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【应用研究】

视网膜电图在早产儿视网膜病变激光术后视网膜功能评价中的应用

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and control group were(37.71 ± 22.23) μV and(49.70 ± 32.24) μV, respectively (P < 0.05). There was no statistical difference in latency of a, b wave in rod reaction and maximum mixed reaction between two groups(all P > 0.05). There was no statistical difference in latency and amplitude of a, b wave in cone reaction between two groups(all P > 0.05). **Conclusion** After laser photocoagulation treatment, the retinal cone cell functional development has no difference with normal premature infants, but the rod cell functional development is slightly worsen.

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【关键词】 早产儿视网膜病变;激光光凝;视网膜电图

【摘要】 目的 应用视网膜电图(electroretinogram, ERG)评价早产儿视网膜病变(retinopathy of premature, ROP)激光术后视网膜功能的变化。方法 选取2011年1月至2012年12月在我院行激光光凝术的ROP患儿30例(60眼)为观察组,另选取同期视网膜发育正常的健康早产儿30例(60眼)为对照组,记录激光术后6个月的暗适应与明适应ERG,并对两组结果进行统计比较。结果 观察组视杆反应b波振幅为(131.47 ± 36.20) μV,对照组为(149.33 ± 40.14) μV,差异有统计学意义(P < 0.05);观察组最大混合反应a波、b波振幅分别为(96.52 ± 23.71) μV、(222.76 ± 53.44) μV,对照组分别为(109.85 ± 23.17) μV、(260.44 ± 52.28) μV,差异均有统计学意义(均为P < 0.05);观察组振荡电位峰值为(37.71 ± 22.23) μV,对照组为(49.70 ± 32.24) μV,差异有统计学意义(P < 0.05)。观察组视杆反应b波及最大混合反应a波、b波潜伏期与对照组差异均无统计学意义(均为P > 0.05)。观察组视锥反应a波、b波振幅与对照组差异均无统计学意义(均为P > 0.05),观察组视锥反应a波、b波潜伏期与对照组差异也均无统计学意义(均为P > 0.05)。结论 经过激光光凝术治疗,ROP患儿视网膜视锥细胞功能发育与正常早产儿没有差别,而视杆细胞功能发育略差。

[眼科新进展,2014,34(6):570-572]

随着国内新生儿学科的不断发展和临床早产儿、低体质量儿的生存率显著提升,早产儿视网膜病变(retinopathy of premature, ROP)也愈加引起研究者的关注和重视^[1-2]。激光光凝是治疗ROP的主要方法之一,但术后视功能评测较为困难,因为不同于一般患者,婴幼儿自我认知有限,不具备完整表达的能力,很多行之有效的视功能测评方法很难实现。视

网膜电图(electroretinogram, ERG)可较为客观地反映视网膜功能和发育情况^[3],非常适合婴幼儿。有研究显示ERG能够准确评价早产儿、足月儿以及10月龄内婴儿的视网膜发育情况^[4]。本研究利用ERG观察评价ROP患儿激光光凝术后视网膜功能变化,现报告如下。

Electroretinogram in retinal functional evaluation after laser surgery in retinopathy of premature

GAO Shang

【Key words】 retinopathy of premature; laser photocoagulation; electroretinogram

【Abstract】 **Objective** To evaluate the retinal function changes after laser surgery in patients with retinopathy of premature(ROP) by electroretinogram(ERG). **Methods** A total of 30 cases (60 eyes) underwent laser photocoagulation in our hospital during January 2011 and December 2012 were chosen as observation group, and another 30 healthy premature cases (60 eyes) with normal retina were selected as control group, the photopic and scotopic ERG at 6 months after laser surgery were recorded, and the results between two groups were compared and analyzed. **Results** The amplitude of b wave in rod reaction in observation group and control group were(131.47 ± 36.20) μV and(148.33 ± 40.14) μV, respectively (P < 0.05). The amplitude of a, b wave in maximum mixed reaction in observation group were(96.52 ± 23.71) μV and(222.76 ± 53.44) μV, respectively, which in control group were(109.85 ± 23.17) μV and(260.44 ± 52.28) μV, respectively (all P < 0.05). The peak of oscillatory potentials in observation group and control group were(37.71 ± 22.23) μV and(49.70 ± 32.24) μV, respectively (P < 0.05). There was no statistical difference in latency of a, b wave in rod reaction and maximum mixed reaction between two groups(all P > 0.05). There was no statistical difference in latency and amplitude of a, b wave in cone reaction between two groups(all P > 0.05). **Conclusion**

After laser photocoagulation treatment, the retinal cone cell functional development has no difference with normal premature infants, but the rod cell functional development is slightly worsen.

