

doi: 10.13241/j.cnki.pmb.2017.31.031

高浓度玻璃酸钠滴眼液与聚乙二醇滴眼液防治飞秒激光辅助 LASIK 术后干眼的临床疗效对比 *

许博 黄磊 吴琼 李雪 曹文萍 康杨 胡琦[△]

(哈尔滨医科大学附属第一医院视光学中心 黑龙江 哈尔滨 150000)

摘要 目的:比较高浓度玻璃酸钠滴眼液与聚乙二醇滴眼液防治飞秒激光辅助 LASIK 术后干眼的临床效果。**方法:**选取 2016 年 1 月至 2017 年 1 月在我院视光学中心收治的飞秒激光辅助 LASIK 术后干眼患者 80 例并将其随机分为 A、B 两组, 分别给予玻璃酸钠滴眼液(3 g/L)、聚乙二醇滴眼液, 在用药后 1 周、2 周、1 个月进行干眼体征检查, 比较患者用药前后泪液分泌试验(SIT)、泪膜破裂时间(BUT)、角膜荧光素染色(FL)的变化。**结果:**术后 1 周, 所有患者 BUT 均较术前显著降低, FL 均较术前显著升高, 差异均有统计学意义($P < 0.05$), 但 SIT 与术前比较差异无统计学意义($P > 0.05$)。两组患者用药后 SIT 数值随时间变化差异没有统计学意义($P > 0.05$); A 组和 B 组分别在用药后 1 周、2 周、1 个月时进行比较, SIT 变化差异没有统计学意义($P > 0.05$); 而 A 组 BUT 时间、FL 评分改善时间明显早于 B 组, 差异有统计学意义($P < 0.05$)。**结论:**滴用高浓度玻璃酸钠滴眼液(3 g/L)对飞秒激光辅助 LASIK 术后干眼患者的效果明显优于滴用聚乙二醇。

关键词:飞秒激光辅助 LASIK; 干眼; 玻璃酸钠; 聚乙二醇

中图分类号:R77 **文献标识码:**A **文章编号:**1673-6273(2017)31-6132-04

Comparison of the Preventive Effect of High Concentration of Sodium Hyaluronate Eye drops and Polyethylene Glycol eye drops on the Dry Eye after LASIK with Femtosecond Laser*

XU Bo, HUANG Lei, WU Qiong, LI Xue, CAO Wen-ping, KANG Yang, HU Qi[△]

(Visual Optics Center, First Affiliated Hospital, Harbin Medical University, Harbin, Heilongjiang, 150000, China)

ABSTRACT Objective: To investigate the effect of high concentration of sodium hyaluronate eye drops and polyethylene glycol eye drops on prevention of dry eye after LASIK with femtosecond laser. **Methods:** 80 patients with dry eye after LASIK with femtosecond laser admitted in our hospital optometry center from January 2016 to January 2017 were collected and randomly divided into group A and B, which were given sodium hyaluronate eye drops (3 g/L), polyethylene glycol eye drops respectively. The changes in Schirmer I test, break up time and fluorescein staining before and at 1 week, 2 weeks, 1 month after operation were compared between two groups. **Results:** At 1 week after operation, BUT of all patients was significantly lower than that before operation, FL was significantly higher than before surgery($P < 0.05$); but SIT showed no significant difference before and after surgery($P > 0.05$). There was no significant difference in the SIT values of both groups with the changes of time after treatment. There was no statistical significance in the change of SIT between group A and group B at 1 week, 2 weeks and 1 month after treatment($P > 0.05$), while the time of BUT and the improvement of FL score in group A were significantly earlier than those in group B ($P < 0.05$). **Conclusions:** High concentration of sodium hyaluronate (3 g/L) on dry eye was significantly better than that of polyethylene glycol after femtosecond laser assisted LASIK.

