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不同类型弱视儿童视网膜神经纤维层与预后视力恢复的相关性 *

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摘要 目的:探讨不同类型弱视儿童视网膜神经纤维层(RNFL)与预后视力恢复的相关性。**方法:**选择2017年6月至2020年6月在本院眼科就诊的80例弱视患儿作为研究对象,其中屈光参差性弱视32例(A组)、斜视性弱视28例(B组)、屈光不正性弱视20例(C组)。三组患儿都进行常规检查与光学相干断层成像(OCT),调查随访患儿的预后视力恢复情况,并进行相关性分析。**结果:**三组的视盘面积、盘沿面积、校正视盘面积、校正盘沿面积、等效球镜绝对值、眼轴长度等数据对比无差异(P>0.05)。B组与C组的上方、鼻侧、下方、颞侧、全周的RNFL厚度都高于A组(P<0.05),C组高于B组(P<0.05)。随访截止时间为2021年1月,A组、B组与C组的总有效率分别为87.5 %、85.7 %和85.0 %,对比无差异(P>0.05)。Pearson线性相关分析显示预后总有效率与上方、鼻侧、下方、颞侧、全周的RNFL厚度均存在相关性(P<0.05)。**结论:**不同类型弱视儿童的视网膜神经纤维层结构厚度存在差异,与患儿的预后视力恢复存在相关性。

关键词:弱视;视网膜神经纤维层;视力恢复;相关性;光学相干断层成像

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The Correlation between Retinal Nerve Fiber Layer and Prognosis of Visual Acuity Recovery in Children with Different Types of Amblyopia*

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ABSTRACT Objective: To explore the correlation between the retinal nerve fiber layer of children with different types of amblyopia and the prognosis of vision recovery. **Methods:** From June 2017 to June 2020, 80 cases of children with amblyopia who were treated in our Hospital, ophthalmology department were selected as the research objects, included 32 cases of anisometropic amblyopia (group A), 28 cases of strabismus amblyopia (group B), 20 cases of refractive amblyopia (group C). All the cases were underwent routine examinations and optical coherence tomography (OCT), Were to investigate the prognosis of the followed-up children and given correlation analysis. **Results:** There were no difference in the absolute value of the equivalent spherical lens, eye axis length, optic disc area, disc edge area, corrected optic disc area, and corrected disc edge area of the three groups (P>0.05). The thickness of RNFL in the upper, nasal, inferior, temporal and whole weeks of group B and C were higher than that of group A(P<0.05), and group C were higher than group B (P<0.05). The deadline for followed-up were January 2021, the total effective rates of group A, group B and group C were 87.5 %, 85.7 %, and 85.0 %, respectively, and there were no difference in comparison (P>0.05). Pearson linear correlation analysis showed that the total effective prognosis were correlated with the thickness of RNFL above, nasal, inferior, temporal, and whole week (P<0.05). **Conclusion:** There has differences in the thickness of the retinal nerve fiber layer structure in children with different types of amblyopia, which are related to the prognosis of the children's vision recovery.

Key words: Amblyopia; Retina; Retinal nerve fiber layer; Correlation; Optical coherence tomography

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前言

弱视当前在临床上比较多见,多发生于儿童,是视觉发育期由于内外在各种因素的影响导致眼睛最佳矫正视力较相应年龄视力低,进而形成的疾病[1,2]。弱视的成因包括先天性因素与后天性因素,特别是在儿童视觉发育的关键期内,当光线对眼睛的刺激不足时,可影响儿童视觉系统的正常发育,使得黄斑难以形成较为清晰的物像[3,4]。传统观点认为:弱视具有一定的可逆性,逆转的年龄有一定的上限性,越早逆转,成功率越高, 特别是需要在视觉发育敏感期内消除被阻断的形觉刺激,恢复弱视眼的视力及双眼视功能,调整异常的双眼相互作用[5,6]。屈光参差性、斜视性、屈光不正性为临床最常见弱视类型,也是