[Rec Adv Ophthalmol, 2014, 34(6) :570-572]

1 资料与方法

1.1 一般资料 选取2011年1月至2012年12月在我院行激光光凝术的ROP患儿30例(60眼)为观察组,其中男20例,女10例,出生胎龄26~30(28.65±1.55)周,出生体质量690~2320(1460±290)g,ROP筛查时点为矫正胎龄31~34周。所有患儿均符合ROP阈值期特征。纳入患儿均满足激光光凝手术的适应证。接受手术治疗时,平均矫正胎龄35周左右。另选取同期视网膜发育正常的健康早产儿30例(60眼)为对照组,其中男22例,女8例,出生胎龄26.56~34.60(29.55±1.45)周,出生体质量850~2450(1590±320)g。两组胎龄、体质量、性别比例等基线资料方面比较,差异均无统计学意义(均为 $P < 0.05$),具有可比性。所有研究对象家属均知情同意,并获得医院伦理委员会批准。

1.2 激光光凝方法 激光光凝手术在暗室下进行。在+28 D透镜辅助双目间接检眼镜直视条件下,采用810 nm Iridis激光机(法国光大公司),主要光凝部位为嵴和周边视网膜无血管区,周边视网膜区域采用巩膜压迫器辅助进行手术操作,光凝区域从嵴到锯齿缘整个视网膜无血管区。激光能量控制在100~450 mW,最初能量值为100 mW,后逐级增加,曝光时长0.4 s。每个光凝点距离约半个光斑直径。

1.3 ERG检测方法 所有研究对象均于激光术后6个月进行ERG检查。复方托吡卡胺滴眼散瞳,每5 min 1次,共5次。均在幼儿熟睡时进行检查,丁卡因滴眼液角膜表面麻醉,滴甲基纤维素滴眼液于角膜接触镜上,把角膜接触镜电极插向上穹隆方向并轻轻放置于角膜上。暗室中记录暗适应ERG,包括视杆反应、最大混合反应、振荡电位(OPs),然后在亮度为20 cd·m⁻²的背景下明适应10 min后记录明适应视锥反应ERG。

1.4 统计学分析 使用SPSS13.0统计软件进行统计分析,计量资料均以均数±标准差表示,采用 t 检验。 $P < 0.05$ 为差异有统计学意义。

2 结果

2.1 组间暗适应指标比较 观察组视杆反应b波振幅为(131.47±36.20)μV,对照组为(149.33±40.14)μV,差异有统计学意义($P < 0.05$);观察组最大混合反应a波、b波振幅分别为(96.52±23.71)μV、(222.76±53.44)μV,对照组分别为(109.85±23.17)μV、(260.44±52.28)μV,差异均有统计学意义(均为 $P < 0.05$);观察组振荡电位峰值为(37.71±22.23)μV,对照组为(49.70±32.24)μV,差异有统计学意义($P < 0.05$)。

观察组视杆反应b波潜伏期为(58.31±6.70)ms,对照组为(62.67±2.34)ms,差异无统计学意义($P > 0.05$)。观察组最大混合反应a波、b波潜伏期

分别为(21.83±0.87)ms、(48.82±11.89)ms,对照组分别为(20.45±0.77)ms、(17.22±1.42)ms,差异均无统计学意义(均为 $P > 0.05$)。

2.2 组间明适应指标比较 观察组视锥反应a波振幅为(16.68±14.70)μV,对照组为(18.64±5.59)μV,差异无统计学意义($P > 0.05$);观察组视锥反应b波振幅为(61.65±20.77)μV,对照组为(68.21±20.66)μV,差异无统计学意义($P > 0.05$)。观察组视锥反应a波潜伏期为(17.89±11.88)ms,对照组为(16.23±1.38)ms,差异无统计学意义($P > 0.05$);观察组视锥反应b波潜伏期为(34.53±2.03)ms,对照组为(33.77±1.73)ms,差异无统计学意义($P > 0.05$)。

