS 的形成^[16,17]。LUTS 包含储尿期、排尿期及排尿后症状等多种类型,其中储尿期症状包括尿失禁、日间尿频、尿急、夜尿增多等,排尿期症状包括排尿等待、尿线变细、困难、间断、滴沥等,而排尿后症状主要为排尿后滴沥、排尿不尽感等^[18]。本研究显示在 172 例患者中,术后平均 IPSS 评分为 5.67± 0.13 分,其中储尿期症状评分 3.01± 0.11 分,排尿期症状评分为 1.76± 0.22 分,排尿后症状评分 0.89± 0.14 分,发生 LUTS 18 例(LUTS 组),发生率为 10.5%,表明遂宁地区良性前列腺增生术后 LUTS 发生率相对

比较高。与王建龙^[19]等学者的研究类似,术前尿动力学参数与经尿道绿激光手术治疗后下尿路症状(储尿期症状)改善状况之间的关系,结果显示术后随访 12 个月,患者储尿期症状和排尿期症状均取得明显改善,IPSS 评分,下尿路储尿期症状评分,下尿路排尿期症状评分,膀胱过度活动症评分较术前减少,患者储尿期症状,排尿期症状均取得明显改善。本研究显示 LUTS 组的生活质量评分高于非 LUTS 组,与胡万萍^[20]的研究类似,探讨影响老年良性前列腺增生患者术后 LUTS 的相关因素,结果显示多数老年良性前列腺增生患者下尿路症状处于重度水平,其生活质量评分也显著升高,其中年龄的增加,人均月收入的提高,良性前列腺增生病程的增长,焦虑程度的增加和非已婚的婚姻状况是 LUTS 的促进因素。从机制上分析,受到 LUTS 影响的良性前列腺增生术后患者,其生活质量明显降低,也会消耗大量的医疗资源^[21]。有研究显示约 1/3 的 60 岁以上男性良性前列腺增生患者可遭受 LUTS 的影响,70 岁以上男性受到影响的则在 1/2 左右^[22]。

排尿困难是 LUTS 患者较常见的症状,很多患者常需用力并增加腹压来帮助排尿,排尿终末也常伴有尿不尽感。很多患者可伴随有睡眠障碍,并可造成次日疲倦、注意力下降,患者的

性功能与 LUTS 严重程度明显相关,也可影响家人的睡眠质量^[23,24]。从病因上分析,增生的前列腺压迫尿道可增加排尿阻力,进而影响逼尿肌收缩功能,从而考核术后排尿不畅、残余尿量增多、尿线无力等症状的发生^[25,26]。本研究显示 LUTS 组的年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积与非 LUTS 组对比差异有统计学意义;Pearson 分析显示年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都与 LUTS 存在相关性;二元 Logistic 回归分析显示年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都为导致 LUTS 发生的主要因素。与蒋悦^[27]的研究类似,该学者探究多因素回归分析良性前列腺增生电切术后并发膀胱过度活动综合征的影响因素,患者均顺利行 TURP 术,多因素非条件 Logistic 回归分析结果显示,术前患者更小的最大尿流率、更差的逼尿肌稳定性及更高的 IPSS 评分显著增加 TURP 术后膀胱过度活动综合征的风险,TURP 术后并发膀胱过度活动综合征与患者最大尿流率、逼尿肌稳定性及 IPSS 评分相关,应积极控制风险因素,以提高患者生活质量并改善预后。从机制上分析,机体的膀胱逼尿肌的收缩功能随年龄增长而减弱,雄激素水平也会随着年龄的增长逐年降低,导致排尿障碍与雌-雄比例失衡,使得尿潴留风险增高^[28]。前列腺体积增加可使前列腺部尿道弯曲、延长,前列腺腺管上皮数量增多,一定程度加重了患者的下尿路症状^[29]。患者体重指数的增加可能导致脂肪细胞的代谢紊乱,改变了体内的激素水平,易诱发前列腺上皮增生;也可促进释放大炎症因子,改变前列腺平滑肌细胞的表型,使机体炎症水平升高,从而引起尿道出口梗阻,导致 LUTS 的发生^[30,31]。低密度脂蛋白、总胆固醇异常可导致全身血管内皮细胞病理性增殖并出现动脉粥样硬化,导致盆腔缺血,进一步减弱膀胱逼尿肌的收缩功能,可该病膀胱逼尿肌结构与功能,增加尿潴留的风险^[32]。特别是低密度脂蛋白过多会诱导增加细胞内钙含量,易致交感神经过度紧张,过度抑制膀胱逼尿肌的收缩,影响前列腺平滑肌功能^[33,34]。本研究也存在一定的不足,比如调查对象存在一定的地域性缺陷,也没有追踪 LUTS 的动态变化过程,将在后续研究中深入探讨。

