INTERMEDIATE UVEITIS: VISUAL OUTCOME AFTER INTRAVITREAL TRIAMCINOLONE ACETONIDE

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ABSTRACT

Objective: To determine the visual outcome after intravitreal triamcinolone acetonide (IVTA) in intermediate uveitis (IU).

Place and Duration: This study was conducted at Department of Clinical Ophthalmology, Khyber Institute of Ophthalmic Medical Sciences (KIOMS), Hayatabad Medical Complex (HMC), Peshawar, Pakistan. The study was conducted from 1st August, 2010 to 31st July, 2012.

Study Design: A descriptive interventional case series.

Material and Methods: This case series included 21 eyes of 21 patients with intermediate uveitis. In case of bilateral disease, one eye with worse visual acuity (VA) was included in the study. All eyes received 4 mg of 0.1ml of IVTA. Baseline best corrected visual acuity (BCVA), level of vitreous activity, presence of cystoid macular edema (CME) was recorded. Follow up was done at 15th, 45th, 90th, 120th post IVTA.

Results: Mean age of patients was 34.7 years (range 17 to 60 year). Males were 71.4% and females were 28.6%. The disease was bilateral in 33.3% cases. Mean pre IVTA BCVA was 0.97 log MAR (approx 6/60 Snellen's equivalent) which improved to 0.46 log MAR (approx 6/18 Snellen's equivalent) at 90th post IVTA day. It started deteriorating after 90th day. Mean vitreous activity also started decreasing and continued so till 90th day after IVTA. Thereafter vitreous activity started rising again. CME was present initially in 7 (33.3%) eyes. CME resolution occurred in all except 1 (4.8%) eye. CME also recurred in 1 eye (4.8%) at 120th post injection day. Repeat IVTA was needed in 2 (9.5%) cases for persistent severe inflammation and recurrence of CME. One case (4.8%) underwent parsplana vitrectomy for persistent vitreous inflammation but ended up with pthysis bulbi. No injection related complications were noted.

Conclusion: IVTA resulted in improvement of visual acuity at 90th post injection day. The efficacy was not maintained at 120th day.

Key Words: Intermediate uveitis; Intravitreal triamcinolone acetonide; Cystoid macular edema.

INTRODUCTION

Intermediate uveitis (IU) is defined as the inflammation localized to the vitreous, cilliary body and peripheral retina. The incidence is similar in both genders with no racial predilection. It can affect any age group but is commonly found in third and fourth decades.[1,2,3] It is bilateral in 70 to 90% in the western literature and is 13.6% from a south Indian based study.[2,3] The reported percentage of intermediate uveitis is 7.8 among uveitic patients in India.[2] It has been reported in 1.4-22% of uveitic patients in the western studies.[4] Its prevalence is 5.9/100000 and incidence is 1.4/100000. It comprises 10-12% of uveitis seen in children.[4] Exact etiology is not known in majority of cases.[4] It is associated with infectious diseases such as lyme disease, toxoplasmosis, toxocariasis, tuberculosis, syphilis and with non-infectious diseases such as multiple sclerosis, sarcoidosis or intraocular lymphoma.[4] HLA association has been found and HLA DR2, HLA DR15, HLA A28, HLA B8 and HLA B51 are seen.4 IU usually presents with blurring of vision and floaters without pain and photophobia.[4]

Patients having visual acuity (VA) of <0.3 log-MAR (<6/12 on Snellen's visual acuity chart) used to be usually treated.[4] Now more aggressive treatment is advocated. Various treatment options are local steroids (periocular or intravitreal), oral steroids, immunomodulatary therapy, cryotherapy or indirect laser photocoagulation to peripheral affected retina, pars plana vitrectomy with induction of posterior hyloid separation and peripheral laser photocoagulation to pars plana snow banks.[4] Periocular injections are the preferred route of treatment.[4] Intravitreal Triamcinolone Acetonide (IVTA) is used to treat inflammation and cystoid macular edema associated with IU which achieves high vitreous concentration as compared to periocular route.[5] Cystoid macular edema (CME) resolves in median time of about 4 weeks.[5] Hogewind et al reported that 50% of eyes with

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IU or posterior uveitis and refractory CME improved greater than 2 lines at 3 months after IVTA but by 12 months the proportion of improved eyes decreased to 40%.[6] The data regarding visual outcome after IVTA in IU is lacking in Pakistan. Development of insight, availing information and evidence regarding IU treatment outcome in our population is highly awaited by the ophthalmologists. Therefore we designed this study to determine the visual outcome of IVTA in patients with IU.

