Visual Outcome Following Medical Management in Intermediate Uveitis

Shrestha C,* Rijal AP, Shrestha S

*Ophthalmologist, Nepal Eye Hospital.

ABSTRACT

INTRODUCTION: Intermediate uveitis is a diagnosis based on the anatomic location of ocular inflammation and is made when the inflammatory reaction primarily involves the vitreous and peripheral retina. The purpose of the study is to find out the visual outcome following medical management in 50 cases of Intermediate uveitis.

METHODS: A prospective study was done from January 2008 to December 2008 in Retina Clinic of Nepal Eye hospital. A total of 50 cases of Intermediate Uveitis were taken for the study. Particulars of the patients were collected on a pre-designed performa. The examination procedure included history taking, snellen acuity charting, refraction, slit lamp biomicroscopy and fundus with 90° lens.

RESULTS: Intermediate uveitis was seen more in 10 to 20 years and 20 to 30 years age group (26%, n=13) and least common after 60 years. The distribution of male and female patients having intermediate uveitis was found to be more in male patients (60%, n=30). Indo-Aryan were found to be mostly affected (52%, n=26). The disease was more common among farmers (52%, n=26). Intermediate uveitis was found to be in highest proportion in residents of Dhading district (34%, n=17). 40 % had bilateral involvement of the eye while 60% had unilateral involvement. Among the patients, 8% underwent observation, 20% received topical steroid, 32% received posterior subtenon steroid injection and 40% received systemic corticosteroid. No patient required anti-metabolites/ immunosuppressive.

CONCLUSION: The visual prognosis of intermediate uveitis is relatively good with visual acuity improvement in 84% of the cases and remained static in 10 % while deteriorated in 6%. Many patients with mild disease do not require treatment.

KEY WORDS: Intermediate uveitis, snow ball, corticosetroids, visual acuity

INTRODUCTION

Intermediate uveitis is an idiopathic, insidious, inflammatory disease affecting the pars plana, peripheral retina and underlying choroid. Its account for 8% of all cases of uveitis and affects primarily healthy children and young adults.

The Standardization of Uveitis Nomenclature (SUN) Working Group defines intermediate uveitis as the subset of uveitis where the major site of inflammation is in the vitreous. It is characterized by ocular inflammation concentrated in the anterior vitreous and the vitreous base overlying the ciliary body and peripheral retina-pars plana complex.

Eighty percent of cases are bilateral, although most present asymmetrically, often with symptoms limited to one eye. The major symptoms are floaters and hazy vision due to cells in the vitreous or if the macula is affected with cystoids macular edema.

The disease has been frequently encountered in Nepal Eye Hospital outpatient department and accounts for 5% of the cases in an analysis of 400 cases of posterior segment affections affecting Nepal Eye Hospital.
This disease is common in young people causing visual morbidity and economic loss. Timely and proper guideline for the treatment is necessary. Visual outcome following treatment of intermediate uveitis has not been studied in Nepalese population and hence the study to make a proper guideline for the treatment of intermediate uveitis at Nepal Eye Hospital with the objective to find out the visual outcome following treatment guideline along with demographic profile, clinical presentation, systemic association, and complications of intermediate uveitis.

The hospital-based prevalence of the disease has been outlined and clinical features of intermediate uveitis have been documented for the first time in the context of Nepal. There is no prospective study of visual outcome and treatment guideline on intermediate uveitis in Nepal. Therefore this study was conducted in Nepal Eye Hospital.

This is a Hospital based interventional, prospective study conducted at Nepal Eye Hospital. This study will provide baseline information, treatment guideline and visual outcome following treatment of intermediate uveitis

METHODS

A prospective study was done in patients with intermediate uveitis visiting Nepal Eye Hospital within a period of one year (2008 January to 2008 December). Sample size was 50. The SUN working group grading scheme for anterior chamber cells, anterior chamber flare was followed. Data were entered on the daily basis by the research team in the computer and data were analyzed using the SPSS program. Inclusion criteria were all the patients diagnosed as the case of Intermediate uveitis in the Retina clinic of Nepal Eye Hospital.

