

动脉瘤性蛛网膜下腔出血致Terson综合征一例

苏日娜^{1*}, 王宝蕙^{1,2#}

¹济宁医学院临床医学院, 山东 济宁

²山东省济宁市第一人民医院眼科, 山东 济宁

收稿日期: 2024年3月17日; 录用日期: 2024年4月11日; 发布日期: 2024年4月17日

摘要

Terson综合征是蛛网膜下腔出血(SAH)的眼部相关并发症, 可引起视网膜出血、视网膜下出血、视网膜前出血及玻璃体出血, 导致视力的严重损害。患者多因颅内出血所致的意识及言语障碍无法及时发现眼部并发症, 从而延误最佳治疗时机。本文报道了一例老年男性患者, 因动脉瘤性蛛网膜下腔出血合并双眼Terson综合征, 经玻璃体切割治疗后预后良好。对于蛛网膜下腔出血的患者, 应在意识恢复的早期进行眼科相关检查, 及时明确Terson综合征的诊断, 对于有黄斑区视网膜前出血及内界膜下出血的患者, 及时进行眼底激光干预, 对于视力的预后及减轻患者经济负担均有一定意义。

关键词

蛛网膜下腔出血, Terson综合征, 玻璃体切割术

Terson Syndrome Caused by Aneurysmal Subarachnoid Hemorrhage: A Case Report

Rina Su^{1*}, Baohui Wang^{1,2#}

¹School of Clinical Medicine, Jining Medical University, Jining Shandong

²Department of Ophthalmology, Jining No. 1 People's Hospital, Jining Shandong

Received: Mar. 17th, 2024; accepted: Apr. 11th, 2024; published: Apr. 17th, 2024

Abstract

Terson syndrome is an ocular complication of subarachnoid hemorrhage (SAH), which can cause retinal hemorrhage, subretinal hemorrhage, preretinal hemorrhage and vitreous hemorrhage, leading to severe visual impairment. Due to the consciousness and speech disorders caused by in-

*第一作者。

#通讯作者。

文章引用: 苏日娜, 王宝蕙. 动脉瘤性蛛网膜下腔出血致 Terson 综合征一例[J]. 临床医学进展, 2024, 14(4): 1129-1134.

DOI: 10.12677/acm.2024.1441133

tracranial hemorrhage, the eye complications cannot be found in time, thus delaying the best treatment opportunity. We report an elderly male patient with bilateral Terson syndrome due to aneurysmal subarachnoid hemorrhage. The patient had a good prognosis after vitrectomy. For patients with subarachnoid hemorrhage, ophthalmological examinations should be performed in the early stage of consciousness recovery, and the diagnosis of Terson syndrome should be confirmed in time. For patients with premacular hemorrhage, timely fundus laser intervention is of certain significance for the prognosis of vision and reducing the economic burden of patients.

Keywords

Subarachnoid Hemorrhage, Terson Syndrome, Vitrectomy

Copyright © 2024 by author(s) and Hans Publishers Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

1. 引言

Albert Terson 于 1900 年首次描述了玻璃体、视网膜前或视网膜出血与蛛网膜下腔出血(SAH)的关系,并以“Terson”命名此疾病。一项研究显示 Terson 综合症的 5 年累积发生率为 0.86% [1],其中以动脉瘤性 SAH 最为多见,且病死率更高,长期预后更差[2],Obuchowska 等[3]的研究指出多达 42%的动脉瘤性 SAH 患者在急性出血后期有异常的眼底表现。其中有 13.5%的患者仅有视盘水肿,23%的患者有视网膜出血或不伴视盘水肿,5%的患者有玻璃体出血。眼内后果的危险因素包括 SAH 的严重程度、卒中时意识丧失时间、更大的动脉瘤、老年人以及高血压等[1] [3],一项针对 96 例动脉瘤性 SAH 的研究显示发生眼内病变的患者平均年龄为(52.7 ± 11.9)岁,明显大于未发生眼内病变的患者(45.6 ± 11.5)岁,眼内病变患者的动脉瘤大小(中位数: 9 mm, IQR: 7~12 mm)显著大于无眼底病变患者(中位数: 8 mm, IQR: 6~9.5 mm),在 SAH 发作时仅经历头痛且入院时 Hunt-Hess 和 Fisher 评分等于 I 的患者眼内发病率较小。现将我院经治的一例动脉瘤性蛛网膜下腔出血致 Terson 综合征的患者资料进行分析并文献复习后,报道如下。