MATERIAL AND METHODS

This descriptive interventional case series was carried out after approval from the ethical board and included 21 eyes of 21 patients with IU. In case of bilateral disease, one eye with worse VA was included in the study. Intermediate uveitis was diagnosed if patient complained of defective vision of < 0.3 logMAR (<6/12) and /or floaters in the affected eye in the presence of vitreous cells that out number anterior chamber cells infiltration and/or vitreous snow balls or snow banking. It was detected by slit lamp bimicroscopy using 78D lens or snow banking at pars plana was detected by indirect ophthalmoscopy with scleral indentation.

Visual outcome was determined in terms of improvement or worsening of Best Corrected Visual Acuity (BCVA) by at least 2 lines at 90th post IVTA and was detected by using Snellen's chart. It was categorized into stable: if VA remained the same, Improved: if there was improvement in BCVA of two or more lines and worsened: if BCVA decreased by two or more Snellen's line compared to pre IVTA baseline BCVA. Both genders with IU with age 16 years or more with BCVA less than 6/12 on Snellen's VA chart were included in the study. Cases of anterior uveitis, posterior uveitis and pan uveitis which were diagnosed clinically by our study consultant were excluded from the study. Cases of intermediate uveitis who already had received other treatment modalities for example posterior subtenon triamcinolone acetonide, peribulbar steroid injections, peripheral laser or cryotherapy were also excluded from the study. All patients meeting the inclusion criteria were included in the study through OPD. The purpose and benefits of the study were explained to all patients. The patients were assured that the study would be done purely for research and publication purpose and informed consent was obtained. The patients were worked up with complete history, ophthalmological examination and complete systemic examination to find out associated conditions like multiple sclerosis, tuberculosis or sarcoidosis etc. Under strict aseptic technique 4mg/0.1ml of IVTA was injected by an experienced ophthalmologist who was a fellow of College of Physician and Surgeons Pakistan (CPSP). Follow up visits were done at 15th, 45th, 90th and 120th day to determine the visual outcome in terms of stability, improvement or worsening of VA by at least two or more Snellen's lines from baseline BCVA. All the above mentioned information including name, age, gender, address and contact number was recorded on a predesigned proforma. Data was analyzed by SPSS version 16. Snellen's VA was converted to logMAR to facilitate data analysis. Percentages were calculated for categorical variables like gender, laterality and presence of CME.

RESULTS

Demographic data of our study cases is given in (Table 1).

VA improvement of 2 or > lines was achieved in 15 eyes (71.4%). Four eyes (19.1%) have stable VA and there was < 2 Snellen lines improvement in BCVA. Two eyes (9.5%) have worsening of BCVA. CME resolution occurred in all except 1 eye (4.8%). It occurred between 2nd and 12th weeks. There was no recurrence in CME till 90th post IVTA day. Recurrence of CME was recorded in 1 eye (4.8%) at 120th post IVTA day. Repeat IVTA was needed in 2 (9.5%) eyes for persistent/worsening inflammation and recurrence of CME. Worsening rather than persistence of vitreous inflammation was noted in 1 eye (4.8%) at 90th post IVTA which detoriated VA to counting finger. That patient underwent parsplana vitrectomy but ultimately the eye ended up with pthysis bulbi. No intraoperative complications were noticed.