Exclusion criteria were patients having other ocular diseases, which can be the cause of visual impairment, e.g. corneal opacity, cataract, posterior capsular opacity etc, patients on long-term treatment for systemic diseases (on steroids, immunosuppressive or anti-cancer drugs). Informed consent was obtained from the patients for enrollment in the study.

MANAGEMENT PROTOCOL: Treatment protocol of Kaplan has been modified:

Grade 0: Unilateral cases with visual acuity 6/6 to 6/9 received no treatment.

Grade I: Unilateral cases with visual acuity 6/12 to 6/24 received topical steroids (Prednisolone).

Grade II: Unilateral cases with visual acuity 6/36 or worse received posterior sub-tenon injection (Triamcinolone) with topical steroid.

Grade III: Bilateral cases or resistant to topical or periocular injection received systemic steroid (Prednisolone) with topical steroid

Grade IV: Complications (CME, Cataract, Vitreous haemorrhage) immunosuppressants (Methotraxate, Cyclophosphamide, Chlorambucil, Cyclosporin) with topical steroid

RESULTS:

Of the 50 cases of intermediate uveitis the age was grouped from 10 to 70 years and every group was of 10 years. The minimum age of the patient in this study was found to be 14 years whereas the maximum was 66 years.

Intermediate uveitis was seen more in 10 to 20 years and 20 to 30 years age group (26%, n=13) and least common after 60 years.

The distribution of male and female patients having intermediate uveitis was found to be more in male patients (60%, n=30). Among the study population, Indo-Aryan were found to be mostly affected (52%, n=26) followed by Tibetoburman (48%, n=24).

![Figure 1. Showing the distribution of patient by ethnicity](image-url)
The disease was noted to be more common among farmers (52%, n=26) followed by housemaker (18%, n=9) and students (18%, n=9). People of business class, carpenter, tailor, teacher and labors were found to be significantly less affected.

Distribution of patient by Occupation

Intermediate uveitis was found to be in highest proportion in residents of Dhading district (34%,n=17).

40% had bilateral involvement of the eye while 60% had unilateral involvement.

90% percent of the patients reported with blurring of vision and 76% patients reported floaters. Only 12% of patients complained of pain. Similarly, only 8% of patients had photophobia.

In the study pulmonary tuberculosis was found in 10% of the cases whereas syphilis was found in 2% of the cases. Rest of the patients had no other associated diseases.

Affection of anterior segment with keratic precipitates and anterior segment cells were noted in 70% of the cases. Hypopyon was present in 2% of the cases.

The intraocular pressure ranged from 12-22 mm of Hg in right eye and from 10-22 mm of Hg in left eye. Vitreous cells were noted in 72% of the cases in RE and 64% in cases in LE. Vitreous snowballs were observed in equal population in both the eyes (20% in each eye). Among the study population, snowbanking was observed in 14% of cases in RE and 10% of cases in LE. Vitreous hemorrhage was observed in 2% of the cases.

Findings in retina like vasculitis, disc edema, macular edema was not observed in any cases. Vitreous hemorrhage was observed in 2% of the cases which had periphlebitis and neovascularization at vitreous base.

The total leucocytes count of the patients with maximum of 12000, minimum of 5800.

The differential count was within normal limits. Erythrocyte sedimentation rate of the patient varied from 2 to 42 mm in 1st hour. Among the patients, 26% were mantoux positive. 2% showed positive rheumatoid factor. Stool for ova and cyst was positive in 4% of the cases and was subsequently treated with anti-helminthes medications. Chest x-ray in posterior-anterior view was abnormal in 4% of the cases.

Among the patients, 8% underwent observation, 20% received topical steroid, 32% received posterior subtenon steroid injection and 40% received systemic corticosteroid. No patient required anti-metabolites/immunosuppressive.

The visual acuity improved in 84% of the cases and remained static in 10% while deteriorated in 6%.
Table 1. Visual outcome

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved</td>
<td>42</td>
</tr>
<tr>
<td>Static</td>
<td>5</td>
</tr>
<tr>
<td>Worsening</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
</tr>
</tbody>
</table>

The above table showed that the visual acuity improved in 84% of the cases and remained static in 10% while deteriorated in 6%.

