INTERMEDIATE UVEITIS COMPONENTS:

A HOSPITAL BASED STUDY

SUBMITTED BY

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CONTENTS

ABSTRACT

Introduction:

Intermediate uveitis is an idiopathic, insidious, inflammatory disease affecting the pars plana, peripheral retina and underlying choroid[1]. It accounts for 8% of all cases of uveitis and affects primarily healthy children and young adults[2].

Objectives:

General: To study the components of intermediate uveitis at Nepal Eye Hospital in the year 2003 August to 2004 March.

Specific:

1. To study the prevalence of intermediate uveitis.
2. To study the association of intermediate uveitis with systemic diseases.
3. To study the management outcome following treatment of intermediate uveitis
4. To study the complications of intermediate uveitis.

Materials and methods:

It was a prospective study done at Nepal Eye Hospital in the year 2003 July to 2004 March. Target population was the patients with intermediate uveitis visiting Nepal Eye Hospital in the study duration. Convenient sampling was done. Sample size was 50. Specially designed Performa of intermediate uveitis was used to collect particulars of the patients, history, clinical

examination findings, investigation reports, management protocols used and the final visual outcome.

Results:

Intermediate uveitis was seen more in 20 to 29 years age group (38%, n=19) and least common before 10 years and after 50 years. The disease was found to be slightly more prevalent among males (52%). Among the study population, farmers constituted maximum proportion (36%, n=18) and Mongoloid origins were mostly affected (30%, n=15). Ninety percent of the patients reported blurring of vision and 72% patients reported floaters. Pain was not a frequent complaint. Only 12% of patients complained of pain. Similarly, only 10% of patients had photophobia. Forty-two had bilateral involvement of the eye while 58% had unilateral involvement. Anterior segment affection with keratic precipitates and anterior chamber cells were noted in 72% of involved eyes. All patients had normal intra ocular pressure. Vitreous cells were noted in all the affected eyes while 4%(in each eye) had vitreous snowbanking and 3% (in each eye) had vitreous snowballs.

Laboratory test showed normal total and differential leukocyte counts. 30% cases were mantoux positive and 10% had abnormal chest X-ray findings. Stool for ova/cyst was positive in 28% of cases. 8% of cases had associated pulmonary tuberculosis.

Most of the patients (52%) received both topical steroid and posterior subtenon injection of Triamcinolone. Systemic steroid was used in 4%. No patients required antimetabolites/ immunosuppressants or laser photocoagulation while 2% received cryotherapy.

Cystoid macular oedema was noted in one patient on presentation and complicated cataract was noted in one patient on presentation. Similarly, three patients had mild vitreous haemorrhage

which resolved spontaneously. Visual acuity was improved in 52% of cases and remained static in 46% while deteriorated in 2%.

CONCLUSION:

The clinical features of intermediate uveitis have been documented for the first time in the context of Nepal in this study. Similarly, the study tries to outline the hospital-based prevalence of the disease. Significantly high number of patients with intermediate uveitis has been reported from central development region, mainly from Dhading, Kathmandu and Nuwakot districts. People in their third decade were found to be commonly affected in this study. Most of the presenting cases were of Mongoloid origin. The severity of the disease was found to be in milder form with fewer complications in our study. With the treatment protocol followed in our study, visual acuity improved in 52% of the cases.

INTRODUCTION:

Intermediate uveitis is an idiopathic, insidious, inflammatory disease affecting the pars plana, peripheral retina and underlying choroid[1]. It accounts for 8% of all cases of uveitis and affects primarily healthy children and young adults[2].

Inspite of advanced investigational and research facilities intermediate uveitis still remains a significant cause of visual impairment in the developing and also in the developed countries. Intermediate uveitis is a clinical condition which runs a chronic course and gives rise to a number of complications like complicated cataract, cystoid macular oedema, vitreous haemorrhage, secondary glaucoma, vitreous membranes and neovascularization. It has been found that diferent systemic diseases like multiple sclerosis, lyme disease are associated with intermediate uveitis globally. Whether the situation holds the same for Nepal or not is the question to be answered.