Table 1: Demographic data of our study (n=21)

Demographic data	
Total number of patients (n)	21
Total eyes (n)	21
Mean age (years)	34.7 (min.17, max.60)
Male versus Female	15 versus 6 (71.4% VS 28.6%)
Laterality at initial presentation	Right eye: 12 (57.1%)
	Left eye: 9 (42.9%)

n= number, min= minimum, max= maximum, %= percentage

Table 2: Parameters Pre and Post IVTA

Parameters	At presentation	90th day post IVTA
Mean BCVA (logMAR)	0.97 (approx 6/60 on Snellen's chart)	0.46 (approx 6/18 on Snellen's chart)
Mean vitreous activity(cells)	+3.47	+1.33
CME	7 eyes (33.3%)	1 eye (4.8%)

BCVA = best corrected visual acuity, logMAR = base-10 logarithm of the minimum angle of resolution,
CME = cystoid macular edema,
IVTA = intravitreal triamcinolone acetonide, %= Percentage

DISCUSSION

Corticosteroids are considered to be the mainstay of treatment in non infectious uveitis.[7,8] It can be either oral, posterior subtenon or through intravitreal route. Intravitreal steroid delivery can be through intravitreal injection or through sustained release intravitreal implants.[7] The most common steroids used for intravitreal injections are triamcinolone acetonide and dexamethasone.9 Triamcinolone acetonide has been used as intravitreal injections in different studies in different doses i.e., 1, 2, 4, 5, 6, 8, 10, 20, 25 mg.[10-17] Many studies have used 4mg dose.[9] Dexamethasone can also be used successfully as intravitreal injection which is safe in dosage of up to 1 mg.[19] Sustained release intravitreal implant is another drug delivery system which uses triamcinolone acetonide, flucinolone acetonide and dexamethasone.[9] Gills and Gills used triamcinolone to anterior chamber solution for controlling inflammation after cataract surgery.[19] IVTA has been used in many studies to treat cystoid macular edema associated with conditions like retinal vein occlusion, uveitis and diabetic macular oedema.[20-22] Triamcinolone is a nonspecific suppressor of intraocular inflammation. It exerts its effect through several significant pathways such as reducing the distribution and trafficking of leukocytes, blockage of various T cell / macrophage function and decreasing the maturation of dendritic cells as well as its potential side effects of inducing acute infections.[23]

To our knowledge, this is the first study investigating the visual outcome of IVTA in IU. It can avoid adding or increasing the dose of systemic immunosuppression. In our study VA improvement of 2 or more lines was achieved at 3 months post IVTA in 71.4%[15] eyes which is more than a study by Kok et al in which 51% eyes gained at least 2 Snellen's lines.[21] Macular edema is the one of the most common complication of uveitis, which is the most frequent cause of both reversible and long-term visual loss in such patients.[24] A study reported VA improvement in 54% eyes after IVTA to treat postoperative cystoid macular oedema.[25] Exact duration of CME was not known in most cases. In this case series we could not investigate any correlation between the duration of CME and its responsiveness to IVTA. Androudi et al also found no direct relation between duration and resolution of CME and improvement of VA.[26] However Kok et al found that eyes with CME of less than 1 year duration have more improvement in VA.[21] Resolution of CME occurred in all except 1 eye. Resolution of CME occurred between 2nd and 12th week post IVTA. CME does recur and is related to the pharmacokinetics of IVTA.[27,28] In this case series 4.8% eyes has recurrence of CME which is less than the rates reported in other series of IVTA for uveitic CME.[21,26,29] VA improvement is also directly related to reduction in vitreous activity. As vitreous activity decreases, VA improvement occurs. The course of IU is long and subjects frequently experience multiple complications of both the disease and the treatment.[30] Careful management results in most subjects achieving good visual outcomes. Use of IVTA in its management is associated with improvement in visual acuity, reduction of vitreous inflammation and resolution of macular edema. It is worth considering in eyes with unilateral IU or even in bilateral cases to avoid systemic steroids and its systemic side effects. Due to short half life of intravitreal steroids, repeat injections are required to maintain the therapeutic effect after 3 months. To avoid this need, sustained release intravitreal steroid implants have been introduced. Ozurdex (dexamethasone steroid Implant) has been approved by FDA for the treatment of uveitis in 2010.[31] Randomized controlled trials are needed to compare the visual outcome, efficacy and safety of intravitreal triamcinolone with sustained release intravitreal implants.[26]

CONCLUSION

Intravitreal triamcinolone in management of intermediate uveitis is associated with improvement in visual acuity, reduction of vitreous inflammation and resolution of macular edema. However, the efficacy is not maintained after 90th day in all cases.

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