3 讨论

目前随着新生儿成活率的提高,ROP罹患率逐年增高。ROP多见于高浓度吸氧史患儿,部分也见于发育迟滞的低体质量新生儿^[5]。研究表明,诱发本病的因素较多,常见的有新生儿呼吸衰竭或窘迫、反复感染、体温较低、代偿性酸中毒等。这些诱因的共性特点是患儿处于机体缺氧状态。倘若临床上没有规范运用吸氧疗法,往往更容易引发ROP^[6]。从病理表现看,ROP患儿的视网膜出现微血管异常增生,其发病部位常在视网膜周边部,颞侧尤其明显^[7]。最初是内层出现微血管增生,然后攀沿生长到表面,逐渐进入玻璃体内。血管增生还伴有纤维组织生长,随着不断增殖,纤维组织形成膜结构,膜的自身收缩会把周边视网膜牵拉至眼球中心,严重者视网膜脱落,最终致盲。大量研究表明,疾病发展到阈值期时,必须在72 h内进行有效干预和治疗^[7],超过阈值期的患儿若不积极干预和治疗,约50%出现不良后果^[8]。

目前ROP最常用的治疗措施为冷冻与激光疗法。临床研究证实,激光光凝术效果更佳,其机理为降低视网膜VEGF含量,减缓微血管增生^[9]。不少临床研究显示,对满足ROP阈值期手术指征的患儿,采用激光光凝术能有效改善患眼视野,促进视力提高。但较少文献采用ERG评价激光手术对ROP患者的临床疗效。在ERG反应不同组分中,a波来自光感受器,暗适应a波测评视杆细胞的功能强度,明适应a波则是评价视锥细胞的功能强度;b波来自双极细胞和Müller细胞,b波振幅是评价视网膜内核层的电活动强度。膜内核层属于Ⅱ级神经元功能,震荡电位的异常变化多见于缺血^[10]。

本研究采用ERG比较激光光凝术后半年ROP患儿和健康早产儿的视网膜功能变化,研究结果显示,观察组视杆反应b波振幅低于对照组($P < 0.05$),最大混合反应a波、b波振幅均低于对照组(均为 $P < 0.05$),振荡电位峰值也低于对照组($P < 0.05$);观察组视杆反应b波及最大混合反应a波、

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【应用研究】

超声乳化联合人工晶状体植入术治疗原发性房角关闭或原发性闭角型青光眼合并白内障的疗效观察

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Phacoemulsification and IOL implantation for PAC and PACG with cataract

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【Key words】 phacoemulsification; cataract; primary angle-closure; primary angle-closure glaucoma

【Abstract】 Objective To analyze the efficacy of phacoemulsification and intraocular lens (IOL) implantation for primary angle-closure (PAC) and primary angle-closure glaucoma (PACG) with cataract. Methods Clinical data of 60 patients (60 eyes) diagnosed with PAC or PACG with cataract in our hospital from March 2011 to December 2012 was retrospectively analyzed and divided into PAC group (28 cases) and PACG group (32 cases), all cases received phacoemulsification and IOL implantation. The best corrected visual acuity (BCVA), intraocular pressure (IOP) and anterior chamber angle (ACA) at pre-operation and postoperative 1 day, 1 month, 6 months were observed by standard visual acuity chart, OCT and non-contact tonometer, and the postoperative complication was also observed. Results The preoperative BCVA in PAC group and PACG group were 0.31 ± 0.21 and 0.32 ± 0.19, respectively, which at postoperative 6 months were 0.57 ± 0.28 and 0.58 ± 0.26, respectively, compared with pre-operation, the postoperative BCVA at different time points were all improved in two groups (all P <

0.05). Compared with pre-operation, the postoperative IOP at different time points in two groups were all decreased (all P < 0.05), and there was no statistical difference between postoperative IOP at different time points in two groups (all P > 0.05). The postoperative IOP in PAC group at different time points were all lower than those in PACG group, but there was no statistical difference (all P > 0.05). Compared with pre-operation, the postoperative ACA in two groups were all widened (all P < 0.05), and no statistical difference in postoperative ACA at different time points between inner-group and inter-group (all P > 0.05). Conclusion The phacoemulsification and IOL implantation for PAC and PACG with cataract have obvious short-term clinical efficacy, but its long-term efficacy should be further observed.

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b波潜伏期与对照组差异均无统计学意义(均为 P > 0.05)。观察组视锥反应 a 波、b 波振幅与对照组差异均无统计学意义(均为 P > 0.05),观察组视锥反应 a 波、b 波潜伏期与对照组差异也均无统计学意义(均为 P > 0.05)。说明经过激光光凝术治疗,ROP 患儿视网膜视锥细胞功能发育与正常早产儿没有差别,而视杆细胞功能发育略差,表明激光光凝术对视网膜视锥细胞功能的改善更为显著。

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