Key words: Femtosecond laser assisted LASIK; Dry eye; High concentrations of sodium hyaluronate; Polyethylene glycol

Chinese Library Classification(CLC): R77 **Document code:** A

Article ID: 1673-6273(2017)31-6132-04

前言

飞秒激光辅助 LASIK 手术 (femtosecond laser assisted LASIK) 是应用飞秒激光制瓣及准分子激光使角膜消融, 进而达到屈光矫正目的^[1]。虽然飞秒激光制瓣在安全性、准确性、稳定性等方面已经远远超过了机械角膜刀制瓣的传统 LASIK 手

术^[2], 但是仍然不能解决因角膜屈光手术本身导致的角膜中央区感觉神经损伤、角膜知觉减退和术后角膜表面规则性下降等并发症所引起的术后泪液动力学异常, 加上术后炎症反应也会引起泪液功能的异常, 最终会导致干眼并发症的发生^[3]。

术后干眼问题是困扰患者术后舒适感的重要因素, 所以术后滴用药物来改善干眼症状十分重要, 部分药物会对术后恢复

* 基金项目: 黑龙江省博士后科研启动基金项目(LBH-Q13126); 黑龙江省卫生厅科研基金项目(2012-554)

作者简介: 许博(1985-), 硕士, 住院医师, 研究方向: 眼视光学, 电话: 13703628028, E-mail: 287636827@qq.com

[△] 通讯作者: 胡琦, 博士, 主任医师, 研究方向: 眼视光学, E-mail: huqi5115@sina.com

(收稿日期: 2017-04-06 接受日期: 2017-04-30)

产生影响,选择适当有效的滴眼液对屈光手术的术后恢复有重大意义^[4]。近年有研究表明^[5]高浓度玻璃酸钠滴眼液和聚乙二醇滴眼液都能够缓解干眼引起的干涩、异物感、刺痛等症状,是治疗干眼的一线用药。本研究拟通过比较飞秒激光辅助 LASIK 术前术后干眼体征证明飞秒激光制瓣术后仍然存在干眼问题,和比较高浓度玻璃酸钠滴眼液(3 g/L)和聚乙二醇滴眼液治疗飞秒激光辅助 LASIK 术后干眼的临床疗效,以期飞秒激光辅助 LASIK 术后干眼用药提供参考。

1 资料和方法

1.1 一般资料

选取 2016 年 1 月至 2017 年 1 月在我院视光学中心行飞秒激光辅助 LASIK 术后干眼患者 80 例(160 眼)作为研究对象,研究不分左右眼。患者纳入标准:(1)年龄 18 岁-50 岁;(2)术前常规检查无其他眼病史,符合手术适应证者;(3)除飞秒激光辅助 LASIK 术前术后常规用药外无其他药物使用史;(4)术前常规进行泪液分泌试验(Schirmer I test, SIT)、泪膜破裂时间(break up time, BUT)、角膜荧光素染色(fluorescein staining, FL),检查, SIT>10 mm, BUT>10 s, FL:无着色。排除标准:(1)患有眼病史及手术禁忌的全身病史者;(2)妊娠及哺乳期妇女。

1.2 分组及方法

随机将患者分为 2 组,每组 40 例(80 眼),所有患者术后 1 周检查泪液分泌试验(Schirmer I test, SIT)、泪膜破裂时间(break up time, BUT)、角膜荧光素染色(fluorescein staining, FL),记录结果。然后 A 组用玻璃酸钠滴眼液(3 g/L),每日 4 次滴眼内;B 组用聚乙二醇滴眼液,每日 4 次滴眼内。两组患者均治疗 1 个月,分别于滴眼液使用后 1 周、2 周、1 个月进行干眼体征检查并记录检查结果。术后用滴眼液除本次研究用药外,所有患者还同时滴用左氧氟沙星滴眼液,每天 4 次滴眼内,滴用 1 个月;妥布霉素地塞米松滴眼液每日 4 次滴眼内,以后每两天减量一次,直至第 8 天停药。

1.3 干眼体征评价

1.3.1 泪液分泌试验 泪液分泌试验(Schirmer I test, SIT)用检测试纸,免用麻药,防止麻药对检查结果的影响,将泪液试纸前端沿虚线折叠,将折叠后的试纸放置于双眼下睑中外 1/3 处的睑结膜内,计时 5 min,5 min 后取下并记录刻度所显示的数值,此数值即为泪液分泌量,数值≤10 mm 为阳性。

