ISSN: 2641-6360
DOI: 10.33552/WJOVR.2022.04.000582
World Journal of Ophthalmology & Vision Research
Iris Publishers

Research Article

Effect of Anti-VEGF Treatment on Retinopathy of Prematurity of Libyan Patients

Khalifa M Alsawidi[1]*, Nuri K Sultan[1] and Gareeb Bagdadi[1]

[1]*Assistant Professor, Tripoli Eye Hospital, Tripoli, Libya*

***Corresponding author:** Khalifa M Alsawidi, Assistant Professor, Tripoli Eye Hospital, Tripoli, Libya.

Received Date: April 19, 2022

Published Date: June 07, 2022

Abstract

Aim: To evaluate the effect of intravitreal bevacizumab in management of retinopathy of prematurity patients zone I disease without macular involvement or zone II stage 3.

Methods: Data was collected for ROP patients with zone I disease without macular development and zone II stage 3 who received intravitreal bevacizumab injections of 0.625 mg/0.05 mL between November 2019 and March 2022 at Alrassen medical center. No prior laser or other intravitreal treatment was done. Prior to the intervention and at each follow-up visit, fundus examination was performed. gestational age at birth, sex, birth weight, ROP zone, ROP stage, and follow-up period were recorded. The final clinical status of the retina was evaluated for each patient.

Results: Twenty-four eyes of premature infants with ROP zone I disease without macular involvement or zone II stage 3 were enrolled in the study. The mean gestational age at birth was 28.12±1.37 (range: 26 to 33) wks. and the mean birth weight was 1470.57±226.85 (range: 1020.00 to 1650.00) g. All eyes vascularized into zone III at the end of the study and twenty-two eyes treated successfully with single injection of intravitreal bevacizumab only two eyes needed another intravitreal bevacizumab injection. No cases of cataract formation, endophthalmitis, or vitreous hemorrhage were reported

Conclusion: Intravitreal bevacizumab injection is an effective treatment for ROP patients with zone I disease macular involvement or zone II stage 3 through inducing regression of ROP and promoting normal retinal vascularization. More patients with longer follow-up duration are necessary to confirm the safety and efficacy of this treatment.

Introduction

Retinopathy of prematurity (ROP) remains one of the leading causes of childhood blindness worldwide [1]. Characterized by retinal ischemia, aberrant angiogenesis, fibrovascular proliferation, and progressive vitreoretinal traction, ROP accounts for 14% of childhood blindness within the United States and greater than 20% in developing nations [2]. Vascular endothelial growth factor (VEGF) is the principal mediator of pathological angiogenesis [2].

Methods

Patients' pupils were dilated with 0.5% tropicamide and 0.5% phenylephrine drops 1 hour before examination. Indirect ophthalmoscopy was routinely performed after topical anesthesia. Then data was collected for ROP patients with zone I disease without macular development and zone II stage 3 between November 2019 and March 2022 at Alrassen Medical Center. After a written informed consent was obtained an initial intravitreal injection of bevacizumab 0.625 mg/0.05 mL given to each eye separately using short needle (4-mm length) 1.0 mm posterior to limbus, the eyelids and conjunctiva were sterilized with 5% povidone iodine for disinfection, and the first follow-up was 24 to 48 hours post-injection. Then 2 weeks following the injection after that monthly until mature vascularization will happen. The primary outcome

measures included ROP recurrences requiring re-treatment, complete or incomplete peripheral vascularization.

Results

Twenty-four eyes of premature infants with ROP zone I disease without macular involvement or zone II stage 3 were enrolled in the study. The mean gestational age at birth was 28.12±1.37 (range: 26 to 33) wks. and the mean birth weight was 1470.57±226.85 (range: 1020.00 to 1650.00) g. All eyes vascularized into zone III at the end of the study and twenty-two eyes treated successfully with single injection of intravitreal bevacizumab only two eyes needed another intravitreal bevacizumab injection. No cases of cataract formation, endophthalmitis, or vitreous hemorrhage were reported Intravitreal injection of ranibizumab is very effective in this study; however, successful treatment cannot be achieved in all eyes with a single injection. The reason for recurrence might be associated with the location of disease and the severity of the disease, further studies are still needed to clarify the reason (Table 1).