2. 病例资料

患者男,74 岁,因突然头痛、头晕、意识丧失 1 小时就诊当地医院,入院查体 Hunt-Hess 分级 IV 级,深度昏迷,双侧瞳孔等大等圆,直径约 2 mm,对光反射存在,颈韧,有抵抗,行脑动脉 CTA 成像示蛛网膜下腔出血,脑血管造影示右侧颈内动脉后交通动脉瘤,入院第 3 日在气管插管全身麻醉下行“经导管颈动脉瘤弹簧圈栓塞术”,术后患者逐渐恢复意识,手术后 1 周患者诉右眼视物模糊,未行眼科相关检查,于当地医院继续住院治疗 17 天后出院。发病 28 天后患者第一次就诊我院眼科,查体右眼视力光感/光定位差,左眼视力手动/眼前,右眼眼压 15 mmHg,左眼眼压 13 mmHg,既往 8 年前行双眼白内障手术,双眼人工晶体位正,右眼玻璃体白色混浊,视网膜窥不见,左眼眼底黄斑区可见视网膜前出血,周边玻璃体可见部分积血吸收痕迹,眼部 B 超示右眼玻璃体中量混浊-积血(图 1A),左眼黄斑区隆起(图 1B),诊断:双眼 Terson 综合征,左眼黄斑区视网膜前出血,因就诊时已发病 28 天,左眼黄斑区视网膜前出血已错过最佳激光治疗时期,于是予和血明目片口服治疗促进出血吸收,18 天后复查眼部 B 超示右眼玻璃体积血机化(图 1a),左眼黄斑区仍隆起(图 1b),左眼黄斑 OCT 及眼底照相示黄斑区视网膜前出血范围约 2PD × 4PD (图 2),遂收住我院,行右眼玻璃体切除术,术后 6 天右眼矫正视力 0.6,左眼

矫正视力 0.06; 继续予和血明目片口服治疗, 术后 38 天复查右眼矫正视力 0.8, 左眼矫正视力 0.2, 眼底照相示右眼玻璃体腔清(图 3A), 左眼黄斑区视网膜前出血较前吸收, 范围约 $1\text{PD} \times 2\text{PD}$, 黄斑部分可见(图 3B), 黄斑 OCT 示右眼黄斑区形态大致正常(图 3a), 左眼黄斑区视网膜前出血较前明显吸收, 黄斑前膜形成(图 3b)。

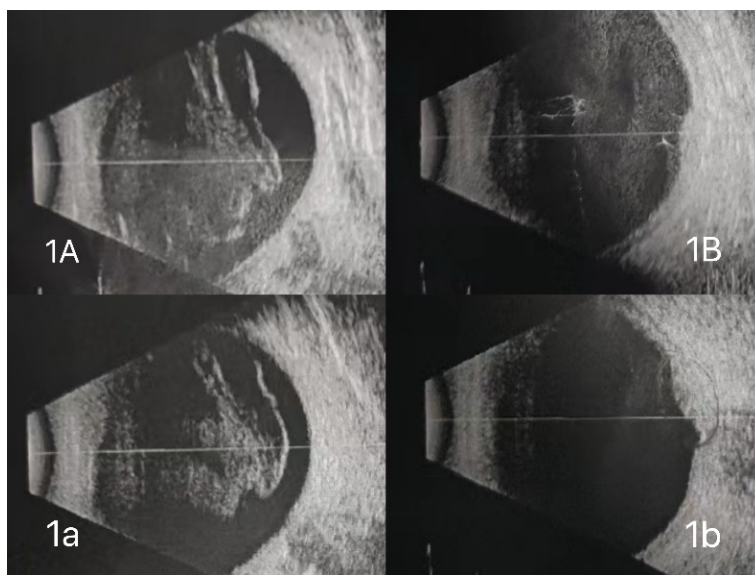


Figure 1. 1A showed moderate vitreous opacities and hemorrhage in the right eye, 1B showed macular bulge in the left eye. 1a showed that the vitreous hemorrhage of the right eye was organized on day 46 of onset, and 1b showed that the macular area of the left eye was still elevated