Table 2. Visual outcome of each grade

<table>
<thead>
<tr>
<th>grade</th>
<th>No of patients</th>
<th>Treatment modality</th>
<th>Improved</th>
<th>Static</th>
<th>Worsening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade -0</td>
<td>4</td>
<td>Observation</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade -I</td>
<td>10</td>
<td>Topical steroid</td>
<td>9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Grade - II</td>
<td>16</td>
<td>Periocular steroid</td>
<td>12</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Grade - III</td>
<td>20</td>
<td>Systemic steroid</td>
<td>17</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Grade - IV</td>
<td>0</td>
<td>Immuno-suppressant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td></td>
<td>42</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

The above table shows that the patient who underwent observation, the visual acuity improved in all patients (n=4). The patient who received topical steroid, the visual acuity improved in 9 patient and visual acuity was static in 1 patient. The patient who received periocular steroid, the visual acuity improved in 12 patients, static in 2 patients and worsening in 2 patients. The patient who received systemic steroid, the visual acuity improved in 17 patients, static in 2 patients and worsening in 1 patient.

Table 3 Pre-treatment Visual acuity:

<table>
<thead>
<tr>
<th>Visual acuity</th>
<th>Pre-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unilateral</td>
</tr>
<tr>
<td>6/6</td>
<td>1 14 15</td>
</tr>
<tr>
<td>6/9</td>
<td>3 6 9</td>
</tr>
<tr>
<td>6/12</td>
<td>4 6 10</td>
</tr>
<tr>
<td>6/18</td>
<td>6 1 7</td>
</tr>
<tr>
<td>6/24</td>
<td>1 5 6</td>
</tr>
<tr>
<td>6/36</td>
<td>2 3 5</td>
</tr>
<tr>
<td>6/60</td>
<td>5 1 6</td>
</tr>
<tr>
<td>3/60</td>
<td>1 0 1</td>
</tr>
<tr>
<td>2/60</td>
<td>4 0 4</td>
</tr>
<tr>
<td>1/60</td>
<td>5 0 5</td>
</tr>
<tr>
<td>Total eyes</td>
<td>32 36 68 eyes</td>
</tr>
</tbody>
</table>

Out of 68 eyes, the pre-treatment visual acuity was 6/6 in 15 eyes in which 1 eye had unilateral involvement and 14 eyes had bilateral involvement. 9 eyes -6/9, 10 eyes had initial visual acuity of 6/12.

Table 4 Post-treatment Visual acuity:

<table>
<thead>
<tr>
<th>Visual acuity</th>
<th>Post-treatment visual acuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/6</td>
<td>30</td>
</tr>
<tr>
<td>6/9</td>
<td>11</td>
</tr>
<tr>
<td>6/12</td>
<td>5</td>
</tr>
<tr>
<td>6/18</td>
<td>6</td>
</tr>
<tr>
<td>6/24</td>
<td>4</td>
</tr>
<tr>
<td>6/36</td>
<td>3</td>
</tr>
<tr>
<td>6/60</td>
<td>4</td>
</tr>
<tr>
<td>2/60</td>
<td>4</td>
</tr>
<tr>
<td>1/60</td>
<td>1</td>
</tr>
<tr>
<td>Total eyes</td>
<td>68 eyes</td>
</tr>
</tbody>
</table>

Above table show 30 eyes with post-treatment visual acuity of 6/6 followed by 11 eyes with visual acuity of 6/9.

Complication of the disease was present in twelve of the cases, of which six had glaucoma, two had cystoid macular edema, two had vitreous hemorrhage, one had cellophane maculopathy and one had complicated cataract.

DISCUSSION

Intermediate uveitis (IU) is a diagnosis based on the anatomic location of ocular inflammation, and is made when the inflammatory reaction primarily involves the vitreous and peripheral retina. In the past, the terms intermediate uveitis and pars planitis were frequently interchanged and authors have reported the association of pars planitis with different systemic diseases, such as sarcoidosis and multiple sclerosis (MS).

In 1998, the American Uveitis Society defined Classic Pars Planitis as a unilateral or bilateral, idiopathic intermediate uveitis without associated systemic disease, in which snowbanks are observed in at least one eye.

This relatively common inflammatory disease affects otherwise healthy children and young adults and is usually bilateral. It is classically described as painless and as having no external inflammation, mild anterior chamber cellular reaction and a marked exudative response in the peripheral retina and overlying...
Vitreous ("snow banking"). It is a chronic condition characterized by alternating periods of exacerbation and reduced activity.

