

# Management of Intraocular Inflammatory Disease

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## ABSTRACT

**Background:** Intra ocular inflammatory disease is a broad-spectrum eye inflammatory condition.

**Objective:** To evaluate various management protocols for Intra ocular inflammatory disease.

**Study Design:** Retrospective study

**Place and Duration of Study:** Department of Ophthalmology, Lorallai Medical College, Loralai from 1<sup>st</sup> January 2020 to 31<sup>st</sup> March 2021.

**Methodology:** One hundred and twenty medical files of patients with various intra ocular inflammatory diseases were recruited. Patients were managed by various pharmacological drugs including corticosteroids, second line agents, anti-metabolites as well as biologics (anti-TNF-alpha) therapy.

**Results:** There were 45% females while 55% were males. The mean age of the patients was 45±4.4 years. Majority of the patients were within 41-50 years with 37.5% followed by those >50 years of age. Corticosteroids were efficient in 50% of patients with intra ocular inflammatory disease as a secondary condition while azathioprine in 75% patient and tacrolimus 93.4% patients.

**Conclusion:** Second line agents and antimetabolites have higher prevalence of acceptance and efficacy in managing intra ocular inflammatory disease.

**Keywords:** Management, Intraocular inflammatory disease, Broad spectrum

## INTRODUCTION

Intra ocular inflammatory disease (IOID) is a commonly reported condition in ophthalmology. It has a broad-spectrum involvement of other medical fields. There is a variety of intraocular inflammatory diseases at various locations such as orbits, ocular surface or adnexa, corneal region, conjunctiva, uvea, sclera, retinal-vessel as well as optic nerve. Management of ocular inflammatory infections is a challenge for ophthalmologist due to different therapeutic and diagnostic conditions which also includes the management of benign cases to those which can result into life threatened organ loss complications.<sup>1-3</sup>

Patients having systematic inflammatory diseases as arthritis, polyarteritis, Kawasaki syndrome in children, poly-chondritis relapse; are also at a risk of developing IOID. The involvement of eye inflammation can be first diagnostic symptoms in such diseases and might act as a biomarker for identification of systematic inflammatory disease. IOID has been a cause of 10-15% bilateral while 22% unilateral vision loss in western countries with 20-65 year of population to be most vulnerable for it.<sup>4</sup> An estimate of around hundred cases out of each hundred thousand are having IOID with 35% are visually impaired.<sup>5-6</sup>

The role of immunosuppressant medications is still under proper understanding and enquiry for management of intra ocular inflammatory diseases.<sup>7-8</sup> Data demonstrates that good treatment option for managing intraocular inflammation are mandatory for improving vision quality which is impacted by IOID.<sup>9-11</sup> The present study was designed to evaluate possible management protocols which might seem beneficial in IOID cases.

## MATERIALS AND METHODS

This retrospective study enrolled 120 patient's data suffering from various intraocular inflammatory diseases (uveitis, scleritis, conjunctivitis, poly-chondritis or ocular-cicatricial pemphigoid) was completely analyzed. The study was conducted at Department of Ophthalmology, Lorallai Medical College, Loralai from 1<sup>st</sup> January 2020 to 31<sup>st</sup> March 2021. The selection of 120 IOID cases was done by grouping a set of 15-20 patients having similar drug for their IOID management. In this way prednisolone, methylprednisolone, cyclosporine, tacrolimus, azathioprine, methotrexate and infliximab were analyzed for their efficacy in managing patient condition. As IOID might be a secondary disease resulting from systematic inflammatory diseases or as a result of viral/bacterial infection therefore their treatment requires treatment of the following primary disease. However above-mentioned drugs

could be an option for managing the IOID condition in patients. The complete medical file analysis of the 120 patients allowed an in depth information about their treatment/management plan, age, gender, clinical comorbidities. Prednisolone a corticosteroid was given as 10 mg once a day (OD) for 14-24 weeks as a maintenance dose. A data of 20/120 patients was identified from medical files who were managed by prednisolone. Cyclosporin (20/120 patients) was given as an oral dose of 2.2-5mg/kg BD for treating uveitis with as an initial treatment up to 7-15 days, later with 150 to 250 mg per day. Tacrolimus (15/120 patients) was administered 0.03-0.08 mg per kg per day with a critical monitoring (for aimed dose up to 8-12 ng/L). Azathioprine (20/120 patients) was orally given as 2-3 mg per kg per day prior titration and in accordance with side effect response for 4-12 weeks. Methotrexate (15/120 patients) was orally delivered or through IM injection as a weekly initial dose of 2.5-10 mg then in accordance with titration a max dose up to 50 mg per week. Infliximab (15 /120 patients) was given in IV injectable form as a short course at start for 3 days with 2 weeks interval in a dose of 3 to 5 mg per kg and then further as 5-10 mg per kg every 4 to 8 weeks. Data was analyzed by using t test, chi square by SPSS version 24.