1.3.2 泪膜破裂时间 泪膜破裂时间(break up time, BUT)在 SIT 结束半小时后进行,用荧光素钠检测试纸进行检测,防止两项检查时间过近,影响检查结果。湿润荧光素钠检测试纸,轻沾结膜,荧光素染色后,嘱患者瞬目,使荧光素钠均匀平铺在角膜表面,然后计时并记录泪膜破裂时间。重复 3 次取其平均值,数值≤10 s 为阳性。

1.3.3 角膜荧光素染色 角膜荧光素染色(fluorescein staining, FL)可与 BUT 检测同时进行,若角膜表面干燥不光滑,荧光素钠就会嵌顿在角膜表面不光滑处,即为角膜荧光素染色。将角膜分为四个象限,计数每个象限角膜点状着色数量,无着色为 0 分;着色 5 点以下为 1 分;着色 5 点以上为 2 分;丝状着色为 3 分;着色连成块状为 4 分,以此为角膜荧光素染色记分。

1.4 统计学分析

采用 SPSS11.0 软件进行统计学分析,符合正态分布的数据表示为均数±标准差($\bar{x} \pm s$),两组患者术前与术后未用药结果比较采用配对样本 t 检验,同组患者术后用药后不同时间点的结果比较采用方差分析, A 组与 B 组相同时间点的结果比较采用两独立样本 t 检验,以 P<0.05 为差异有统计学意义。

2 结果

2.1 所有患者术前与术后 1 周 SIT、BUT、FL 的比较

术后 1 周,所有患者 BUT 均较术前显著降低,FL 均较术前显著升高,差异均有统计学意义(P<0.05),但 SIT 与术前比较差异无统计学意义(P>0.05)(表 1)。

表 1 所有患者术前与术后 1 周 SIT、BUT、FL 的比较

Table 1 Comparison of the SIT, BUT, FL of all patients before and at 1 week after surgery

Time	SIT(mm/5 min)	BUT(s)	FL(score)
Pre-operation	16.22± 5.76	10.59± 1.26	0.15± 0.42
At 1 week after surgery	3.14± 5.52	1.95± 1.29	3.35± 2.82
P	0.217	0.454	0.048

2.2 两组患者术后 1 周、用药后 1 周、2 周、1 个月 SIT、BUT、FL 的比较

两组患者用药后 SIT 随时间变化差异均没有统计学意义(A 组 F=38.891, P>0.05; B 组 F=70.354, P>0.05)(表 2, 表 3)。两组患者随用药时间延长 BUT 时间均延长, A 组用药后 1 周 BUT 时间明显延长,用药后 2 周 BUT 时间恢复到正常; B 组用药后 1 周 BUT 时间延长不明显、用药后 2 周 BUT 时间明显延长,用药后 1 个月 BUT 时间恢复到正常,差异有统计学意义(A 组 F=49.301, P<0.05; B 组 F=10.393, P<0.05)(表 2, 表 3); 两组患者随用药时间延长 FL 评分均减少, A 组用药后 1 周角膜荧光素染色已经好转, 用药后 2 周角膜已经基本无着色; B 组用

药后 1 周角膜荧光素染色好转不明显、2 周角膜荧光素染色开始好转,用药后 1 个月角膜基本无着色,差异有统计学意义(A 组 F=49.301, P<0.05; B 组 F=10.393, P<0.05)(表 2, 表 3)。A 组和 B 组分别在用药后 1 周、2 周、1 个月时进行比较, SIT 变化差异没有统计学意义(P>0.05, 表 4); 而 A 组 BUT 时间比 B 组好转速度明显加快, FL 评分也降低速度明显加快, 差异有统计学意义(P<0.05, 表 4)。