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一种发育障碍性疾病，严重阻碍视觉系统的发育[7,8]。同时弱视患儿多需要佩戴矫正镜片，其具有较大的球面差，长期佩戴矫正镜片可干扰对视网膜神经纤维层（Retinal nerve fiber layer, RNFL）的观察，造成在弱视诊断中易出现漏诊与误诊情况，因此需要一种弱视早期诊断的检测手段，且具有客观、有效、方便、快捷等特征[9,10]。随着医学技术的发展，光学相干断层成像（Optical coherence tomography, OCT）技术得到了广泛应用，其能精确测量视网膜形态和视网膜神经纤维层厚度[11,12]。本研究选用 OCT 测量不同类型弱视儿童的视网膜神经纤维层厚度，分析其结果，以探讨不同类型弱视儿童视网膜结构与预后视力恢复的相关性。

1 资料与方法

1.1 研究对象

选择 2017 年 6 月至 2020 年 6 月在本院眼科就诊的 80 例弱视患儿作为研究对象，其中屈光参差性弱视 32 例（A 组）、斜视性弱视 28 例（B 组）、屈光不正性弱视 20 例（C 组）。

纳入标准：符合弱视相关诊断标准；单眼发病；患儿及其监护人知情同意；无外伤及眼部手术史；双眼前节及眼底检查正常；年龄 2-8 岁；初次就诊，无弱视治疗史；本院伦理委员会批准了此次研究；无严重的呼吸系统、循环系统、神经系统等疾病。

排除标准：合并有全身疾病；存在眼底病变者；由于其他疾病正在进行其他方法与药物治疗者；主动要求退出者；既往有眼科手术史者。

三组一般资料对比无差异（P>0.05）。

表 1 一般资料对比

Table 1 Comparison of three groups of general data

Groups	n	Gender (male/female)	Age (years)	Weight (kg)	Height (cm)	Vision
Group A	32	17/15	5.23± 1.10	19.36± 2.44	113.09± 11.47	0.34± 0.04
Group B	28	14/14	5.19± 1.09	19.22± 3.14	114.76± 14.67	0.35± 0.03
Group C	20	11/9	5.20± 0.57	19.17± 2.17	115.20± 12.74	0.34± 0.04

1.2 常规检查

屈光度：采用 NIDEK ARK-710A 全自动验光仪（日本尼德克公司）行屈光度检查，计算等效球镜绝对值（Spherical equivalent, SE）。

眼轴长度：使用 Alcon Ultrascan 眼科 A/B SW-2100 超声诊断仪（上海涵飞公司）测量。屈光度与眼轴长度均取 3 次测定的平均值。

采用快速视盘扫描模式测定视盘参数，记录盘沿面积、校正视盘面积、校正盘沿面积、视盘面积。

1.3 OCT 检查

选择采用 Stratus OCT（加拿大 Zeiss 公司）进行测量，采用快速厚度扫描模式测定 RNFL 厚度。测定上方、颞侧、全周、鼻侧、下方的 RNFL 厚度，所有 OCT 检查指标都测量 3 次取平均值。

1.4 预后视力调查

随访截止时间为 2021 年 1 月，判定预后疗效，包含无效、好转、显效以及治愈四个等级[13]。治愈：患儿视力恢复至正常范围；显效：患儿视力提高 90 %以上；好转：患儿视力提高至少 2 行；无效：患儿视力无改善甚或恶化。总有效率 =（完全治愈 + 显效 + 好转）例数 / 总数× 100 %。

1.5 统计方法

采用 SPSS 23.00 统计进行分析，相关性分析采用 Pearson 分析，计量数据以均数± 标准差表示，两组间采用 t 检验，多组间采用方差分析；计数数据以 n/%表示，两组间采用卡方分析，多组间采用方差分析，检验水准为α=0.05。

2 结果

2.1 常规检测指标对比

三组的校正视盘面积等数据对比无差异（P>0.05）。见表 2。

表 2 常规检测指标对比（均数± 标准差）

Table 2 Comparison of routine testing indicators (mean ± standard deviation)