## RESULTS

There were 45% females while 55% were males. Males were reported to be having IOID at a greater number bur females were having higher co-morbidities chances in them. The mean age of the patients was 45±4.4 years. There were 7.5% those patients having age <30 years. These young adults mostly suffered from conjunctivitis with a history of mobile screen abuse. Corticosteroid short courses were mainly administered in them, in case otherwise they were presenting IOID as a secondary infection. Majority of the patients were within 41-50 years with 37.5% followed by those >50 years of age (Table 1).

Various drugs were used for management of IOID in total 120 patients. The patients who were not initially responded to a drug their treatment was continued up to a year if required. However, each drug has drop out number of patients who developed non-tolerable side effects which lead to ceasing of the drug in use. Corticosteroids were efficient in 50% of patients with IOID as a secondary disease, while in rest it was related with formation of cataract, diabetes, hypertension as side effect in few patients. Azathioprine caused gastrointestinal problems in 35% patients where as tacrolimus resulted in renal impairment in 6.6% patients leading to stoppage of drug (Table 2).

The prednisolone, Methylprednisolone, Cyclosporine, Azathioprine, Methotrexate, Infliximab were administered initially for 14-24, 24, 48, 4-12, 3-6 and 10 weeks respectively (Fig 1).

Table 1: Distribution of gender and age among patients (n=120)

Variable	No.	%
<b>Gender</b>		
Male	66	55.0
Female	54	45.0
<b>Age (years)</b>		
20-30	9	7.5
31-40	21	17.5
41-50	45	37.5
>50	35	29.1

Table 2: Drug management in patients with various IOID

Drug	IOID patients	Treatment affected	Stopped treatment
<b>Corticosteroids</b>			
Prednisolone	20(16.6%)	10(50%)	10(50%)
Methylprednisolone	15(12.5%)	8(53.3%)	6(46.6%)
<b>Second-line agents (T-cell inhibitors)</b>			
Cyclosporine	20(16.6%)	17(85%)	3(15%)
Tacrolimus	15(12.5%)	14(93.3%)	1(6.6%)
<b>Antimetabolites</b>			
Azathioprine	20(16.6%)	13(65%)	7(35%)
Methotrexate	15(12.5%)	11(73.3%)	4(26.6%)
<b>Biologics (Anti TNF-alpha)</b>			
Infliximab	15(12.5%)	12(80%)	3(20%)

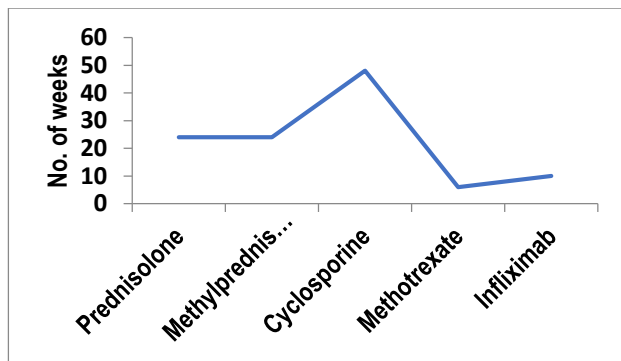


Fig 1: Management of IOID with various drugs as initial dose plan

**DISCUSSION**

The present study was an analysis on various drugs used for management of IOID. The mean age of patients was 45±4.4 years. The patients who were having any other primary disease and IOID as their secondary condition were managed by various drugs which had their own side effects as seen in present study. The corticosteroids have indeed an outstanding anti-inflammatory response but it can result in unrequired side effects.<sup>12</sup> These side effects are more common usage of the medication system and commonly included diabetes, hypertension as well as sleep apnea, mood disturbances.<sup>13,14</sup>

Cyclosporin is a drug which is mainly used for organ transplantation surgical procedure but it also acts to inhibit T cells and inflammation.<sup>15,16</sup> The administration of cyclosporin in various uveitis condition has shown to be efficient in decreasing inflammation.<sup>17</sup> Similarly tacrolimus is a macrolide consistent antibiotic used for treating uveitis which has similar functioning as cyclosporin and used in organ transplantation.<sup>16</sup> Tacrolimus showed better efficacy than cyclosporin in many studies worldwide.<sup>16,17</sup> Azathioprine is effective in the management of various wide variety of IOID conditions including scleritis, ocular-citricial pemphigoid and poly-chondritis.<sup>18</sup>

Methotrexate is an analogue of folic acid as well as inhibitor of dihydro-folate enzyme reductase<sup>19</sup> which managed IOID in 76% of patients.<sup>20</sup> Infliximab is immunoglobulin which is chimeric

monoclonal-antibody binds to TNF-alpha and further inhibits the biological function of TNF-alpha.<sup>21</sup> Anti-TNF-alpha therapy is administered in acute patients with IOID after screening them for tuberculosis, hepatitis B and moderate cardiovascular diseases where it is contraindicated.<sup>22</sup>

**CONCLUSION**

Depending upon which type of Intra ocular inflammatory disease is to be treated various drugs can be used for its management with second line agents, anti-metabolites to have higher prevalence of acceptance and efficacy.

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