总之,遂宁地区良性前列腺增生术后 LUTS 的发生比较常见,可严重影响患者的生活质量,年龄、体重指数、低密度脂蛋白、总胆固醇、前列腺体积都为导致 LUTS 发生的主要因素。

参考文献(References)

- [1] 胡海峰,杨进,汪自力,等.保守疗法和同期微创手术治疗前列腺增生合并输尿管结石的疗效及其对性功能的影响[J].*湖北医学院学报*, 2020, 35(1): 96-99
- [2] 王治国.坦索罗辛联合泼尼松龙治疗 III 型前列腺炎的疗效及对 B7-H3、IFN- γ 、IL-10 表达的影响[J].*湖北医学院学报*, 2017, 32(2): 230-232, 253
- [3] Yamanishi T. A randomized controlled study of the efficacy of tadalafil monotherapy versus combination of tadalafil and mirabegron for the treatment of persistent overactive bladder symptoms in men presenting with lower urinary tract symptoms (CONTACT Study)[J]. *JMIR Res Protoc*, 2020, 39(2): 804-812
- [4] Yamazaki H, Tsujimoto N, Koyanagi M, et al. Real-World Safety and Effectiveness of Tadalafil in Patients with Lower Urinary Tract Symptoms Secondary to Benign Prostatic Hyperplasia: A Japanese Post-Marketing Surveillance Study[J]. *PLoS One*, 2020, 11(8): 45-54
- [5] Yu S, Li Q, Zhou Z, et al. Clinical application of intravesical botulinum toxin type A for overactive bladder and interstitial cystitis[J]. *Am J Mens Health*, 2020, 61(Suppl 1): S33-s42
- [6] Desai M, Cho JM, Moon KT, et al. Robotic Simple Prostatectomy: Why and How?[J]. *BJU Int*, 2020, 24(1): 12-20
- [7] Elterman D, Bach T, Rijo E, et al. Transfusion rates after 800 Aquablation procedures using various haemostasis methods [J]. *BJU International*, 2020, 125(4): 568-572
- [8] Garg A, Bansal S, Saha S, et al. Study of correlation of urodynamic profile with symptom scoring and ultrasonographic parameters in patients with benign prostatic hyperplasia [J]. *J Family Med Prim Care*, 2020, 9(1): 215-220
- [9] Hackett G. Should All Men with Type 2 Diabetes Be Routinely Prescribed a Phosphodiesterase Type 5 Inhibitor? [J]. *World J Mens Health*, 2020, 38(3): 271-284
- [10] Kaga K, Sakata K, Yokoyama T, et al. Evaluation of Clinical Outcomes of Prostatic Urethral Lift for Benign Prostatic Hyperplasia: An Asian Population Study[J]. *Neurourol Urodyn*, 2020, 38(3): 338-344
- [11] Kim HB, Kim YI, Jeon JH, et al. Effectiveness and safety of electroacupuncture and its cotreatment with electronic moxibustion in the treatment of patients with moderate benign prostatic hyperplasia using alpha blocker: Study protocol for an assessor-blinded, randomized controlled clinical trial [J]. *Medicine (Baltimore)*, 2020, 99(15): e19678
- [12] Large T, Nottingham C, Stoughton C, et al. Comparative Study of Holmium Laser Enucleation of the Prostate With MOSES Enabled Pulsed Laser Modulation[J]. *Urology*, 2020, 136(8): 196-201
- [13] Lee HY, Bae GE, Lee SD, et al. Moxibustion as an adjunct for lower urinary tract symptoms associated with benign prostate enlargement: A randomized controlled pilot trial [J]. *Medicine (Baltimore)*, 2020, 99(4): e18918
- [14] Busetto GM, Del Giudice F, D'agostino D, et al. Efficacy and safety of Finasteride (5 alpha-reductase inhibitor) monotherapy in patients with benign prostatic hyperplasia: A critical review of the literature [J]. *BJU Int*, 2020, 91(4): 205-210
- [15] Cai T, Cui Y. Comparison of Serenoa repens With Tamsulosin in the Treatment of Benign Prostatic Hyperplasia: A Systematic Review and Meta-Analysis [J]. *American Journal of Men s Health*, 2020, 14(2): e1557
- [16] Chen Z, Liu Y, Zhao M, et al. Urinary ATP may be a biomarker for bladder outlet obstruction and its severity in patients with benign prostatic hyperplasia[J]. *Transl Androl Urol*, 2020, 9(2): 284-294
- [17] D'agate S, Wilson T, Adalig B, et al. Impact of disease progression on individual IPSS trajectories and consequences of immediate versus delayed start of treatment in patients with moderate or severe LUTS associated with BPH [J]. *World Journal of Urology*, 2020, 38(2): 463-472
- [18] Liao X, Tang Z, Ai J, et al. Detection of Prostatic Inflammation From Peripheral Lymphocyte Count and Free/Total PSA Ratio in Men With LUTS/BPH[J]. *Front Pharmacol*, 2020, 11(22): e589
- [19] 王建龙,陈毅来,王蕾蕾,等.老年前列腺增生患者经尿道绿激光气化切除术后储尿期症状改善的多因素分析[J].*中华老年医学杂志*, 2019, 38(2): 196-200