In our study the disease was noticed to be more common in 10 to 20 years and 20-30 years age group, least common after 60 years. It was seen that the youngest patient was 14 years and the oldest was 63 years old. This finding is consistent with other reports that this disease commonly affects young adults ranging from 2nd to 4th decade although age at presentation may vary from 5 years to over 65 years. Albert and Jakobiec had stated that the age of onset of intermediate uveitis ranges from 5-65 years of age with the mean and median occurring in the 3rd decade of life. N Vidović et al studied 29 patients with intermediate uveitis and the average age at onset of Intermediate uveitis was 31 (range 8–64) years which was similar with our study.

In our study males (60%, n=30) were affected more than female (40%, n=20). Most studies reveal no sex predilection. As reported by Malla OK et al, Arellanes Garcia L et al and we also noticed slightly more occurrence of intermediate uveitis in males compared to female (60% vs.40 %). Krista D et al studied in 148 patients out of which 71 were males and 77 were females showing more occurrences of intermediate uveitis in female. D BenEzra et al studied in 821 patients, 276 (33.1%) were 18 years of age or younger with a male to female ratio of 1 to 1.

In our setup male work outside so visual impairment might hamper their activity whereas female mostly are housemaker so visual impairment in this category would not hamper their activity much.

In our study, individuals of Indoaryan origin were found to be mostly affected (52%, n=26) followed by Tibetoburman (48%, n=24). O K Malla et al quoted that Mongoloid origin were noticed to be more commonly affected (30%), followed by Brahmin (28%) and Newar community (20%). The literature reviewed didn’t show increased prevalence of intermediate uveitis in any specific community or ethnic group. Hegan first reported familial occurrence of intermediate uveitis in 1963 and many other families have been documented since then.

In our study the disease was noted to be more common among farmers (52%, n=26) followed by housewives (18%, n=9) and students (18%, n=9). People of business class, carpenter, tailor, teacher and labors were found to be significantly less affected. The findings were similar with that reported by Malla OK. The reason for farmer being mostly affected may be their use of some fertilizer, more research need to be done. Intermediate uveitis was found to be in highest proportion in residents of Dhading district (34%, n=17) followed by residents of Kathmandu and Nuwakot which was similar as reported by Malla OK. Most of the residents of dhading were farmers.

Our study showed bilateral involvement in only 40% of cases which was similar as reported by Malla OK et al. Regarding the laterality of the disease, bilateral involvement was observed in 80% of cases by M Nagpal et al, 94% of the patients by Joke de Boer and 71% of the patient by N Vidovic. May be the number of cases included in our study was not enough. Arellanes-Gracia L et al quoted that both eyes affected in 84.4% of the cases which was similar with the findings by Lourdes Arellanes et al which was also 84.4% of the cases. Krista D et al studied in 148 patients, 71% patients had bilateral disease. D BenEzra et al studied in 821 patients, 70.3% had bilateral ocular involvement.

In our study pulmonary tuberculosis was found in 10% of the cases whereas syphilis was found in 2% of the cases. Rest of the patients had no other associated diseases. Pulmonary tuberculosis was seen in 8% of the cases of intermediate uveitis in study done by Malla OK. D BenEzra et al reported Juvenile idiopathic arthritis (JIA) was the most common systemic disease association diagnosed in 14.9% of the children and Parasite infestation the most common infectious association. In our study, stool for ova and cyst was positive in 4% of the cases and was subsequently treated with anti-helminthic medications.

The most common mode of presentation in our study was blurring of vision (90%), followed by floaters (76%) and pain (12%). Photophobia was the least common mode of presentation (8%). This finding is consistent with the available reports on intermediate uveitis by Malla OK. The most frequent complaint was also decreased visual acuity in study done by Lourdes Arellanes et al.
The anterior segment manifestations in the involved eyes were keratic precipitates (70%, n=35) and anterior chamber cells (70%, n=35) which is similar with the finding by Malla OK\textsuperscript{12}. Hypopyon was present in 2% of the cases in our study. Intermediate uveitis cases (± anterior uveitis) had a lower risk of hypopyon. Vitreous cells were noted in 72% of the cases in RE and 64% in cases in LE. Vitreous snowballs were observed in equal population in both the eyes (20% in each eye). Snow banking was observed in 14% of cases in RE and 10% of cases in LE. Periphebitis and neovascularization at vitreous base were present in 4%, of cases leading to vitreous haemorrhage. The most clinical manifestations found were vitritis (99.7%), snowballs (99.3%), retinal vasculitis (89.2%), and snowbanks (63.4%) in study done by Arellanes-Gracia L et al\textsuperscript{13}. All patients had varying degrees of vitritis, 28 eyes had snow banks and 5 had cystoid macular edema at presentation in study done by Jain R et al\textsuperscript{22}.