Intermediate uveitis, running a chronic course and sometimes being misiagnosed as the presenting symptoms are minimal to begin with, leads to permanent visual impairment. The disease has been frequently observed in ophthalmological clinical practice. This holds true also in Nepalese context. The disease has been frequently encountered in Nepal Eye Hospital outpatient clinic and accounted for 5% of the cases in an analysis of 400 cases of posterior segment affections attending Nepal Eye Hospital [3]. Our observation in Nepal Eye Hospital had shown that the disease has been seen more in certain ethic group i.e. Mongoloid and in the residents of Nuwakot and Dhading. This disease entity although frequently encountered, has not been studied in Nepalese population and hence the study was conducted at NEH with the objective to find out the prevalence, systemic association, clinical presentation, ethnicity, demographic profile, management outcome and complications of intermediate uveitis.

OBJECTIVES:

General: To study the components of intermediate uveitis at Nepal Eye Hospital in the year 2003 August to 2004 March.

Specific:

1. To study the prevalence of intermediate uveitis.
2. To study the association of intermediate uveitis with systemic diseases.
3. To study the management outcome following treatment of intermediate uveitis
4. To study the complications of intermediate uveitis.

LITERATURE REVIEW:

Intermediate uveitis is an idiopathic syndrome consisting of intraocular inflammation centered around the peripheral retina and pars plana. 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 (" snowbanking"). It is a chronic condition characterized by alternating periods of exacerbation and reduced activity. Vision loss is most commonly due to cystoid macular oedema (CME), cataract, and vitreous debris.

The disease was described in the first half of the 20th century by Fuchs and Duke-Elder, but the modern description was written by Schepens in 1950.Schepens detailed the modern clinical description of this condition in 1950, shortly after the introduction of the binocular indirect ophthalmoscopy [4,5,6]. Brockhurst and colleagues extended and elaborated on this description in a series of papers wherein they termed the disorder as peripheral uveitis [7,8,9,10]. Welsh was the first to introduce the term 'Pars planitis'[11] in 1960. The condition has also been termed as chronic cyclitis, cyclochorioretinitis, vitritis, angiohyalitis etc. by various people but none of these have been truly satisfactory. Although both pars planitis and peripheral uveitis terms remain in common usage, intermediate uveitis is the term suggested by International Uveitis Study Group[12].

Different authors have quoted the incidence of the disease differently, the most accepted incidence being 4-16%. It is difficult to assess the incidence and prevalence data accurately because the disease is often painless and indolent and can go undiagnosed for several years, particularly in children. The cause of intermediate uveitis is unknown. The inflammatory response present in the vitreous base, peripheral retina, pars plana, and ciliary body suggests an

immune system-mediated disease. This general premise is supported by pathologic, serologic, and experimental evidence. Whether the disease is autoimmune; occurs in response to an infectious antigen, or is a combination of the two is still a matter of debate.

Patients with intermediate uveitis commonly present with complaints of floaters and blurring of vision. Later as the disease progresses, patient may complain of pain, redness and photophobia.

The conjunctiva and external adnexae are typically not involved. Mild anterior chamber inflammation is common. The intraocular pressure is usually normal. Posterior synechiae are a common complication of extracapsular cataract extraction in these patients. Anterior and posterior synechiae may lead to secondary angle closure glaucoma and pupillary block glaucoma respectively.

Posterior subcapsular cataracts are common over the course of the disease. Vitreous inflammatory infiltrate must be present to make the diagnosis of intermediate uveitis. Large fibrocellular exudative aggregates of gray-white or yellow material in the inferior vitreous base overlying the pars plana and anterior retina are the classic findings in intermediate uveitis. These may coalesce to form a snowbank. Peripheral retinal neovascularization may lead to mild or massive vitreous haemorrhage. CME and its sequele are the leading causes of significant visual loss in intermediate uveitis. CME is clinically present in 28-64% of patients. The retinal vasculature is commonly affected in intermediate uveitis. Focal areas of phlebitis and venous dilatation in the peripheral retina occur early in the disease[13].

MATERIALS AND METHODS:

It was a prospective study done in Nepal Eye Hospital. The study was conducted from August 2003 through March 2004. The target population was the patients with Intermediate Uveitis visiting Nepal Eye Hospital. Convenient sampling was done. Sample size was 50. A especially designed performa of intermediate uveitis was used to collect particulars of the patients, history, clinical examination findings, investigation reports, management protocols used and the final visual outcome. Informed consent was taken from all the patients enrolled in the study.

Pre-testing was done in ten patients with intermediate uveitis.