图 1. 1A 示发病 28 天眼部 B 超示右眼玻璃体中量混浊 - 积血, 1B 示左眼黄斑区隆起; 1a 示发病 46 天右眼玻璃体积血机化, 1b 示左眼黄斑区仍隆起

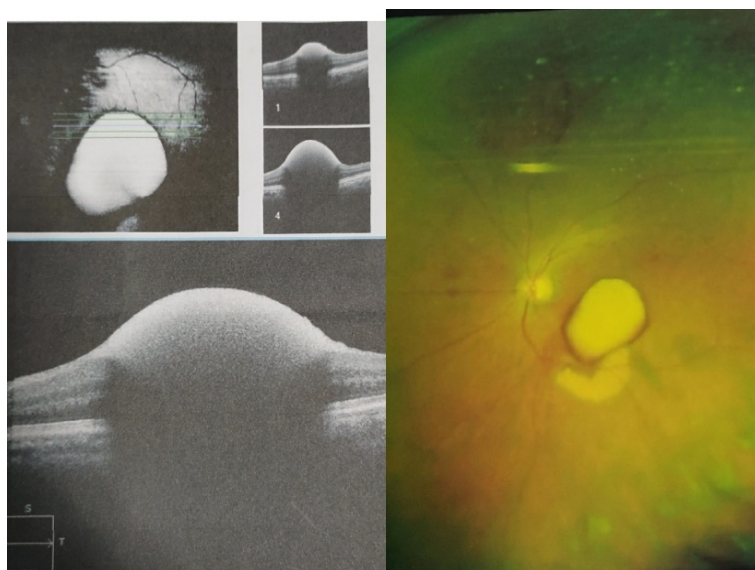


Figure 2. The macular OCT and fundus photography of the left eye on day 46 showed that the area of macular preretinal hemorrhage was about $2\text{PD} \times 4\text{PD}$

图 2. 发病 46 天左眼黄斑 OCT 及眼底照相示黄斑区视网膜前出血范围约 $2\text{PD} \times 4\text{PD}$

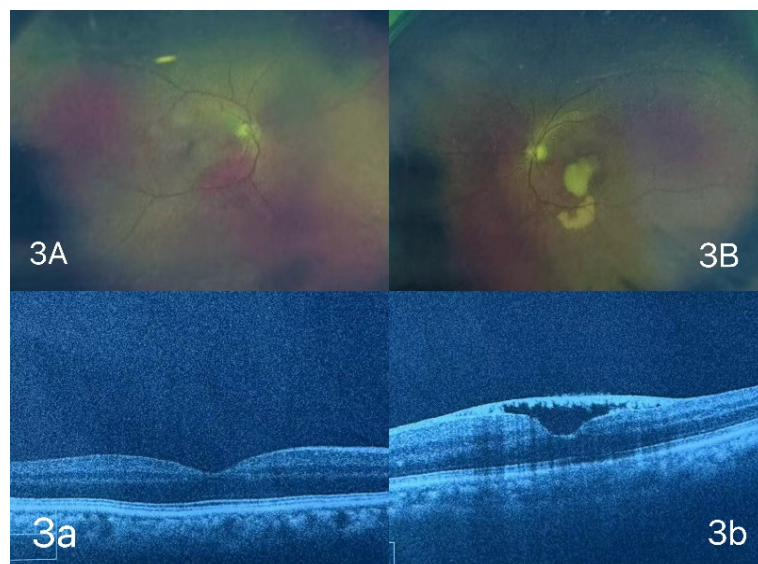


Figure 3. 38 days after surgery, B-ultrasound: 3A showed vitreous cavity clear in the right eye, 3B showed preretinal hemorrhage in the macular area of the left eye was absorbed, the range was about 1 PD × 2 PD, and the macular part was visible. Macular OCT: 3a showed that the morphology of the macular area in the right eye was generally normal, 3b showed that the preretinal hemorrhage in the macular area in the left eye was obviously absorbed and the epiretinal membrane was formed