- [15] 伍艳玲, 冯勤付. 原发性肝细胞肝癌手术联合放疗的进展[J]. 中华放射医学与防护杂志, 2019, 39(7): 554-557
- [16] Yan SY, Fan JG, Qio L. Hepatitis B Virus (HBV) Infection and Hepatocellular Carcinoma New Insights for an Old Topic[J]. *Curr Cancer Drug Targets*, 2017, 17(6): 505-511
- [17] Zhao X, Chen Y, Mao Q, et al. Overexpression of YTHDF1 is associated with poor prognosis in patients with hepatocellular carcinoma[J]. *Cancer Biomark*, 2018, 21(4): 859-868
- [18] Kallin A, Johannessen L E, Cani P D, et al. SREBP-1 regulates the expression of heme oxygenase 1 and the phosphatidylinositol-3 kinase regulatory subunit p55 gamma [J]. *J Lipid Res*, 2007, 48(7): 1628-1636
- [19] Lounis MA, Bergeron KF, Burhans MS, et al. Oleate activates SREBP-1 signaling activity in SCD1-deficient hepatocytes [J]. *Am J Physiol Endocrinol Metab*, 2017, 313(6): E710-E720
- [20] Yin F, Feng F, Wang L, et al. SREBP-1 inhibitor Betulin enhances the antitumor effect of Sorafenib on hepatocellular carcinoma via restricting cellular glycolytic activity [J]. *Cell Death Dis*, 2019, 10(9): 672
- [21] Coskun M. Hepatocellular Carcinoma in the Cirrhotic Liver: Evaluation Using Computed Tomography and Magnetic Resonance Imaging [J]. *Exp Clin Transplant*, 2017, 15(Suppl 2): 36-44
- [22] Granito A, Bolondi L. Non-transplant therapies for patients with hepatocellular carcinoma and Child-Pugh-Turcotte class B cirrhosis [J]. *Lancet Oncol*, 2017, 18(2): e101-e112
- [23] Arab JP, Karpen SJ, Dawson PA, et al. Bile acids and nonalcoholic fatty liver disease: Molecular insights and therapeutic perspectives[J]. *Hepatology*, 2017, 65(1): 350-362
- [24] 杨光明, 杨晓军, 马婷, 等. 沉默甲胎蛋白表达对人肝癌细胞 HepG2 细胞功能学的影响 [J]. 中华实验外科杂志, 2016, 33(10): 2275-2278
- [25] Shu H, Li W, Shang S, et al. Diagnosis of AFP-negative early-stage hepatocellular carcinoma using Fuc-PON1 [J]. *Discov Med*, 2017, 23(126): 163-168
- [26] Gilles F, Goy A, Remache Y, et al. MUC1 dysregulation as the consequence of a t (1;14)(q21;q32) translocation in an extranodal lymphoma[J]. *Blood*, 2000, 95(9): 2930-2936
- [27] Flaherty SE 3rd, Grijalva A, Xu X, et al. A lipase-independent pathway of lipid release and immune modulation by adipocytes [J]. *Science*, 2019, 363(6430): 989-993
- [28] Kim GA, Lim YS, Han S, et al. High risk of hepatocellular carcinoma and death in patients with immune-tolerant-phase chronic hepatitis B [J]. *Gut*, 2018, 67(5): 945-952
- [29] Fu Y, Liu S, Zeng S, et al. From bench to bed: the tumor immune microenvironment and current immunotherapeutic strategies for hepatocellular carcinoma[J]. *J Exp Clin Cancer Res*, 2019, 38(1): 396
- [30] Khemlina G, Ikeda S, Kurzrock R. The biology of Hepatocellular carcinoma: implications for genomic and immune therapies[J]. *Mol Cancer*, 2017, 16(1): 149

