The term “intermediate uveitis” describes inflammation of the anterior vitreous, ciliary body and peripheral retina which may or may not be associated with infection or systemic disease. A subset of this, which is not associated with any systemic disease is termed as “pars planitis.” It comprises of approximately 9.5-17.4% of all uveitis. The prevalence of active intermediate uveitis in a South India-based study was 0.25%.

Intermediate uveitis presents with minimal symptoms, commonly blurred vision and floaters. The characteristic of this subtype of ocular inflammatory disease is a relapsing remitting nature of inflammation leading to chronicity, hence significant complications. Corticosteroids have been recommended as the first line of treatment. However, in a country known to be endemic for tuberculosis, steroids can only be given after ruling out tuberculosis with the aid of various investigations like Mantoux, Quantiferon Gold, chest X ray (CXR), Computerised tomography of chest (CECT), PCR from ocular fluids, etc. Improper treatment or early taper of drugs are often responsible for recurrences. Still, there is no consensus regarding the end point of treatment. Although with the advent of immunosuppressives, complications due to long term steroid use have reduced markedly, adequate management of intermediate uveitis is still lacking in multiple areas.

Kirti Jaisingh - Q. Are there any diagnostic criteria or clinical features to diagnose intermediate uveitis?

Amit Khosla: Intermediate uveitis is a clinical diagnosis, presenting with vitreous cells, macular edema and vitreous floaters. It may present with normal to severe visual impairment.

Somasheila Murthy:
The Diagnostic criteria For Intermediate Uveitis include:

Symptoms
- Floaters
- Impaired vision (due to cataract, cystoid macular edema, epiretinal membrane, extensive vitritis, retinal detachment, glaucoma, vitreous haemorrhage)

Signs
- Minimal anterior segment inflammation, except in granulomatous cases and in cases with recurrent episodes (spill over)
- Moderate anterior chamber reaction is usually noted in children
- Complicated cataract (posterior sub capsular cataract)
- Cells are noted in anterior and mid vitreous
- Vitreous snowballs and aggregates of inflammatory cells, usually inferiorly, turbid vitreous with membranes (Figure 1 a & b)
- Snowbanking in chronic cases
- Peri-vasculitis in peripheral retina
Sheathing of vessels
Rarely peripheral neovascularization (Figure 2) and cyclitic membranes

Reema Bansal: Significant vitritis, snowballs and/or snowbanking, and cystoid macular edema (CME), point towards intermediate uveitis.

Parthopratim Dutta Majumder: Unfortunately, there are no standard diagnostic criteria to diagnose intermediate uveitis. Standardization of Uveitis Nomenclature (SUN) classification helps us to define intermediate uveitis as a subset of uveitis where the primary site of inflammation is vitreous.1 There was consensus in this workshop that the term “intermediate uveitis” should be used if the uveitis is associated with systemic disease. The term “pars planitis” to be used in cases without any systemic association i.e. idiopathic cases. It has been emphasized that the presence of vascular sheathing and macular edema should not change the classification. However, in literature, the term ‘intermediate uveitis’ is used widely to denote the anatomical site of involvement. Vitreous cells are the most characteristic sign of the disease. Yellowish white inflammatory aggregates in vitreous, mostly in inferior periphery, are hallmark of the disease and commonly termed as snowball. Snowbanking of the pars plana represents stimulation of the collagen formation by the inflammatory process. Unlike snowballs, they remain adherent to the pars plana region and can extend to encompass 360 degrees of the retinal periphery. A thorough peripheral retinal examination with scleral depression is a must for the diagnosis of intermediate uveitis.

Padmamalini Mahendradas: There are no specific diagnostic criteria. However the presence of following clinical features will help us to diagnose intermediate uveitis. There may be presence of vitritis, snow ball opacities and snowbanks. It may be associated with minimal anterior chamber inflammation, sheathing of peripheral veins with neovascularization in some cases.6,7

Summary (Kirti Jaisingh): In the absence of any standard diagnostic criteria, vitreous cells, snowballs and snow banking at pars plana are essentially referred to as intermediate uveitis. They may be accompanied by minimal anterior chamber inflammation due to spill over. In chronic cases, its complications like cataract, glaucoma, cystoid macular edema and peripheral neovascularization point towards previous or ongoing intermediate uveitis. Symptomatically, the patient may only complain of floaters in active cases and just painless, diminution of vision in chronic cases.

Kirti Jaisingh - Q. Which Ocular and Systemic investigations do you advise in intermediate uveitis?

Amit Khosla: Ocular investigations to assess the severity of the disease include fluorescein angiography and optical
coherence tomography. Where fluorescein angiography may reveal macular edema and peri-vascular leakage, OCT helps diagnose macular edema and epiretinal membrane. Systemic investigations are done to rule out systemic diseases like TB and sarcoidosis. CECT chest and USG abdomen have emerged as very important investigations to rule out TB, especially in an endemic country like India. Diseases like multiple sclerosis, Lyme disease and syphilis are also known to cause intermediate uveitis. Thus, specific tests to rule out these diseases are also carried out.

