

# 早期和晚期激光治疗视网膜分支静脉阻塞的疗效比较

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## Comparison of efficacy of laser photocoagulation for the treatment of branch retinal vein occlusion at the early and late stage

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### Abstract

• AIM: To observe the effect of later laser photocoagulation for the treatment of the branch retinal vein occlusion (BRVO) at the early and late stage.

• METHODS: Totally 125 cases (125 eyes) with BRVO were divided into two groups: a early therapeutic group of 68 cases (68 eyes) and a later therapeutic group of 57 cases (57 eyes). Visual acuity, intraocular pressure (IOP), fundus fluorescein angiography (FFA) and optical coherence tomography (OCT) were recorded before therapy. The early therapeutic group was treated with krypton laser photocoagulation at baseline: krypton red laser was applied to obvious hemorrhage areas, krypton yellow laser was applied to obvious macular edema, krypton green laser was applied to the rest, retrobulbar TA at the dose of 40 mg was injected after laser photocoagulation. The later therapeutic group was treated with peroral drugs such as jolethin, vitamin C, calcium dobesilate in 1-3 months, retrobulbar TA at the dose of 40mg was injected in obvious macular edema. According to the capillary nonperfusion area showed by OCT and FFA at follow-up visits, the laser photocoagulation was applied. The follow-up was 1 year.

• RESULTS: In early therapeutic group of 68 eyes, visual acuity was improved in 49 eyes (72.1%), stable in 16 eyes (23.5%), and decreased in 3 eyes (4.4%). In later therapeutic group of 57 eyes, visual acuity was improved in 35 eyes (61.4%), stable in 8 eyes (14.0%), and decreased in 14 eyes (24.6%). The course of reduction or

elimination of macular edema of early therapeutic group was significantly shorter than that of later therapeutic group, the rate of cystoid macular degeneration and macular hole were pretty reduced, the course of absorption of retinal hemorrhage of early therapeutic group was shorter than that of control group. No eye of cystoid macular degeneration, macular hole or vitreal hemorrhage was noted in early therapeutic group, but 14 eyes occurred cystoid macular degeneration or macular hole, 9 eyes of vitreal hemorrhage caused decrease of visual acuity in later therapeutic group.

• CONCLUSION: The treating efficacy of early laser photocoagulation for the treatment of the BRVO was better than that of later laser photocoagulation, as it can maintain the visual functions uttermostly. Laser photocoagulation can promote the absorption of retinal hemorrhage, reduction or elimination of macular edema, prevention of cystoid macular degeneration, prevention of retinal neovascularization and vitreal hemorrhage. No adverse events following early laser photocoagulation treatment were observed.

• KEYWORDS: branch retinal vein occlusion; laser photocoagulation; krypton laser photocoagulation

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### 摘要

目的: 比较早期行氩激光视网膜光凝治疗视网膜分支静脉阻塞和晚期激光治疗的疗效。

方法: 视网膜分支静脉阻塞患者 125 例 125 眼分为早期治疗组 68 例 68 眼和晚期治疗组 57 例 57 眼, 初诊时行视力、眼压、眼底、FFA 和 OCT 检查。早期组在初诊时行氩激光光凝治疗: 除出血区行氩红激光和波及黄斑区行氩黄激光, 其余行氩绿激光, 激光术后给予球后注射曲安奈德 40mg。晚期组在初诊时口服沃丽汀、维生素 C 和安多明等药物, 若病变波及黄斑区引起黄斑水肿者行球后注射曲安奈德 40mg。1, 3, 6, 12mo 行复诊, 复诊时行视力、眼压、眼底、FFA 和 OCT 检查。若 FFA 检查发现晚期组视网膜出现毛细血管无灌注区行氩激光光凝治疗。随访时间为 1a。

结果: 早期组 68 眼中视力提高 49 眼 (72.1%), 视力稳定 16 眼 (23.5%), 视力下降 3 眼 (4.4%); 晚期组 57 眼中视力提高 35 眼 (61.4%), 视力稳定 8 眼 (14.0%), 视力下降 14 眼 (24.6%)。FFA 和 OCT 检查发现早期组黄斑水肿消失或减轻的时间比晚期组明显缩短, 视网膜出血吸收的时间也比晚期组缩短。早期组中没有 1 眼发生黄斑囊样变性、黄斑裂孔和玻璃体出血, 晚期组中有 14 眼发生黄斑囊样变性或黄斑裂孔, 有 9 眼发生玻璃体出血导致视力

显著下降。

**结论:**早期行氩激光视网膜光凝治疗视网膜分支静脉阻塞的疗效明显优于晚期激光治疗,早期治疗能最大限度保存和提高患者的视力。早期行激光治疗未发现明显的不良反应,是安全有效的方法。

**关键词:**视网膜分支静脉阻塞;激光治疗;氩激光光凝治疗  
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## 0 引言

视网膜分支静脉阻塞往往由于眼内反复出血和黄斑水肿,而导致视功能严重受损。我院对确诊为视网膜分支静脉阻塞125例患者分别采用早期激光和晚期激光治疗,发现早期激光治疗组患者取得远优于晚期组的疗效,现报告如下。

### 1 对象和方法

**1.1 对象** 2005-02/2007-12来我院就诊患者125例,经荧光素眼底血管造影(FFA)和光学相干断层扫描(OCT)检查确诊为视网膜分支静脉阻塞;其中男69例,女56例,年龄48~77岁,初诊时病程均挑选在发病2wk内患者。治疗前常规行最佳矫正视力、眼压、裂隙灯、眼底、FFA及OCT检查。两组均随机抽选,早期激光组患者68例,晚期治疗组57例。两组治疗前各项数据均无显著性差异。