Groups	n	Absolute value of equivalent spherical mirror (D)	Axial length (L/mm)	Optic disc area (s/mm^2)	Area along the disk (s/mm^2)	Corrected optic disc area (s/mm^2)	Area along the calibration panel (s/mm^2)
Group A	32	7.00± 0.44	25.78± 3.13	2.44± 0.41	1.90± 0.34	2.70± 0.28	2.12± 0.26
Group B	28	7.04± 0.32	25.33± 2.48	2.39± 0.22	1.87± 0.14	2.69± 0.33	2.11± 0.31
Group C	20	7.00± 0.28	25.68± 3.11	2.41± 0.18	1.89± 0.22	2.68± 0.32	2.21± 0.38

2.2 RNFL 厚度对比

B 组与 C 组的上方、鼻侧、下方、颞侧、全周的 RNFL 厚度都高于 A 组（P<0.05），C 组高于 B 组（P<0.05）。见表 3。

2.3 预后疗效对比

随访截止时间为 2021 年 1 月，A 组、B 组与 C 组的总有效率分别为 87.5 %、85.7 %和 85.0 %，对比差异无统计学意义

（P>0.05）。见表 4。

2.4 相关性分析

在 80 例患儿中，Pearson 线性相关分析显示预后总有效率与上方、鼻侧、下方、颞侧、全周的 RNFL 厚度都存在相关性（P<0.05）。见表 5。

表 3 三组不同位置的 RNFL 厚度对比（μm，均数± 标准差）

Table 3 Comparison of RNFL thickness in three groups at different positions (μm, mean ± standard deviation)

Groups	n	All around	Above	Nasal side	Below	Temporal side
Group A	32	105.35± 14.38	132.97± 11.82	75.46± 12.83	136.92± 15.45	81.40± 13.17
Group B	28	112.39± 11.39*	140.92± 18.37*	80.28± 12.03*	142.92± 13.09*	90.48± 14.77*
Group C	20	120.37± 12.77*#	147.28± 11.73*#	86.72± 13.45*#	150.27± 12.33*#	96.38± 12.33*#

Note: * Compared with group A, P<0.05; # Compared with group B, P<0.05.

表 4 三组预后疗效对比（n）

Table 4 Comparison of the prognostic efficacy of the three groups (n)

Groups	n	Fully cured	Work	Get better	Invalid	Total effective rate
Group A	32	10	13	5	4	28（87.5 %）
Group B	28	8	12	4	4	24（85.7 %）
Group C	20	6	8	3	3	17（85.0 %）

表 5 不同类型弱视儿童的 RNFL 厚度与预后视力恢复的相关性（n=80）

Table 5 Correlation between RNFL thickness of children with different types of amblyopia and prognostic vision recovery (n=80)

Indicators	All around	Above	Nasal side	Below	Temporal side
r	0.443	0.487	0.513	0.449	0.401
P	0.014	0.010	0.008	0.013	0.018

3 讨论

弱视当前在儿童中的发病人数逐年增加，且发病年龄日趋降低，严重影响儿童身心健康[14]。该病的发病机制尚不明确，早期认为弱视多数非外因造成，而是一种功能性的视力知觉异常。随着医学技术的发展，已有研究表明：弱视的发展与视觉系统的发育具有相关性，视网膜、外侧膝体、神经因子、视皮层的异常变化可导致弱视[15,16]。根据弱视形成的机制不同，临床上可将弱视分为屈光不正性弱视、屈光参差性弱视、斜视性弱视，其中屈光参差性弱视比较常见[17,18]。本研究显示，三组的视盘面积、盘沿面积、校正视盘面积、校正盘沿面积、等效球镜绝对值、眼轴长度等数据对比无差异，说明采用常规指标很难对不同类型弱视进行区分与鉴别诊断，这一结果与中国眼科协会报道相一致[19]，表明本研究的正确性以及科学性。