Exclusion criteria

1. Patients having other ocular diseases
2. Patients on long term treatment for systemic diseases (on steroids, immunosupressives or anti- cancer drugs).

The examination procedure consisted of history taking, Snellen acuity charting, slit lamp bio-microscopy and funduscopy with 78 diopter lens in all cases. All patients also underwent indirect ophthalmoscopy with scleral depression and intra ocular pressure measurement with schiotz tonometer.

The study was monitored and supervised by the principal investigator through out the study period. Data were entered on the daily basis by the research team in the computer and data were analyzed using the SPSS program.

RESULTS:

Out of 35,320 new cases visiting the outpatient department of Nepal Eye Hospital from 1st of August 2003 to the end of March 2004, 72 cases of intermediate uveitis were identified which were approximately 2.04 cases per thousand.

Table: 1

Description of the age of the patients

	Age of the Patients
Minimum	*6*
Maximum	*70*
Mean	*29.72*
Std. Deviation	*12.933*

The above table shows that the minimum age of the patient in this study was found to be six years where as the maximum was seventy years and the mean age was 29.72 with standard deviation 12.933.

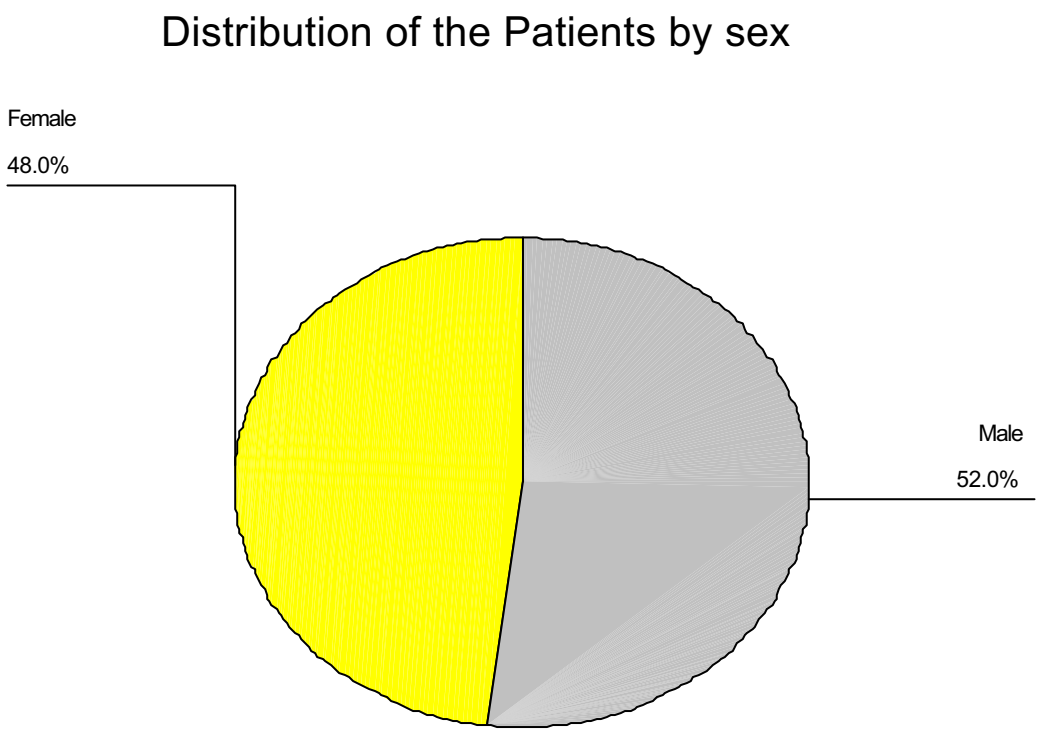
Table: 2

Distribution of patients by Age Group

		Frequency	Percent
Age Group in Years	<=10	*1*	*2.0*
	11-20	*10*	*20.0*
	21-30	*21*	*42.0*
	31-40	*7*	*14.0*
	40-50	*9*	*18.0*
	>60	*2*	*4.0*
	Total	*50*	*100.0*

Intermediate uveitis was seen more in 20 to 29 years age group (38%, n=19) and least common before 10 years and after 50 years.

Figure: 1



The above figure shows that the distribution of male and female patients having intermediate uveitis was almost equal with slightly more male patients (52%).