3 讨论

飞秒激光辅助 LASIK 手术是目前角膜屈光手术中常见的术式,其手术安全性、切削角膜瓣的准确性都更加优化。虽

表 2 A 组患者不同时间点 SIT、BUT、FL 比较

Table 2 Comparison of the S I T, BUT, FL of group A among different time points

Time	SIT(mm/5 min)	BUT(s)	FL(score)
At 1 week after surgery	3.44± 3.52	2.95± 1.89	3.35± 1.32
At 1 week after administration	5.34± 2.66	3.53± 1.91	2.90± 1.72
At 2 weeks after administration	9.55± 4.22	9.65± 2.08	1.03± 0.80
1 month after administration	14.34± 6.33	13.05± 2.22	0.18± 0.39
F	38.891	49.301	49.241
P	0.121	0.009	0.003

表 3 B 组患者不同时间点 SIT、BUT、FL 的比较

Table 3 Comparison of the S I T, BUT, FL of group B among different time points

Time	SIT(mm/5 min)	BUT(s)	FL(score)
At 1 week after surgery	3.18± 4.62	2.25± 2.19	3.65± 2.19
At 1 week after administration	4.95± 3.66	3.45± 2.91*	3.51± 1.13*
At 2 weeks after administration	10.45± 8.44	7.35± 1.91	2.15± 0.72
1 month after administration	15.22± 10.45	9.83± 2.40	0.83± 0.75
F	70.354	31.519	10.393
P	0.791	0.033	0.011

注: * 表示用药后一周与术后一周比较差异无统计学意义($P>0.05$)。

Note: * Indicates that there was no statistically significant difference between one week after treatment and one week after operation ($P>0.05$).

表 4 两组患者不同时间点 SIT、BUT、FL 的比较

Table 4 Comparison of the SIT, BUT, and FL at different time points between two groups

Group	SIT(mm/5 min)			BUT(s)			FL(score)		
	At 1 week after administration	At 2 weeks after administration	At 1 month after administration	At 1 week after administration	At 2 weeks after administration	At 1 month after administration	At 1 week after administration	At 2 weeks after administration	At 1 month after administration
Group A	5.34± 2.66	9.55± 4.22	14.34± 6.33	3.53± 1.91	9.65± 2.08	13.05± 2.22	2.90± 1.72	1.03± 0.80	0.18± 0.39
Group B	4.95± 3.66	10.45± 8.44	15.22± 10.45	3.45± 2.91	7.35± 1.91	9.83± 2.40	3.51± 1.13	2.15± 0.72	0.83± 0.75
P	0.031	0.012	0.023	0.352	0.267	0.321	0.031	0.022	0.013

然,有研究表明^[6]飞秒激光制瓣能减少术后眼干并发症,但术后干眼仍然存在于飞秒激光辅助 LASIK 手术后。飞秒激光制瓣可能在制瓣过程中切断部分角膜神经,使泪腺接收到的促进泪液分泌的神经冲动减少,从而导致泪液分泌量减少而引起干眼;角膜知觉功能会随着角膜神经切断而减退,致使眼睑瞬目次数减少,泪液蒸发过强而导致干眼;结膜和角膜上皮由于术中负压吸引和机械损伤导致角结膜眼表组织损伤,泪膜稳定系统受到影响而导致干眼;角膜曲率降低,角膜形态变扁平,对泪膜稳定性也产生了影响,从而导致干眼;术后为了促进恢复防治感染必须使用抗炎滴眼液和激素类滴眼液,对泪液动力学产生影响而导致干眼^[7-13]。我们在研究过程中发现飞秒激光辅助 LASIK 手术术后干眼症状会随时间延长而缓解,但是仍然不能放任干眼症状发生而不治疗,若发展为严重干眼,则会影响术后视力和眼表健康的恢复。因此,飞秒激光辅助 LASIK 术除了提高术者技术减少术中对眼表的损伤外,术后尽快缓解干眼症状才能促进视力恢复和提高患者术后舒适度和满意度。