(上接第544页)

- [20] 胡万萍. 老年良性前列腺增生患者下尿路症状及其影响因素研究 [J]. 健康大视野, 2018, 000(21): 199-199
- [21] Ma C, Zhang J, Cai Z, et al. To evaluate the efficacy and safety of different kinds of PDE5-Is with tamsulosin as a medical therapy for LUTS secondary to benign prostatic hyperplasia: A protocol for systematic review and meta analysis[J]. *Medicine (Baltimore)*, 2020, 99(3): e18712
- [22] Nguyen DD, Barber N, Bidair M, et al. Waterjet Ablation Therapy for Endoscopic Resection of prostate tissue trial (WATER) vs WATER I-I: comparing Aquablation therapy for benign prostatic hyperplasia in 30-80 and 80-150 mL prostates [J]. *BJU International*, 2020, 125(1): 112-122
- [23] Noh JW, Yoo KB, Kim KB, et al. Association between lower urinary tract symptoms and cigarette smoking or alcohol drinking[J]. *World J Urol*, 2020, 9(2): 312-321
- [24] Qalawena MM, Al-Shatouri MA, Motawaa MA, et al. Association Between Prostate Zonal Volume and Erectile Dysfunction in Patients With Benign Prostatic Hyperplasia[J]. *Sex Med*, 2020, 8(2): 205-213
- [25] Tajima K, Komori M, Roehrborn CG, et al. Men's Sexual Health Questionnaire score changes vs spontaneous sexual adverse event reporting in men treated with dutasteride/tamsulosin combination therapy for lower urinary tract symptoms secondary to benign prostatic hyperplasia: A post hoc analysis of a prospective, randomised, placebo-controlled study[J]. *Pragmat Obs Res*, 2020, 74(5): e13480
- [26] Traish AM. Health Risks Associated with Long-Term Finasteride and Dutasteride Use: It's Time to Sound the Alarm [J]. *World J Mens Health*, 2020, 38(3): 323-337
- [27] 蒋悦. 多因素回归分析良性前列腺增生电切术后并发膀胱过度活动综合征的影响因素[J]. 中华全科医学, 2016, 14(3): 404-406
- [28] Van Kollenburg R a A, Van Riel L. Transperineal Laser Ablation Treatment for Lower Urinary Tract Symptoms Due to Benign Prostatic Obstruction: Protocol for a Prospective In Vivo Pilot Study [J]. *Rev Urol*, 2020, 9(1): e15687
- [29] Wang JW, Man LB. Transurethral resection of the prostate stricture management[J]. *Asian J Androl*, 2020, 22(2): 140-144
- [30] Wilson TH, Lulic Z, Giuliano F, et al. Lower urinary tract symptoms in patients with advanced prostate cancer: What are the outcomes of androgen deprivation therapy?[J]. *Int J Clin Pract*, 2020, 27(1): 49-53
- [31] Wu YH, Juan YS, Shen JT, et al. Lower urinary tract symptoms-Benign prostatic hyperplasia may increase the risk of subsequent inguinal hernia in a Taiwanese population: A nationwide population-Based cohort study [J]. *Benign Prostatic Hyperplasia*, 2020, 15(6): e0234329
- [32] Yu ZJ, Yan HL, Xu FH, et al. Efficacy and Side Effects of Drugs Commonly Used for the Treatment of Lower Urinary Tract Symptoms Associated With Benign Prostatic Hyperplasia [J]. *Front Pharmacol*, 2020, 11(12): e658
- [33] Zhang T, Xun YQ, Li B, et al. Effect of fire needle therapy on mild-moderate benign prostatic hyperplasia: Protocol for a randomized controlled pilot trial [J]. *Medicine (Baltimore)*, 2020, 99(21): e20376
- [34] Senczuk-Kaczmarek K, Płatek AE, Szymański FM. Co-treatment of lower urinary tract symptoms and cardiovascular disease - where do we stand?[J]. *World J Mens Health*, 2020, 73(1): 42-45