Table: 3

Distribution of Patients by Occupation

		Frequency	Percent
Occupation	House-wife	*14*	*28.0*
	Farmer	*18*	*36.0*
	Student	*14*	*28.0*
	Business	*2*	*4.0*
	Labour	*2*	*4.0*
	Total	*50*	*100.0*

The above table shows that the disease was noted to be more common among farmers (36%, n=18) followed by housewives (28%, n=14) and students (28%, n=14). People of business class and labors were found to be significantly less affected.

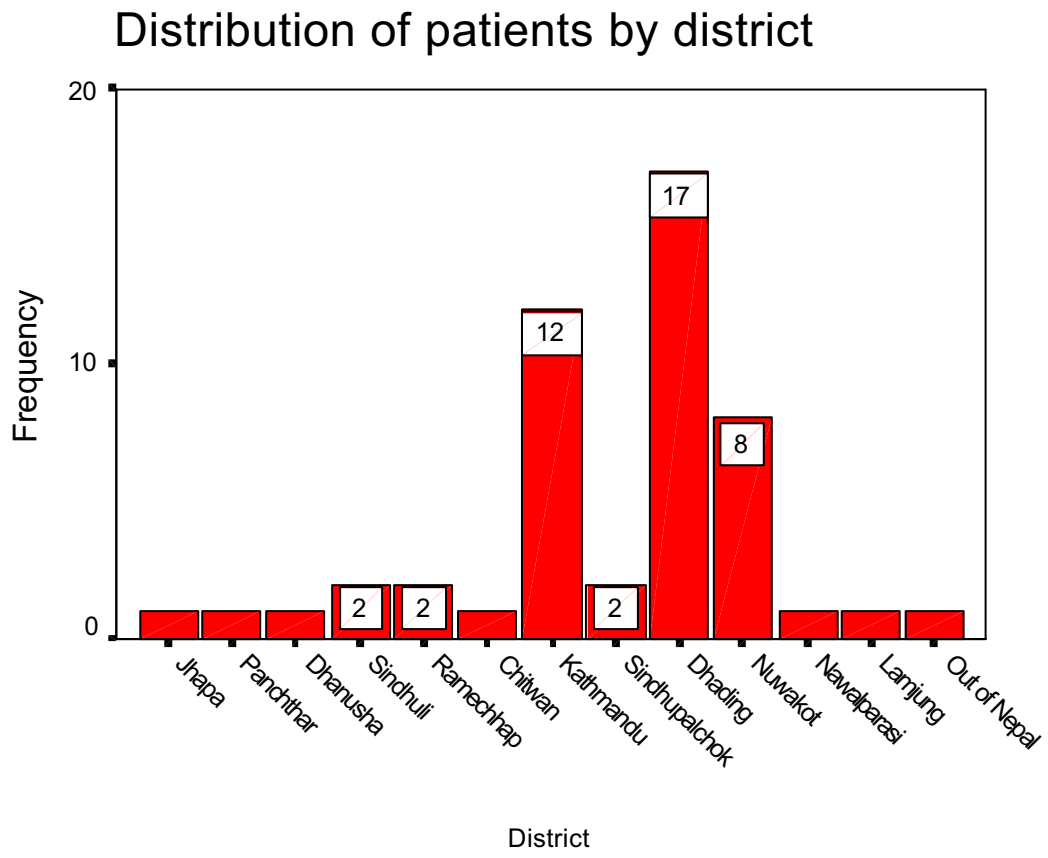
Table: 4

Distribution of Patients by Ethnicity

		Frequency	Percent
Ethnicity of Patients	Bhramin	*14*	*28.0*
	Chettri	*9*	*18.0*
	Newar	*10*	*20.0*
	Mongoloid Origin	*15*	*30.0*
	Others	*2*	*4.0*
	Total	*50*	*100.0*

As shown in the above table, among the study population, Mongoloids were found to be mostly affected (30%, n=15) followed by Brahmins (28%, n=14). Newars (20%, n=10) and Chettris (18%, n=9) were found to be in almost equal proportion whereas other than these four ethnic group, were found to be in significantly in low proportion.

Figure: 2



As shown in the above figure, intermediate uveitis was found to be in highest proportion in residents of Dhading district (34%, n=17) among the study population.