图 3. 术后 38 天眼部 B 超: 3A 示右眼玻璃体腔清, 3B 示左眼黄斑区视网膜前出血较前吸收, 范围约 1 PD × 2 PD, 黄斑部分可见; 术后 38 天黄斑 OCT: 3a 示右眼黄斑区形态大致正常, 3b 示左眼黄斑区视网膜前出血较前明显吸收, 黄斑前膜形成

3. 讨论

Terson 综合征目前的定义涵盖了不仅限于 SAH 的任何形式颅内出血所合并的眼内出血, 尽管 Terson 综合征是一种定义明确且经常发生的现象, 但其病理生理学仍存在争议。先前提出的理论包括: 1) 颅内压突然升高传导至视神经鞘, 压迫视网膜中央静脉, 使眼内静脉血液回流受阻, 导致眼内静脉压迅速增高, 使毛细血管、小静脉、静脉破裂出血[4] [5]; 2) 或者颅内血液通过视神经鞘延伸到眼内[6]。我们的患者出现左眼视网膜大动脉瘤, 不排除颅内压骤然增高引起的视网膜静脉阻塞有关, Kumari [7]等的研究解释了第二种理论, 即类淋巴通路是连接蛛网膜下腔和视网膜的唯一血管外解剖管道, 颅内压升高使血液通过类淋巴通道回流到眼球, 从而引起眼内出血。Czorlich 等[8]研究认为, Terson 综合征的发生可能与这两种病理机制的共同作用有关, 在其研究中 51 例 TS 患者中有 5 例(9.8%)在没有颅内压增高或初始昏迷的情况下便发生了眼内的出血。

因蛛网膜下腔出血的病人患病早期常合并有意识、言语等障碍, 首诊神经科治疗, 碍于全身情况的危急, 常忽略了对眼底出血的早期筛查[9]。有研究报道, 玻璃体积血可以刺激视网膜前膜的产生, 纤维增生引起牵拉性视网膜脱离[4]。因此, 对于眼科医生选择早期适合的筛查手段尤为重要, 在疾病早期施行眼底镜检查受限的情况下, 眼部 B 超在视网膜前出血及视网膜出血的诊断上特异度及灵敏度均较敏感, 表现为玻璃体密度增加和增厚、结节状或月牙形高回声影。

对于 Terson 综合征的治疗, 根据发病时间及出血部位有不同的治疗方案。Munteanu 等[10]报道了一例 34 岁女性患者, 诊断为继发于动脉瘤性蛛网膜下腔出血所致的双侧 Terson 综合征, 手术过程发现该患者 2 只眼的出血部位分别在内外界膜下及视网膜前, 故内界膜下出血术中需剥除内界膜。Morris 等[5]