Table 1: Twenty-four eyes of premature infants with ROP zone I disease without macular involvement or zone II stage 3 were enrolled in the study.

Parameters	Data
Number of pts/eyes	24-Dec
Male / Female	4-Aug
Birth weight	1470.57±226.85
Gestational Age	28.12±1.37
Number of retreatments	2

Discussion

Recently, anti-VEGF injection has become emerging as successful treatment for ROP and was mainly used for Zone I ROP [3,4]. Peripheral retinal laser photocoagulation was the standard method for treatment-requiring ROP in Zone II [5,6]. Recently more Zone II ROP patients showed good response to the anti-VEGF treatment. However, the safety and the efficacy diverse greatly. Intravitreal injection of ranibizumab is effective in this study; however, successful treatment cannot be achieved in all eyes with a single injection. In our study, twenty-two showed rapid regression of ROP after single injection of 0.625 mg bevacizumab. Intravitreal anti-VEGF treatment of ROP with both bevacizumab and ranibizumab achieved stable retinal vascularization with a low rate of complications and recurrence. Ranibizumab achieved similar anatomical outcomes as bevacizumab, without additional risk for major complications [7,8]. On the other hand increasing frequency of intravitreal anti-VEGF use for the treatment of type ROP following the publication of the BEAT-ROP [9] and RAINBOW trials [10] necessitates a practical protocol for both the actual injection and follow-up for these patients.

Conclusion

In this study the efficacy of intravitreal monotherapy bevacizumab injection has been proven with low serious ocular or systemic adverse effects. However, ROP remains an ever relevant and challenging disease due to the advancements in neonatal care leading to more viable preterm infants.

Acknowledgement

None.

Conflict of Interest

No Conflict of Interest.

References

1. Ludwig CA, Chen TA, Hernandez-Boussard T, Moshfeghi AA, Moshfeghi DM (2017) The epidemiology of retinopathy of prematurity in the United States. Ophthalmic Surg Lasers Imaging Retina 48(7): 553-562.
2. Solebo AL, Rahi J (2014) Epidemiology, aetiology and management of visual impairment in children. Arch Dis Child 99(4): 375-379.
3. Darlow BA, Ells AL, Gilbert CE, Gole GA, Quinn GE (2013) Are we there yet? Bevacizumab therapy for retinopathy of prematurity. Arch Dis Child Fetal Neonatal Ed 98(2): F170-F174.
4. Eldweik L, Mantagos IS (2016) Role of VEGF inhibition in the treatment of retinopathy of prematurity. Semin Ophthalmol 31(1): 163-168.
5. Dogra MR, Katoch D, Dogra M (2017) An update on retinopathy of prematurity (ROP). Indian J Pediatr 84(12): 930-936.
6. Wang F, Zhang P, Sun X (2015) The role of laser photocoagulation in the anti-vascular endothelial growth factor therapy era. Zhonghua Yan Ke Za Zhi 51(12): 885-887.
7. Hyun Goo Kang, Eun Young Choi, Suk Ho Byeon, Sung Soo Kim, Hyoung Jun Koh, et al. (2018) Anti-vascular Endothelial Growth Factor Treatment of Retinopathy of Prematurity: Efficacy, Safety, and Anatomical Outcomes. Korean J Ophthalmol 32(6): 451-458.
8. Castellanos MA, García-Aguirre G, Quiroz-Mercado H (2013) Short-term outcome after intravitreal ranibizumab injections for the treatment of retinopathy of prematurity. Br J Ophthalmol 97(7): 816-819.
9. Mintz-Hittner HA, Kennedy KA, Chuang (2011) AZBEAT-ROP Cooperative Group. Efficacy of intravitreal bevacizumab for stage 3+ retinopathy of prematurity. N Engl J Med 364(7): 603-615.
10. Stahl A, Lepore D, Fielder A, Brian F, Reynolds JD, et al. (2019) Ranibizumab versus laser therapy for the treatment of very low birthweight infants with retinopathy of prematurity (RAINBOW): an open-label randomised controlled trial. Lancet 394(10208): 1551-1559.