Table: 5

Eye Involved

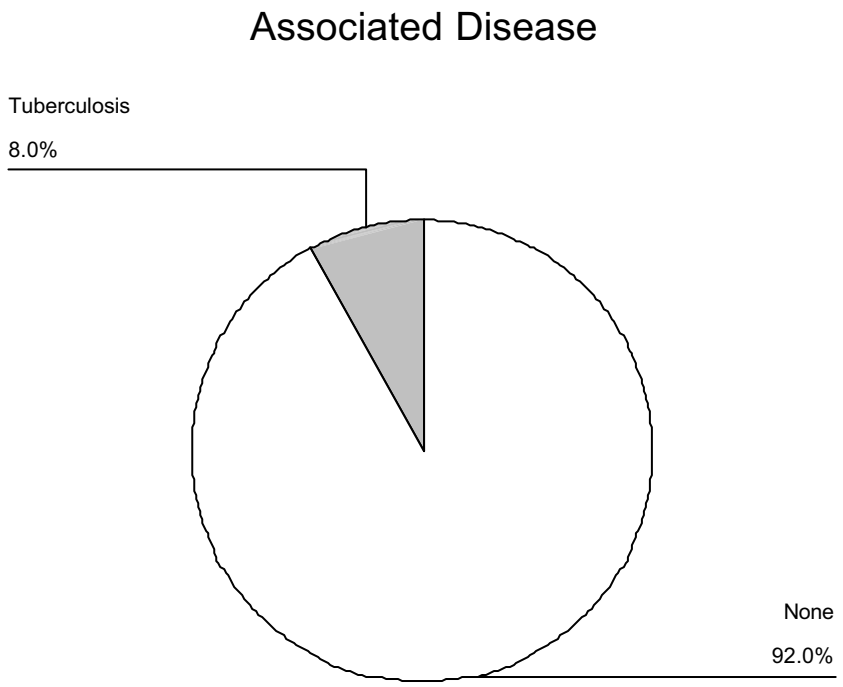
		Frequency	Percent
	One	*29*	*58.0*
	Two	*21*	*42.0*
	Total	*50*	*100.0*

The above table shows that 42% had bilateral involvement of the eye while 58% had unilateral involvement.

90 percent of the patients reported blurring of vision and 72% patients reported floaters. Pain was not a frequent complaint. Only 12% of patients complained of pain. Similarly, only 5% of patients had photophobia.

60% of patients presented in less than one month of the onset of symptoms.

Figure: 3



Among the patient included in the study no other associated diseases were found except pulmonary tuberculosis in 8% of cases.

Table: 6

Anterior Segment

	Keratic Precipitates	Anterior Chamber Cells
No	36(72%)	36(72%)
Yes	14(28%)	14(28%)
Total	50(100%)	50(100%)

Anterior segment affection with keratic precipitates and anterior chamber cells were noted in 72% of cases.

Table: 7
Intraocular pressure (in mm of Hg)

Table: 7.1

Intraocular pressure-Right eye

	Frequency	Percent
12.00	6	12.0
14.00	6	12.0
16.00	1	2.0
17.00	28	56.0
18.00	2	4.0
20.00	5	10.0
22.00	2	4.0
Total	50	100.0

Table:7.2

Intraocular pressure- Left eye

	Frequency	Percent
7.00	1	2.0
8.00	1	2.0
12.00	3	6.0
14.00	4	8.0
16.00	1	2.0
17.00	33	66.0
18.00	1	2.0
20.00	3	6.0
22.00	3	6.0
Total	50	100.0

The above Tables 7.1 and 7.2 showed that the intraocular pressure ranged from 12 to 22 mm of Hg in right eye and from 7 to 22 mm of Hg in left eye.

Table: 8

Vitreous cells

	Right	Left
No	18(36%)	15(30%)
Yes	32(64%)	35(70%)
Total	50(100%)	50(100%)

As shown in the above table, vitreous cells were noted in 64% of cases in right eye and 70% cases in left eye.

Table: 9

Vitreous-Snow Balls

	Right eye	Left eye
No	47(94%)	47(94%)
Yes	3(6%)	3(6%)
Total	50(100%)	50(100%)

Among the study population, vitreous snowballs were observed in equal proportion in both the eyes (6% in each eye).

Table: 10

Vitreous-Snowbanking

	Right eye	Left eye
No	48(96%)	48(96%)
Yes	2(4%)	2(4%)
Total	50(100%)	50(100%)

Among the study population, vitreous snowbanking was observed in 4% of cases in both the eyes.