**1.2 方法** 早期组68例患者在初诊时行氩激光光凝治疗,根据出血情况及黄斑水肿情况波及黄斑区。水肿明显先行氩激光光凝,参数:光斑50~100 $\mu$ m,曝光0.1~0.15s,能量100~300mW, I-II级光斑,每个光斑之间间隔1个光斑。然后再行氩绿激光;出血区域浓厚使用氩红激光;激光术后给予球后注射曲安奈德40mg。晚期组初诊时给予口服沃丽丁、维生素C和安多明等药物,若病变波及黄斑区引起黄斑水肿,行球后注射曲安奈德40mg。1,3,6,12mo行复诊。复诊时行视力、眼压、眼底、FFA和OCT检查。若FFA检查发现晚期组视网膜出现毛细血管无灌注区行氩激光光凝治疗,激光方法同早期组。两组患者随诊时间为1a。

### 2 结果

**2.1 视力** 早期组68例患者中视力提高49眼(72.1%),视力稳定16眼(23.5%),视力下降3眼(4.4%);晚期组57例患者中视力提高35眼(61.4%),视力稳定8眼(14.0%),视力下降14眼(24.6%)。

**2.2 并发症** 早期组中无1例发生黄斑囊样变性、黄斑裂孔及玻璃体积血。晚期组中有14眼发生黄斑囊样变性或黄斑裂孔,占24.6%;有9眼发生玻璃体积血,占15.8%。

**2.3 病程** 早期组中病程平均在2mo左右,视力稳定或提高,黄斑水肿消失;晚期组中病程平均在6mo或以上。

### 3 讨论

视网膜分支静脉阻塞是一种常见的疾病,往往由于其并发症而严重影响视功能,其常见并发症有黄斑囊样变性、黄斑裂孔、视网膜新生血管、玻璃体积血等。

视网膜分支静脉阻塞最常见的并发症是黄斑水肿,往往因视网膜毛细血管发生阻塞异常,内皮细胞间紧密结构遭到破坏,血管内的液体和大分子物质即可向外渗漏,积聚在视网膜神经上皮的内核层和外丛状层的细胞间隙,形

成视网膜水肿,这种水肿特别易发生在黄斑区,因为黄斑中心凹锥细胞密度高代谢功能旺盛,且为无血管区,液体难吸收,容易变性,从而导致视力下降。黄斑囊样水肿持久导致视力下降,水肿空腔内壁破裂造成板层裂空。

以往的观点是多主张视网膜分支静脉阻塞3~6mo后对大面积的视网膜无灌注区、视网膜新生血管及持续性的黄斑水肿才考虑激光治疗,我们观察这125例患者觉得早期激光光凝是能有效防止病情进一步变化的较好方法。激光光凝的机制是激光可以减少黄斑区毛细血管的渗漏,破坏视网膜色素上皮的扩散屏障,使视网膜下液通过色素上皮进入脉络膜血管<sup>[1]</sup>,从而减轻黄斑水肿。激光光凝破坏耗氧量高的光感受器,光凝后变薄的视网膜有利于脉络膜氧供向视网膜渗透,从而改善局部代谢,激光能改善视网膜缺血缺氧状态<sup>[2]</sup>,减少因缺血缺氧产生的新生血管生长因子,防止新生血管形成,减少降低玻璃体体积血发生率。早期激光光凝能有效的阻止毛细血管渗出的液体进入黄斑区,可以防止黄斑囊样变性的发生,有利于视力的提高。格栅样光凝治疗对于视网膜中央静脉阻塞虽可减轻黄斑水肿但视力并不会随之好转,而对于分支静脉阻塞既可减轻水肿,也有助于视力的提高。格栅样光凝治疗黄斑水肿的理论基础起自1980年代,美国ETDRSG提出格栅样光凝治疗黄斑水肿,可降低持续性黄斑水肿的发生率<sup>[3,4]</sup>。

上海瑞金医院临床研究,将视网膜分支静脉阻塞的病例分为发病3mo内光凝治疗的早期组与发病3mo后光凝治疗的晚期组,比较两组激光治疗3mo出血情况,结果出血吸收1/2~3/4者在早期组占32.5%,晚期组占16.7%,出血吸收3/4~完全吸收者早期组占30%,晚期组为13.3%。早期组与晚期组在初诊时新生血管发生率亦有显著差异,早期组为5%,晚期组为23.3%,激光随访后6~18mo早期组新生血管为5%,晚期组为33.3%。早期光凝可加速视网膜出血的吸收,有利于视力恢复,明显降低新生血管和玻璃体出血的发生率<sup>[5]</sup>。

治疗组中数据显示,早期激光给予激光光凝视功能恢复较好,并发症少,病程明显偏短,总有效率为95.5%,晚期激光光凝组有效率仅75.4%。患者往往由于有新生血管生长出现玻璃体积血,导致激光效果差,而需要行玻璃体切割手术,患者花费大且并发症多,病程明显偏长,且视功能由于黄斑长期囊样水肿而受到严重影响。

综合视力预后、视网膜出血的吸收、眼部新生血管的发生及黄斑病变的转归来评价:早期患者经激光治疗后能改善视力,可获得较好的视功能,并且在随访期内未发现明显的不良反应。晚期组激光治疗前发生新生血管的比例较高,黄斑变性亦较高。

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