RNFL 主要由视网膜血管、神经节细胞轴突组、神经胶质细胞、传出纤维等组成，特别是视盘上下方中的颞上和颞下方含有较多的神经纤维[20,21]。OCT 具有操作简便等特点，也可直接在人体中进行检查，具有活体检测、分辨层次多、高分辨率、非接触性、非介入性等优点，可为弱视发生机制的研究提供一定的价值[22,23]。本研究显示：B 组与 C 组的上方、鼻侧、下方、颞侧、全周的 RNFL 厚度均较 A 组高，且 C 组较 B 组高。这一结果与 Sahin G、Masri OS 等人[24,25]的研究结果相符，即同的弱视其 RNFL 厚度具有差异，进一步分析原因可知：在视觉发育期间，弱视患儿的黄斑中心凹厚度尤其是视锥细胞的分化受到各种因素的影响。而神经节细胞的轴突形成 RNFL，在弱视形成过程中，不足的视觉刺激可能会影响视网膜神经节的细胞数量，进而影响神经节细胞减少的进程，导致 RNFL 厚度的异常改变以及差异。屈光参差性弱视由于眼轴较短、视网膜空间较正常眼小，神经节细胞轴突在保持数目不变的情况下，其配列空间将会减小，轴突分布较密集，推测经 OCT 测量的 RNFL 厚度较厚；屈光不正性弱视为中央凹的神经通道损伤所致，与视盘周围的视网膜有关，视盘周围细胞的密集造成 RNFL 厚度较厚；斜视性弱视由于双目视觉轴不平行所引起的，其发病年龄相对较晚，对视网膜的发育未造成明显影响，RNFL 厚度较薄，因此三者存在差异且屈光参差性弱视[26]。视觉系统发育过程中的可塑性与弱视的发生、发展息息相关，低龄儿童因其视觉神经尚未发育完全，存在一定的可塑性，易治愈。对于年龄偏大的患儿需有足够的耐心，保持良好的沟通同时树立其战胜疾病的信心，使其不要轻易放弃治疗从而提升其疗效[27]。

弱视的发生机制还不明确，但是其发生与电生理、眼部结构等多种因素有关。OCT 技术为临床上的常见眼部检测技术，可了解视网膜功能，对于眼部结构和视网膜厚度均可精确测量。OCT 可清晰显示组织微小结构情况，确定各层次的分界[28]。经典研究理论认为弱视多发生小儿，尤其是婴幼儿，是在小儿视觉系统发育的关键时期，由于内外在各种因素的影响，使得光线对眼睛的刺激不足，引起患儿视力下降，也会导致黄斑无法形成较为清晰的物像。弱视虽然有一定的自限性，但是具有病情迁延、治疗复杂等特点，可严重影响患儿的身心健康与生

活质量[29,30]。研究表明,早发现早治疗,可使大多数弱视患儿视力恢复正常。弱视患儿的视力低下,对比敏感度缺陷,伴随有双眼单视功能障碍[31,32]。不过当前临床上治疗弱视的方法比较多,特别是屈光参差性弱视是一种单纯性弱视,临床治疗效果最为出色[33]。本研究随访截止时间为 2021 年 1 月,A 组、B 组与 C 组的总有效率分别为 87.5 %、85.7 %和 85.0 %, 对比无差异;Pearson 线性相关分析显示:预后总有效率与上方、鼻侧、下方、颞侧、全周的 RNFL 厚度均存在相关性。这一结果与 Xie GJ 等人[34]的结果一致,分析其原因可知:弱视患儿在病理上主要表现为视盘凹陷扩大和加深,在弱视的早期,局限性的盘沿变厚,视盘特征性形态发生改变,特别是因近视眼眼轴的伸长以及视盘颞侧常有近视弧出现, 造成视盘颞侧 RNFL 厚度的增加,从而可影响患儿的预后[35]。不过本研究纳入的弱视患儿较少,且未深入分析其他视网膜结构指标,将在后续研究中进行探讨。

总之,不同类型弱视儿童的视网膜神经纤维层结构厚度存在差异,与患儿的预后视力恢复存在相关性。

参 考 文 献(References)

[1] Gopal SKS, Kelkar J, Kelkar A, et al. Simplified updates on the pathophysiology and recent developments in the treatment of amblyopia: A review[J]. Indian J Ophthalmol, 2019, 67(9): 1392-1399