Table: 11

Retina

	Right eye	Left eye
Normal	47(94%)	49(98%)
Abnormal	3(6%)	1(2%)
Total	50(100%)	50(100%)

It was found that retina was normal in most of the cases (94% in right eye and 98% in left eye).

Table: 12

Laboratory findings of the patients

Table: 12.1

Total Leucocyte Count

	TC (Total Count)
Minimum	5600
Maximum	10500
Mean	7304.00
Std. Deviation	1020.846

The above table showed the total leukocyte count of the patients with maximum of 10500, minimum of 5600 with mean count 7304 and standard deviation 1021.

Table: 12.2

Differential Count

	Minimum	Maximum	Mean	Std. Deviation
Neutrophil	48	73	60.34	6.423
Lymphocyte	20.00	50.00	35.9000	6.29302
MonoCyte	.00	8.00	.6000	1.51186
Eosinophil	.00	12.00	3.1000	2.54149
Basophil	.00	1.00	.0200	.14142

The above table showed the differential leukocyte counts within normal limits.

Table: 12.3

Absolute Eosinophil Count

	Minimum	Maximum	Mean	Std. Deviation
Absolute Eosinophil Count	63	738	210.56	150.934

The absolute eosinophil count varied from the minimum of 63 to the maximum of 738 with mean of 210.56.

Table: 12.4

Erythrocyte Sedimentation Rate

	ESR
Minimum	1
Maximum	60
Mean	21.42
Std. Deviation	15.208

Erythocye sedimentation rate of the patients varied from 1 to 60 mm in 1st hour with mean of 21.42mm in 1st hour and standard deviation of 15.21mm in 1st hour

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Table: 12.5

Mantoux Test

	Frequency	Percent
Positive	15	30.0
Negative	35	70.0
Total	50	100.0

Among the patients, 30% were mantoux positive

Table: 12.6

Rheumatoid Factor

	Frequency	Percent
Positive	1	2.0
Negative	49	98.0
Total	50	100.0

Among the patients, only very low proportion(2%) showed positive rheumatoid factor.

Table: 12.7

Stool for ova or cyst

	Frequency	Percent
Positive	14	28.0
Negative	36	72.0
Total	50	100.0

Stool for ova/cyst was positive in 28% of cases who were subsequently treated with anti-helminthic medications.

Table: 13

Chest X-Ray

	Frequency	Percent
Normal	46	92.0
Abnormal	4	8.0
Total	50	100.0

Regarding chest x-ray in posterior /anterior view, among the patients, 8% had abnormal findings.

Table: 14
Management of intermediate uveitis

Table: 14.1

Management (Corticosteriods-Topical)

	Frequency	Percent
No	2	4.0
Yes	48	96.0
Total	50	100.0

Table: 14.2

Management (Corticosteriods-Periocular)

	Frequency	Percent
No	23	46.0
Yes	27	54.0
Total	50	100.0

Table: 14.3

Management (Corticosteriods-Systemic)

	Frequency	Percent
No	48	96.0
Yes	2	4.0
Total	50	100.0

Of all the patients, 96% received topical steroid, 54% received posterior subtenons steroid injection among which 26% received both the topical and periocular injections; only 4% received systemic corticosteroid.

No patient required antimetabolites/ immunosupressives or laser photocoagulation except one patient who received cryotherapy.

Cystoid macular oedema was noted in one patient on presentation. Complicated cataract was noted in one patient on presentation. Similarly, three patients had mild vitreous haemorrhage which resolved spontaneously.

Table: 15

Visual Outcome

	Frequency	Percent
Improved	26	52.0
Static	23	46.0
Deteriorated	1	2.0
Total	50	100.0

The above table showed that the visual acuity improved in 52% of cases and remained static in 46% while deteriorated in 2%.

DISCUSSION

Pars planitis is an inflammatory disease, usually affecting healthy young people, commonly within first three decades of life. In our study the disease was noticed to be more common in 20 to 29 years age group, least common before 10 years and after 50 years. 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[13]. Intermediate uveitis occurring in childhood (below 15 years) have a worse visual acuity both at the initial diagnosis and at follow up than those presenting at adulthood[14]. But this is not the same in our study.

As reported by Arellanes Garcia L et al we also noticed slightly more occurrence of intermediate uveitis in males compared to female (52% vs. 42%)[15].