提出了 Terson 综合征的分类, 该分类从组织学上描述了出血的潜在位置: “视网膜下出血”(视网膜内界膜和神经纤维层之间)和“视网膜前出血”(内界膜和玻璃体后皮质之间)。两者可通过黄斑 OCT 鉴别, 内界膜下出血表现为两条高反射带, 一条为紧贴出血并与正常视网膜内界膜相连续的高反射带, 为视网膜内界膜; 另一条为高反射条带前的不连续呈补丁样较弱反射条带, 为玻璃体后皮质[11][12][13]。两者治疗方式上没有明确的区分, 内界膜下出血更不易吸收, 病理检查发现内界膜下出血的细胞增殖在视网膜侧而非玻璃体侧[12], 提示出血时间越长, 预后越差, 对于早期出血且出血未突破玻璃体后皮质或内界膜进入玻璃体腔的, 视网膜前积血需至少 > 3 PD [14][15], 积血下部远离黄斑中心凹及视网膜大血管的前提下, 激光切开引流积血入玻璃体腔不失为好办法, 其治疗花费低, 患者遭受痛苦程度轻, 被不少眼科医生所采用[12][13], 研究提示该治疗方法对于发病时间不超过 21 天的患者有效[5]。我们的患者左眼合并了玻璃体积血及黄斑区的视网膜前出血, 就诊时周边玻璃体可见积血吸收的痕迹, 但黄斑区的出血已发病超过 21 天, 错失激光治疗时机, 经保守治疗后短期随访视力提高不理想, 若积血长期不吸收, 血液代谢物具有视网膜毒性, 积血存在时间越长, 红细胞融解的越多, 炎症浸润越强, 纤维蛋白呈蜂巢状包裹视网膜光感受器细胞外端, 血块的收缩造成了光感受器细胞的撕脱, 最终造成视力不可逆性损伤[16], 特别是出血位于黄斑区的, 血液代谢物的毒性作用使得黄斑区视锥细胞受到更大的破坏, 加之黄斑前膜的形成在剥除增殖膜时可能对黄斑造成一定的损伤。另外积血释放的增殖因子会促使视网膜胶质细胞形成机化膜[17], 造成如增生性玻璃体视网膜病变、视网膜裂孔、视网膜脱离等, 严重影响视力预后[18]。因此, 对于出血部位在黄斑区的视网膜前及内界膜下出血, 早期确诊行激光治疗能避免积血造成的黄斑区视锥细胞的毒害, 在积血不吸收者需要玻璃体切除的情况下也降低了剥除黄斑前膜过程中可能损害到黄斑的危险性, 能获得较好的视力预后。

4. 结论

综上, Terson 综合征早期采取对症治疗, 一般均能获得较好的视力恢复[19], 在临床工作中, 对于蛛网膜下腔出血的患者, 应警惕 Terson 综合征的发生, 特别是出血部位位于黄斑区的视网膜前出血及内界膜下出血, 做到及早发现, 及早激光干预治疗, 对于患者视力的预后及减轻家庭负担具有一定的意义。

参考文献

- [1] Hong, E.H., Seong, M., Yeom, H., *et al.* (2019) Incidence of Terson Syndrome in Treated Subarachnoid Hemorrhage in South Korea: a National Health Insurance Database Study. *Scientific Reports*, **9**, Article 19048. <https://doi.org/10.1038/s41598-019-55566-0>
- [2] Seif, G.I., Teichman, J.C., Reddy, K., *et al.* (2014) Incidence, Morbidity, and Mortality of Terson Syndrome in Hamilton, Ontario. *Canadian Journal of Neurological Sciences*, **41**, 572-576. <https://doi.org/10.1017/cjn.2014.7>
- [3] Obuchowska, I., Turek, G., Mariak, Z. and Mariak, Z. (2014) Early Intraocular Complications of Subarachnoid Hemorrhage after Aneurysm Rupture. *Neuroophthalmology*, **38**, 199-204. <https://doi.org/10.3109/01658107.2014.911918>
- [4] Ren, Y., Wu, Y. and Guo, G. (2019) Terson Syndrome Secondary to Subarachnoid Hemorrhage: A Case Report and Literature Review. *World Neurosurgery*, **124**, 25-28.
- [5] Iuliano, L., Fogliato, G. and Codenotti, M. (2014) Intraoperative Imaging of Subinternal Limiting Membrane Blood Diffusion in Terson Syndrome. *Case Reports in Ophthalmological Medicine*, **2014**, Article ID: 689793. <https://doi.org/10.1155/2014/689793>
- [6] Ogawa, T., Kitaoka, T., Dake, Y. and Amemiya, T. (2001) Terson Syndrome: A Case Report Suggesting the Mechanism of Vitreous Hemorrhage. *Ophthalmology*, **108**, 1654-1656. [https://doi.org/10.1016/S0161-6420\(01\)00673-X](https://doi.org/10.1016/S0161-6420(01)00673-X)
- [7] Kumaria, A., Gruener, A.M., Dow, G.R., *et al.* (2022) An Explanation for Terson Syndrome at Last: The Glymphatic Reflux Theory. *Journal of Neurology*, **269**, 1264-1271. <https://doi.org/10.1007/s00415-021-10686-4>
- [8] Czorlich, P., Skevas, C., Knosp, V., *et al.* (2016) Terson's Syndrome—Pathophysiologic Considerations of an Underestimated Concomitant Disease in Aneurysmal Subarachnoid Hemorrhage. *Journal of Clinical Neuroscience*, **33**, 182-186. <https://doi.org/10.1016/j.jocn.2016.04.015>