本研究采用了临床最权威和最常用的检测方法^[14],泪液分泌试验(Schirmer I test, SIT)能够检测在无麻醉情况下泪液分泌

的量,虽然检测结果容易受患者眼睑敏感度的影响,但是仍然是现在干眼检查的首要手段;泪膜破裂时间 (breakup time, BUT)能够检测出泪膜的稳定性,患者配合度好、依从性高,检查操作简单且不宜受外界影响,检查结果更加准确^[15]。角膜荧光素染色(fluorescein staining, FL)检查能直观的观察角膜表面状态,角膜上皮的光滑度和完整性,所以 FL 也是检查干眼的重要检查手段。

人工泪液使用简单,方便携带,所以一直是干眼治疗的一线用药,但是人工泪液种类繁多,到底哪种更适合用于飞秒激光辅助 LASIK 术后干眼防治一直没有明确研究。聚乙烯醇滴眼液是常用人工泪液之一,具有较高的亲水性,能够缓解眼表干燥,增加角膜表面的湿度,但是它本身没有组织修复功能,黏弹性也较低,只能靠单纯的补充水分来达到缓解干眼的目的^[16]。而玻璃酸钠滴眼液作为治疗干眼的一线用药,具有显著的亲水能力和润滑作用,本次研究采用高浓度玻璃酸钠滴眼液(3 g/L),不仅具有非牛顿液体的特性^[17-23],有较高黏弹性,能够锁住黏蛋白,在眼表维持很长时间,而且具有附水分子、润滑角结膜表面的功能,还能连接纤维蛋白,促进角结膜上皮的修复^[24]。滴

用人工泪液是辅助加快眼干修复速度和促进术口恢复,所以滴眼液不能长时间滴用,以防止药物毒性和耐药性,所以在最短时间起到最快最好的疗效是在飞秒激光辅助 LASIK 术后使用人工泪液的首要目的。

总之,本次研究结果表明高浓度玻璃酸钠滴眼液(3 g/L)和聚乙二醇滴眼液都能够有效缓解干眼症状,都有随着用药时间的延长疗效更好的趋势。但高浓度玻璃酸钠滴眼液(3 g/L)的起效时间快于聚乙二醇滴眼液,缓解眼干的效果好于聚乙二醇滴眼液。由于时间限制研究仍然存在不足之处,本研究没有进一步比较联合用药和耐药性,未来还需要对此做进一步探讨。

参考文献(References)