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[16,17]. In our study, individuals of Mongoloid origin were noticed to be more commonly affected (30%), followed by Brahmin (28%) and Newar community (20%). Regarding the laterality of the disease, bilateral involvement was observed in 80% of cases by M Nagpal et all whereas our study showed bilateral involvement in only 42% of cases[2].

The most common mode of presentation in our study was blurring of vision (90%), followed by floaters (72%) and pain (12%). Photophobia was the least common mode of presentation (10%). This finding is consistent with the available reports on intermediate uveitis[13].

The anterior segment manifestations in the involved eyes were keratic precipitates (72%, n=36) and anterior chamber cells (72%, n=36). Vitreous cells were present in all the affected eyes which included 64% right eye and 70% left eye. The vitreous snowbanking (4% in each eye) and snowballs (6% in each eye) were less frequent in our study. Periphlebitis and neovasularization at vitreous base were present in 6%, of cases leading to vitreous haemorrhage. These features are not consistent with the other reports on intermediate uveitis where snowbanking, peripheritis are more common[15].

Complicaion of the disease was present in five cases, of which one was cystoid macular oedema, second, complicated cataract and 3 cases of vitreous haemorrhage which differ from the cases reported in the literature. Prieto et all have reported the complications of intermediate uveitis as macular oedema 47.7%, vitreous opacities 38.6%, papillitis 38.6%, vasculitis 36.4% and cataract 20.5%[18].

The treatment modalities followed in our study were corticosteroids in 98% of cases (topical, systemic and/or periocular injection) and cryotherapy in 2% of cases. As most of the patients presented early to the hospital, the above-mentioned treatment modalities only were sufficient. At this point, it is noteworthy that one of the patients who received topical and posterior subtenons injection of corticosteroid developed steroid induced glaucoma and the intra ocular pressure came to normal after stopping steroid drops and instilling anti-glaucoma medication temporarily.

In our study, the visual outcome improved in 52% of cases and remained static in 46% while 2% had deteriorated visual acuity. A. Nagpal et all 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[19].

CONCLUSION:

The clinical features of intermediate uveitis have been documented for the first time in the context of Nepal in this study. Similarly, the study tries to outline the hospital-based prevalence of the disease. Significantly high number of patients with intermediate uveitis has been reported from central development region, mainly from Dhading, Kathmandu and Nuwakot districts. People in their third decade were found to be commonly affected in this study. Most of the presenting cases were of Mongoloid origin. The severity of the disease was found to be in milder form with fewer complications in our study. With the treatment protocol followed in our study, visual acuity improved in 52% of the cases.

RECOMMENDATIONS:

1. Young patients presenting with complaints of floaters with or without diminution of vision should be examined with dilated pupil by thorough slit lamp examination and indirect ophthalmoscopy.
2. Periocular subtenons long acting steroid injection is the most effective treatment in milder form of intermediate uveitis.
3. Community based screening study of Intermediate uveitis in Dhading, Kathmandu and Nuwakot districts is recommended.

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Appendix

PERFORMA

Intermediate Uveitis

1. Name:
2. Age/sex:
3. Occupation:
4. Ethnic group:
5. Address:
6. History/Complaints:
    a. Blurred vision
    b. Floaters
    c. Pain
    d. Photophobia

7. Past History:
8. Associated Disease:
9. Examination: RE LE
    a. Visual Acuity - unaided:
    b. Visual Acuity with glass:
    c. Visual acuity with pinhole:
    d. Anterior Segment:
    e. IOP:
    f. Vitreous:
    g. Retina:

10. Diagnosis:
11. Laboratory Tests:
    a. TC, DC, ESR
    b. Mantoux Test
    c. CXR-P/A View
    d. Rheumatoid Factor
    e. Stool for ova and cyst
    f. Absolute eosinophil count

12. Management:
    a. No Treatment: Visual outcome
    b. Corticosteroids:
        i. Periocular injection Visual outcome
        ii. Systemic steroids Visual outcome
        iii.Topical steroids Visual outcome
    c. Immunosuppresive Agents:
        i. Cyclophosphamide+ steroids Visual outcome

ii. Azathioprine Visual outcome
iii. Methotrexate Visual outcome

d. Photocoagulation:
e. Cryotherapy:
f. Cataract extraction/Vitrectomy/ Endolaser therapy

13. Complications