The complications most frequently reported in Pars Planitis are cystoids macular edema (CME) and cataract\textsuperscript{6, 23, 24}. In our study complication of the disease was present in twelve of the cases, of which six had steroid induced glaucoma (12%), two had cystoid macular edema (4%), one had vitreous hemorrhage (2%), two had cellophane maculopathy (4%) and one had complicated cataract (2%). Steroid-induced glaucoma was found in only 8.9% of the secondary glaucoma eyes in study done by Tetsuya Takahashi et al\textsuperscript{25}. Donaldson MJ et al\textsuperscript{26} stated that the most common complications were epiretinal membrane in 17 eyes (36%), cataract in 14 eyes (30.4%), and cystoid macular edema in 12 eyes (26.1%). J. S. Deane et al\textsuperscript{27} noted 86 eyes of 48 patients with a complications such as cystoid macular oedema (31%), vitreous haemorrhage (8%), disc swelling (5%), periphebitis (21%) and cataract (5%).

The treatment modalities followed in our study were topical corticosteroids in 20%, periocular steroid in 32% and systemic steroid in 40% of the cases. A subTenon’s route was repeated every two weeks. Godfrey, Smith, and Kimura\textsuperscript{9} also had similar treatment modalities. No patient required anti-metabolites/immunosuppressive and 8% of the cases underwent observation in our study.

In our study, the visual acuity improved in 84% of the cases and remained static in 10 % while deteriorated in 6%. In study done by Malla OK the visual outcome improved in 52% of cases and remained static in 46% while 2% had deteriorated visual acuity. A. Nagpal et all\textsuperscript{28} quoted that visual acuity improved in 30.6%, remained stable in 39.3% and deteriorated in 16.11% in an analysis done in 608 eyes of intermediate uveitis in Indian patients. Six of the children had successful disease control and maintained a visual acuity of 6/9 in at least one affected eye by Jain R et al\textsuperscript{22}.

**CONCLUSION**

Intermediate uveitis was found to be in highest proportion in residents of Dhading district (34%, n=17) among the study population. The disease was noted to be more common among farmers (52%, n=26). Indo-Aryan was found to be mostly affected.40% had bilateral involvement of the eye while 60% had unilateral involvement. The distribution of male and female patients having intermediate uveitis was found to be more in male patients (60%, n=30). The visual prognosis of intermediate uveitis is relatively good with visual acuity improvement in 84% of the cases and remained static in 10 % while deteriorated in 6%. Many patients with mild disease do not require treatment. Therefore early diagnosis and medical treatment as outlined in modified Kaplan helps in good visual recovery.

**REFERENCES:**

4. Karki DB et all; Analysis of 400 cases of posterior segment diseases visiting retina clinic of Nepal Eye Hospital; Kathmandu University medical Journal; Volume 1; Number 3; July-Sept 2003; 161-165.
7. Nussenblatt RB, Paleste AG. Intermediate uveitis and Visual Outcome Following Medical Management in Intermediate Uveitis
12. Malla OK. Intermediate Uveitis Component: A Hospital based study of Nepal Eye Hospital;
13. Arellanes-Garcia L; Navarro-Lopez L.P.; Recillas-Gispert C: Ocular Immunology and Inflammation Volume 11, Number 1, March 2003, 53-60(8)
20. Lourdes Arellanes GarciaLuz Patricia Navarro-Lopez Claudia Recillas-Gispert Pars planitis in the Mexican Mestizo population: Ocular findings, treatment, and visual outcome Ocular Immunology and Inflammation – 2003, Vol. 11, No. 1, pp. 53–60