[2] Horwood A M, Griffiths H J, Carlton J. Scope and costs of autorefraction and photoscreening for childhood amblyopia-a systematic narrative review in relation to the EUSCREEN project data[J]. Eye (Lond), 2021, 35(3): 739-752

[3] Gaier ED, Gise R, Heidary G. Imaging Amblyopia: Insights from Optical Coherence Tomography (OCT)[J]. Semin Ophthalmol, 2019, 34 (4): 303-311

[4] Arenillas J F, Coco-Martí n M B, South J, et al. Clinical Aniseikonia in Anisometropia and Amblyopia[J]. J Clin Med, 2020, 16(1): 44-54

[5] Arenillas J F, Fu Z, Hong H, et al. Global prevalence of amblyopia and disease burden projections through 2040: a systematic review and meta-analysis[J]. J Ophthalmol, 2020, 104(8): 1164-1170

[6] Beylerian M, Hess R F, Matonti F, et al. Interocular suppressive interactions in amblyopia depend on spatial frequency [J]. Vision Res, 2020, 168(22): 18-28

[7] Hatt S R, Leske D A, Castañeda Y S, et al. Understanding the Impact of Residual Amblyopia on Functional Vision and Eye-related Quality of Life Using the PedEyeQ [J]. Am J Ophthalmol, 2020, 218 (13): 173-181

[8] Hogarty D T, Hogarty J P, Hewitt A W. Smartphone use in ophthalmology: What is their place in clinical practice?[J]. Surv Ophthalmol, 2020, 65(2): 250-262

[9] Jain K, Jain A, Patil J, et al. Amblyopia therapy in children with penetrating corneal injuries[J]. Taiwan J Ophthalmol, 2020, 10(1): 29-31

[10] Jin J, Apple A, Friess A, et al. Using OCT Fixation Shift to Assess Eccentric Fixation in Children With Residual Amblyopia [J]. Transl Vis Sci Technol, 2020, 9(12): 30-39

[11] Birch E E, Castañeda Y S, Cheng-Patel C S, et al. Self-perception in Preschool Children With Deprivation Amblyopia and Its Association With Deficits in Vision and Fine Motor Skills[J]. JAMA Ophthalmol, 2020, 138(12): 1307-1310

[12] Brusini P. OCT Glaucoma Staging System: a new method for retinal nerve fiber layer damage classification using spectral-domain OCT[J]. Eye (Lond), 2018, 32(1): 113-119

[13] Papageorgiou E, Asproudis I, Maconachie G, et al. The treatment of amblyopia: current practice and emerging trends [J]. Graefes Arch Clin Exp Ophthalmol, 2019, 257(6): 1061-1078

[14] Bjeloš M, Bušić M, Krićanović A, et al. Comment on the article: multifocal electroretinography in amblyopia [J]. Graefes Arch Clin Exp Ophthalmol, 2020, 258(5): 1137-1138

[15] Gitsels L A, Cortina-Borja M, Rahi J S. Is amblyopia associated with school readiness and cognitive performance during early schooling Findings from the Millennium Cohort Study [J]. PLoS One, 2020, 15 (6): e0234414

[16] Gonzalez J M, Urdapilleta M. 50 Years Ago in TheJournal ofPediatrics: Amblyopia Screening: An Update[J]. J Pediatr, 2020, 223(12): 163-169

[17] Kepez Yildiz B, Erdem Z G, Demir G, et al. Effect of keratorefractive surgery on choroidal thickness in anisometropic amblyopia [J]. J Fr Ophtalmol, 2020, 43(10): 996-1001

[18] Kuhli-Hattenbach C, Fronius M, Kohnen T. Timing of congenital cataract surgery: Amblyopia versus aphakic glaucoma [J]. Ophthalmologe, 2020, 117(3): 190-198

[19] Chinese Association for Pediatric Ophthalmology and Strabismus; Pediatric Ophthalmology and Strabismus Group of Chinese Ophthalmologist Association. Expert consensus on prevention and treatment of amblyopia in children [J]. Chinese J Opht Mol, 2021, 57 (5): 336-340