- [1] 薛超. 飞秒激光 LASIK 角膜瓣形态及术后角膜后表面高度变化的临床研究[D]. 天津: 天津医科大学, 2012
Xue Chao. Clinical study of lumbar laser LASIK corneal flap morphology and postoperative corneal surface height changes [D]. Tianjin: Tianjin Medical University, 2012
- [2] 李仲佳, 李雪, 杜春宇, 等. 飞秒激光与角膜板层刀辅助 LASIK 术后早期角膜生物力学变化的比较 [J]. 国际眼科杂志, 2015, 15(3): 428-431
Li Zhong-ji, Li Xue, Du Chun-yu, et al. Femtosecond laser with lamellar cornea knife auxiliary LASIK surgery early corneal biomechanics changes comparison[J]. International journal of ophthalmology, 2015, 15(3): 428-431
- [3] Kim C Y, Song J H, Na K S, et al. Factors influencing corneal flap thickness in laser in situ keratomileusis with a femtosecond laser[J]. Korean J Ophthalmol, 2011, 25(1): 8-14
- [4] Grubbs J R Jr, Tolleson-Rinehart S, Huynh K, et al. A review of quality of life measures in dry eye questionnaires [J]. Cornea, 2014, 33(2): 215-218
- [5] 刘畅, 姚靖. 干眼的中医论治思路探讨 [J]. 中医药学报, 2016, (02): 111-114
Liu Chang, Yao Jing. Dry eye treatment of traditional Chinese medicine thinking [J]. Chinese Journal of Traditional Chinese Medicine, 2016, (02): 111-114
- [6] 赵金荣. 飞秒 LASIK 及 ICL 矫正近视视觉质量研究 [D]. 天津医科大学, 2016
Zhao Jin-rong. Study on Visual Quality of Femtosecond LASIK and ICL for Correction of Myopia[D]. Tianjin Medical University, 2016
- [7] 赵春焕. 飞秒激光制瓣的 LASIK 与 SMILE 术后干眼参数的 Meta 分析[D]. 新疆医科大学, 2016
Zhao Chun-huan. Meta-analysis of dry eye parameters of LASIK and SMILE after femtosecond laser flap [D]. Xinjiang Medical University, 2016
- [8] 张杰, 吴菊芬, 王兰, 等. Oculus 眼表综合分析仪测量 LASIK 术后干眼患者非侵入性泪液功能指标与干眼症状和体征之间的相关性分析[J]. 眼科新进展, 2016, (02): 162-164+168
Zhang Jie, Wu Jv-fen, Wang Lan, et al. Eculus ocular surface analyzer to measure the correlation between noninvasive tear function and dry eye symptoms and signs in dry eye after LASIK[J]. New Advances in Ophthalmology, 2016, (02): 162-164+168
- [9] 刘娟, 胡恩海. 飞秒激光联合 LASIK 术后视觉质量的变化[J]. 国际眼科杂志, 2016, (11): 2095-2098
Liu Juan, Hu En-hai. Effects of femtosecond laser combined with LASIK on visual quality changes[J]. International Journal of Ophthalmology, 2016, (11): 2095-2098
- [10] 蔡丽萍, 张宏. 炎症免疫相关信号通路在干眼发病机制中的研究进展[J]. 国际眼科杂志, 2016, (06): 1084-1088
Cai Li-ping, Zhang Hong. Study on the pathogenesis of inflammation and immune related signaling pathway in dry eye [J]. International Journal of Ophthalmology, 2016, (06): 1084-1088
- [11] 李琰. 2 型糖尿病干眼的发生及眼表因素分析 [D]. 石河子大学, 2016
Li Yan. Effects of dry eye and type of ocular surface in type 2 diabetes mellitus[D]. Shihezi University, 2016
- [12] 何玉萍, 张文芳, 律鹏, 等. 大学生干眼症的流行病学调查及相关危险因素分析(英文)[J]. 国际眼科杂志, 2016, (06): 1019-1025
He Yu-ping, Zhang Wen-fang, Lv Peng, et al. An epidemiological investigation and related risk factors of dry eye in college students[J]. International Journal of Ophthalmology, 2016, (06): 1019-1025
- [13] De Pavia CS, Chen Z, Koch DD, et al. The incidence and risk factors for developing dry eye after myopic LASIK [J]. Am J Ophthalmol, 2006, 141(3): 438-445
- [14] 吕菊玲, 吴菊芬, 张杰. 飞秒激光角膜及晶状体手术应用进展[J]. 河北医科大学学报, 2015, 6(2): 240-243
Lv Jv-ling, Wu Jv-fen, Zhang Jie. Application of femtosecond laser cornea and lens surgery [J]. Journal of Hebei Medical University, 2015, 6 (2): 240-243
- [15] Anastasakis A, Plainis S, Giannakopoulou T, et al. Xerophthalmia and acquired night blindness in a patient with a history of gastrointestinal neoplasia and normal serum vitamin A levels [J]. Doc Ophthalmol, 2013, 126(2): 159-162
- [16] 张幼梅. 聚乙二醇滴眼液治疗 LASIK 术后干眼症的临床疗效分析[J]. 中国医疗前沿, 2013, 8(3): 80-81
Zhang You-mei. Clinical efficacy of Polyethylene Glycol Eye Drops in the treatment of dry eye after LASIK surgery [J]. Chinese medical research frontiers, 2013, 8(3): 80-81
- [17] 张斌, 李威, 何伟. 玻璃酸钠滴眼液治疗青少年近视患者配戴硬性透气性角膜接触镜相关性干眼 [J]. 国际眼科杂志, 2016, (03): 511-513
Zhang Bin, Li Wei, He Wei. Sodium hyaluronate eye drops in the treatment of juvenile myopia patients with rigid breathable corneal contact lens related dry eye[J]. International Journal of Ophthalmology, 2016, (03): 511-513
- [18] 林惠岳, 李小静, 林剑鸿. 玻璃酸钠滴眼液联合普拉洛芬治疗青光眼术后干眼症的临床效果[J]. 中国当代医药, 2016, (12): 104-106
Lin Hui-yue, Li Xiao-jing, Lin Jian-hong. Clinical effect of sodium hyaluronate eye drops combined with pranopfen in the treatment of dry eye after glaucoma surgery [J]. Chinese Journal of Contemporary Medicine, 2016, (12): 104-106
- [19] 杨洁, 马英慧, 石晶. 玻璃酸钠滴眼液与小牛血去蛋白提取物眼用凝胶治疗干眼症的疗效对比 [J]. 临床合理用药杂志, 2016, (16): 98-99
Yang Jie, Ma Ying-hui, Shi Jing. Comparison of the efficacy of sodium hyaluronate eye drops and calf blood extract protein ophthalmic gel in the treatment of dry eye [J]. Journal of Clinical Pharmacology, 2016, (16): 98-99