-
- [9] 陈实, 刘盛泽, 庄雪梅, 等. 蛛网膜下腔出血致 Terson's 综合征的治疗体会[J]. 国际神经病学神经外科学杂志, 2021, 48(1): 90-92.
- [10] Munteanu, M., Rosca, C. and Stanca, H. (2019) Sub-Inner Limiting Membrane Hemorrhage in a Patient with Terson Syndrome. *International Ophthalmology*, **39**, 461-464. <https://doi.org/10.1007/s10792-018-0822-5>
- [11] De Maeyer, K., Van Ginderdeuren, R., Postelmans, L., *et al.* (2007) Sub-Inner Limiting Membrane Haemorrhage: Causes and Treatment with Vitrectomy. *British Journal of Ophthalmology*, **91**, 869-872. <https://doi.org/10.1136/bjo.2006.109132>
- [12] Mennel, S. (2007) Subhyaloidal and Macular Haemorrhage: Localisation and Treatment Strategies. *British Journal of Ophthalmology*, **91**, 850-852. <https://doi.org/10.1136/bjo.2007.114025>
- [13] Hussain, R.N., Stappler, T., Hiscott, P. and Wong, D. (2020) Histopathological Changes and Clinical Outcomes Following Intervention for Sub-Internal Limiting Membrane Haemorrhage. *Ophthalmologica*, **243**, 217-223. <https://doi.org/10.1159/000502442>
- [14] Durukan, A.H., Kerimoglu, H., Erdurman, C., *et al.* (2008) Long-Term Results of Nd:YAG Laser Treatment for Premacular Subhyaloid Haemorrhage Owing to Valsalva Retinopathy. *Eye (London)*, **22**, 214-218. <https://doi.org/10.1038/sj.eye.6702574>
- [15] Ulbig, M.W., Mangouritsas, G., Rothbacher, H.H., *et al.* (1998) Long-Term Results after Drainage of Premacular Subhyaloid Hemorrhage into the Vitreous with a Pulsed Nd:YAG Laser. *Archives of Ophthalmology*, **116**, 1465-1469. <https://doi.org/10.1001/archophth.116.11.1465>
- [16] Lewis, H., Resnick, S.C., Flannery, J.G. and Straatsma, B.R. (1991) Tissue Plasminogen Activator Treatment of Experimental Subretinal Hemorrhage. *American Journal of Ophthalmology*, **111**, 197-204. [https://doi.org/10.1016/S0002-9394\(14\)72259-7](https://doi.org/10.1016/S0002-9394(14)72259-7)
- [17] Toth, C.A., Morse, L.S., Hjelmeland, L.M. and Landers III, M.B. (1991) Fibrin Directs Early Retinal Damage after Experimental Subretinal Hemorrhage. *Archives of Ophthalmology*, **109**, 723-729. <https://doi.org/10.1001/archophth.1991.01080050139046>
- [18] Johnson, M.W., Olsen, K.R. and Hernandez, E. (1991) Tissue Plasminogen Activator Treatment of Experimental Subretinal Hemorrhage. *Retina*, **11**, 250-258. <https://doi.org/10.1097/00006982-199111020-00011>
- [19] Garweg, J.G. and Koerner, F. (2009) Outcome Indicators for Vitrectomy in Terson Syndrome. *Acta Ophthalmologica*, **87**, 222-226. <https://doi.org/10.1111/j.1755-3768.2008.01200.x>