[20] Lapajne L, Rošker S, Tekavčič Pompe M, et al. Vision training with VEP biofeedback in amblyopia after the critical period [J]. Doc Ophthalmol, 2020, 141(3): 269-278

[21] Liu J, Li J, Chen Z, et al. Anisometropic Amblyopia: Interocular Contrast and Viewing Luminance Effects on Aniseikonia [J]. Transl Vis Sci Technol, 2020, 9(3): 11-19

[22] Mao Y, Min S H, Chen S, et al. Binocular Imbalance in Amblyopia Depends on Spatial Frequency in Binocular Combination [J]. Invest Ophthalmol Vis Sci, 2020, 61(8): 7-11

[23] Margines J B, Huang C, Young A, et al. Refractive Errors and Amblyopia Among Children Screened by the UCLA Preschool Vision Program in Los Angeles County [J]. J Ophthalmol, 2020, 210 (3): 78-85

[24] Sahin G, Dal D. Analysis of retinal nerve fiber layer thickness in anisometropic amblyopia via optic coherence tomography [J]. Graefes Arch Clin Exp Ophthalmol, 2019, 257(10): 2103-2110

[25] Masri OS, Abiad B, Darwich MJ, et al. Morphological changes in amblyopic eyes in choriocapillaris and Sattler's layer in comparison to healthy eyes, and in retinal nerve fiber layer in comparison to fellow eyes through quantification of mean reflectivity: A pilot study [J]. PLoS One, 2021, 16(8): e0255735

[26] Mazzone P, Channa A, Nordmann M, et al. Baseline and Clinical Factors Associated with Response to Amblyopia Treatment in a Randomized Clinical Trial[J]. Eye (Lond), 2020, 97(5): 316-323

[27] Shoshany T N, Michalak S M, Chinn R N, et al. Evaluating Amblyopia Treatment Success Using the American Academy of Ophthalmology IRIS50 Measures[J]. Ophthalmology, 2020, 127(6): 836-838

(下转第 4718 页)

syndrome and major adverse cardiovascular events [J]. Int J Obes (Lond), 2015, 39(1): 156-161

[14] 卢关平. 退伍军人医院中吸烟相关的疾病[J].华南预防医学, 1989, 17(4): 60-61

[15] 何文华, 吕农华. 2013 版急性胰腺炎诊治指南解读 [J]. 浙江医学, 2014, 36(7): 544-544

[16] 王新, 李春阳, 苏立平, 等. 动脉粥样硬化发病机制及治疗的研究进展[J]. 实用心脑肺血管病杂志, 2017, 25(2): 1-4

[17] Zernecke A, Weber C. Chemokines in atherosclerosis: proceedings resumed[J]. Arterioscler Thromb Vasc Biol, 2014, 34(4): 742-750

[18] Karin N, Wildbaum G, Thelen M. Biased signaling pathways via CXCR3 control the development and function of $CD4^+$T cell subsets[J]. J Leukoc Biol, 2016, 99(6): 857-862

[19] Clement M, Charles N, Escoubet B, et al. $CD4^+CXCR3^+$T cells and plasmacytoid dendritic cells drive accelerated atherosclerosis associated with systemic lupus erythematosus [J]. J Autoimmun, 2015, 63 (9): 59-67

[20] Ghamar Talepoor A, Khosropanah S, Doroudchi M. Functional subsets of circulating follicular helper T cells in patients with atherosclerosis[J]. Physiol Rep, 2020, 8(22): e14637

[21] 许涵, 翟春丽, 李冰冰. 冠心病患者促炎因子 IL-1β 和抑炎因子 IL-10 全身与病变局部水平的关系 [J]. 心肺血管病杂志, 2018, 37 (11): 968-971

[22] Li J, Ley K. Lymphocyte migration into atherosclerotic plaque[J]. Arterioscler Thromb Vasc Biol, 2015, 35(1): 40-49