参考文献(References)

- [1] Abbruzzese JL, Abbruzzese MC, Lenzi R, et al. Analysis of a diagnostic strategy for patients with suspected tumors of unknown origin[J]. *Journal of clinical oncology: official journal of the American Society of Clinical Oncology*, 1995, 13(8): 2094-2103
- [2] Merson M, Andreola S, Galimberti V, et al. Breast carcinoma presenting as axillary metastases without evidence of a primary tumor[J]. *Cancer*, 1992, 70(2): 504-508
- [3] Owen H W, Dockerty M B, Gray H K. Occult carcinoma of the breast [J]. *Surg Gynecol Obstet*, 1954, 98(3): 302-308
- [4] Mainiero MB, Lourenco A, Mahoney MC, et al. ACR Appropriateness Criteria Breast Cancer Screening[J]. *Journal of the American College of Radiology: JACR*, 2016, 13(11s): R45-R49
- [5] Walter B. Nicht jede Form von Brustkrebs demarkiert sich im MRT[J]. *Der Radiologe*, 2010, 50(10): 843-844
- [6] Melnikow J, Fenton JJ, Whitlock EP, et al. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews. Supplemental Screening for Breast Cancer in Women With Dense Breasts: A Systematic Review for the US Preventive Service Task Force. Rockville (MD): Agency for Healthcare Research and Quality (US), 2016
- [7] Londero V, Zuiani C, Linda A, et al. High-risk breast lesions at imaging-guided needle biopsy: usefulness of MRI for treatment decision [J]. *AJR American journal of roentgenology*, 2012, 199 (2): W240-250
- [8] Novikov SN, Krzhivitskii PI, Kanaev SV, et al. Axillary lymph node staging in breast cancer: clinical value of single photon emission computed tomography-computed tomography (SPECT-CT) with ^{99m}Tc-methoxyisobutylisonitrile [J]. *Annals of nuclear medicine*, 2015, 29(2): 177-183
- [9] DeCesare A, De Vincentis G, Gervasi S, et al. Single-photon-emission computed tomography (SPECT) with technetium-99m sestamibi in the diagnosis of small breast cancer and axillary lymph node involvement[J]. *World journal of surgery*, 2011, 35(12): 2668-2672
- [10] Darb-Esfahani S, von Minckwitz G, Denkert C, et al. Gross cystic disease fluid protein 15 (GCDFP-15) expression in breast cancer subtypes[J]. *BMC cancer*, 2014, 14: 546
- [11] Wang X, Zhao Y, Cao X. Clinical benefits of mastectomy on treatment of occult breast carcinoma presenting axillary metastases [J]. *Breast J*, 2010, 16(1): 32-37
- [12] Wang J, Talmon G, Hankins J H, et al. Occult breast cancer presenting as metastatic adenocarcinoma of unknown primary: clinical presentation, immunohistochemistry, and molecular analysis[J]. *Case Rep Oncol*, 2012, 5(1): 9-16
- [13] National Comprehensive Cancer Network (NCCN), NCCN Clinical Practice Guidelines in Oncology. 2014. <https://www.nccn.org>. Accessed 27 April 2014
- [14] Montagna E, Bagnardi V, Rotmensz N, et al. Immunohistochemically defined subtypes and outcome in occult breast carcinoma with axillary presentation [J]. *Breast cancer research and treatment*, 2011, 129 (3): 867-875