[23] Wang HJ, Zhou Y, Liu RM, et al. IP-10/CXCR3 Axis Promotes the Proliferation of Vascular Smooth Muscle Cells through ERK1/2/CREB Signaling Pathway [J]. Cell Biochem Biophys, 2017, 75(1): 139-147

[24] Zhang W, Wang H, Sun M, et al. CXCL5/CXCR2 axis in tumor microenvironment as potential diagnostic biomarker and therapeutic target[J]. Cancer Commun (Lond), 2020, 40(2-3): 69-80

[25] Chen C, Xu ZQ, Zong YP, et al. CXCL5 induces tumor angiogenesis via enhancing the expression of FOXD1 mediated by the AKT/NF-κB pathway in colorectal cancer[J]. Cell Death Dis, 2019, 10(3): 178

[26] Mao Z, Zhang J, Shi Y, et al. CXCL5 promotes gastric cancer metastasis by inducing epithelial-mesenchymal transition and activating neutrophils[J]. Oncogenesis, 2020, 9(7): 63

[27] Wang XZ, Liu LW, Du XM, et al. CXCL5 is associated with the increased risk of coronary artery disease[J]. Coron Artery Dis, 2015, 26 (7): 612-619

[28] 马丹丹, 傅羽, 尹新华. 趋化因子及其受体与冠心病关系的研究进展[J].心脏杂志, 2015, 27(2): 221-223

[29] Gao JH, Yu XH, Tang CK. CXC chemokine ligand 12 (CXCL12) in atherosclerosis: An underlying therapeutic target [J]. Clin Chim Acta, 2019, 495(8): 538-544

[30] Duchene J, von Hundelshausen P. Platelet-derived chemokines in atherosclerosis[J]. Hamostaseologie, 2015, 35(2): 137-141

[31] Gao JH, He LH, Yu XH, et al. CXCL12 promotes atherosclerosis by downregulating ABCA1 expression via the CXCR4/GSK3β/β-cateninT120/TCF21 pathway [J]. J Lipid Res, 2019, 60 (12): 2020-2033

[32] Li L, Du Z, Rong B, et al. Foam cells promote atherosclerosis progression by releasing CXCL12 [J]. Biosci Rep, 2020, 40 (1): BSR20193267

（上接第 4732 页）

[28] Mostafaie A, Ghojazadeh M, Hosseinifard H, et al. A systematic review of Amblyopia prevalence among the children of the world [J]. Rom J Ophthalmol, 2020, 64(4): 342-355

[29] Pineles S L, Aakalu V K, Hutchinson A K, et al. Binocular Treatment of Amblyopia: A Report by the American Academy of Ophthalmology [J]. Ophthalmology, 2020, 127(2): 261-272

[30] Papageorgiou E, Asproudis I, Maconachie G, et al. The treatment of amlyopia: current practice and emerging trends[J]. Graefes Arch Clin Exp Ophthalmol, 2019, 257(6): 1061-1078

[31] Ryu W Y, Lambert S R. Incidence of Strabismus and Amblyopia Among Children Initially Diagnosed With Pseudostrabismus Using the Optum Data Set[J]. J Mot Behav, 2020, 211(16): 98-104

[32] Santhan Gopal K S, Jayadev C, Thomas S, et al. Looking beyond occlusion: A novel perspective for amblyopia treatment [J]. Indian J Ophthalmol, 2020, 68(11): 2462-2465

[33] Sehgal S, Satgunam P. Quantifying Suppression in Anisometropic Amblyopia With VTS4 (Vision Therapy System 4)[J]. Transl Vis Sci Technol, 2020, 9(12): 24

[34] Xie GJ, Lv LW, Zhang JF. The changes of RNFL thickness and its influence on visual field defect in patients with PXG at different stages [J]. Eur Rev Med Pharmacol Sci, 2020, 24(21): 10935-10940

[35] Wong-Kee-You A M B, Wei H, Hou C. Feature Counting Under Dichoptic Viewing in Anisometropic and Strabismic Am blyopia [J]. Transl Vis Sci Technol, 2020, 9(6): 13-15