- [15] Rueth N M, Black D M, Limmer A R, et al. Breast conservation in the setting of contemporary multimodality treatment provides excellent outcomes for patients with occult primary breast cancer [J]. *Ann Surg Oncol*, 2015, 22(1): 90-95
- [16] He M, Tang LC, Yu KD, et al. Treatment outcomes and unfavorable prognostic factors in patients with occult breast cancer [J]. *European journal of surgical oncology: the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology*, 2012, 38(11): 1022-1028
- [17] Woo SM, Son BH, Lee JW, et al. Survival outcomes of different treatment methods for the ipsilateral breast of occult breast cancer patients with axillary lymph node metastasis: a single center experience [J]. *Journal of breast cancer*, 2013, 16(4): 410-416
- [18] Hennequin C, Fourquet A. Controversy about internal mammary chain irradiation in breast cancer [J]. *Cancer radiotherapie: journal de la Societe francaise de radiotherapie oncologique*, 2014, 18 (5-6): 351-355
- [19] Sohn G, Son B H, Lee S J, et al. Treatment and survival of patients with occult breast cancer with axillary lymph node metastasis: a nationwide retrospective study[J]. *J Surg Oncol*, 2014, 110(3): 270-274
- [20] 郭美琴, 宋伟. 隐匿性乳腺癌诊治的争议和展望[J]. *中华乳腺病杂志(电子版)*, 2016, (05): 305-309
- Guo Mei-qin, Song Wei. Dispute and Prospect of the Diagnosis and Treatment for Occult Breast Cancer[J]. *Chinese Journal of Breast Disease (electronic version)*, 2016, (05): 305-309
- [22] 姚小琪. 玻璃酸钠滴眼液与双氯芬酸钠滴眼液治疗干眼症临床观察[J]. *临床医学研究与实践*, 2016, (26): 37-38
- Yao Xiao-qi. Clinical observation of sodium hyaluronate eye drops and diclofenac sodium eye drops in the treatment of dry eye[J]. *Clinical Research and Practice*, 2016, (26): 37-38
- [23] 刘智. 普拉洛芬滴眼液联合 0.1%玻璃酸钠滴眼液治疗干眼患者的临床疗效[J]. *世界最新医学信息文摘*, 2016, (96): 132+142
- Liu Zhi. Clinical efficacy of pramlofen eye drops combined with 0.1% sodium hyaluronate eye drops in the treatment of dry eye [J]. *The latest medical information in the world*, 2016, (96): 132+142
- [24] Mc Cann L C, Tomlinson A, Pearce E I, et al. Effectiveness of artificial tears in the management of evaporative dry eye[J]. *Cornea*, 2012, 31(1): 1-5

(上接第 6135 页)

- [20] 杨勇. 重组牛碱性成纤维细胞生长因子眼用凝胶和玻璃酸钠滴眼液对睑板腺异常相关干眼的效果对比分析 [J]. *中国实用医药*, 2016, (05): 85-87
- Yang Yong. Comparative analysis of the effect of recombinant bovine basic fibroblast growth factor ophthalmic gel and sodium hyaluronate eye drops on the abnormalities of tarsal gland abnormalities in dry eye [J]. *Chinese Journal of Practical Medicine*, 2016, (05): 85-87
- [21] 崔红, 廖燕, 涂文萍, 等. 中药湿热敷联合玻璃酸钠滴眼液治疗视频终端干眼的临床观察 [J]. *现代诊断与治疗*, 2016, (18): 3362-3364
- Cui Hong, Liao Yan, Tu Wen-ping, et al. Clinical observation of the treatment of dry eye with video terminal [J]. *Modern Diagnosis and Treatment*, 2016, (18): 3362-3364