**Somasheila Murthy:**

**Ocular**

1. Fundus fluorescein angiography (FFA) - To assess the presence and extent of CME and to examine the retinal vasculature for signs of peri-vasculitis (Figure 3).
2. USG B Scan - To look for presence of cyclitic membranes/extent of vitreous debris and in cases of non-visualization of fundus
3. Ultrasound biomicroscopy (UBM) - To demonstrate cyclitic membrane and status of ciliary body
4. Optical Coherence Tomography (OCT) - CME (Figure 4a and b) and vitreo-macular traction (VMT), epiretinal membranes (ERM)

**Systemic**

1. Tuberculosis (TB) – Complete blood count (CBC), Erythrocyte Sedimentation rate (ESR), CXR, Mantoux test
2. Sarcoidosis - Chest X-Ray, Serum ACE level, Serum lysozyme, Serum Calcium level, Pulmonary function testing, HRCT chest
3. Syphilis - VDRL, RPR or FTA-ABS
4. Further investigations: based on positive systemic symptoms, history of chronic or bloody diarrhoea - Investigate for inflammatory bowel disease
5. For Multiple Sclerosis – Neurologic history and MRI (although mentioned in literature, I have not yet advised this test)
6. History of rash/arthritis - Serologic test for Lyme disease

Reema Bansal: I would like to investigate for TB, Sarcoidosis, Syphilis, Lyme disease, and primary vitreoretinal lymphoma.

Parthopratim Dutta Majumder: Usually selected ancillary tests are performed in patients with intermediate uveitis. Fundus fluorescein angiography is useful in documenting macular edema, subclinical retinal vasculitis, extent of ischemia and neovascularization. Optical coherence tomography, being a non-invasive imaging technique, has become a popular and reliable method to diagnose and follow maculopathies associated with intermediate uveitis. The initial screening for an intermediate uveitis patient aims at exclusion of systemic pathology. We usually advise complete blood count with differential; HRCT-chest or Chest X-ray and tuberculin skin test to rule out tuberculosis and sarcoidosis; angiotensin converting enzyme (ACE), lysozyme. We selectively perform antibody testing for infectious diseases, such as syphilis, toxocariasis etc. We also routinely advise liver function tests as abnormal liver enzymes may aid in diagnosis of sarcoidosis and as an important bio-marker prior initiating anti-tubercular treatment.
therapy or immunosuppressive therapy.

**Padmamalini Mahendradas**: Ocular investigations include FFA to find out the peripheral retinal vasculitis changes and OCT to diagnose and quantify the CME. If the media is very hazy, then we do B scan ultrasonography to know the posterior segment status and UBM for the pars plana exudates and the ciliary body status.

Ocular fluids for polymerase chain reaction (PCR) for MPB 64 gene and IS6110, RT PCR for ocular TB and CD4/CD8 ratio from the ocular fluids and the serum in selected cases to differentiate between tuberculosis and sarcoidosis.

**Systemic investigations include**

- Mantoux test and Chest X ray PA view in all cases.
- HR CT scan of the chest, sputum examination, lymph node biopsy, bronchoscopy with bronchial lavage and biopsy, AFB smear, TB culture and sensitivity, Gene Xpert test, Quantiferon TB gold test, serum ACE level and serum lysozyme in selected cases to differentiate between tuberculosis and sarcoidosis.
- Non specific tests such as VDRL or RPR along with specific tests such as TPHA or FTA-ABS to rule out syphilis.
- Vitreous biopsy and MRI of the brain for intraocular lymphoma
- Multiple sclerosis – MRI of the brain, VEP for optic nerve involvement
- ELISA for Lyme disease
- The Bartonella henselae immunofluorescence assay (IFA) for Cat Scratch Disease
- ELISA for HIV.

**Summary (Kirti Jaisingh):** Most of the ophthalmologists advocate two kind of investigations; ocular and systemic. Ocular investigations include OCT (to detect macular edema), FFA (to look for perivascular leakage and neovascularization), Ultrasound and UBM (to look for pars plana exudates). While systemic investigations are aimed at finding the etiology, most commonly tuberculosis, sarcoidosis, syphilis, toxocariasis, and sometimes multiple sclerosis and lymphomas. Now a days, CECT chest and USG abdomen are being increasingly used to rule out TB, before starting steroids in a patient.

**Kirti Jaisingh - Q. What are the indications for treatment?**

**Amit Khosla**: Indication for treatment is mainly decrease in vision due to macular edema or disc edema. Other indications include severe traction at the pars plana or vitreous hemorrhage. Vitreous cells without vision loss, is not an indication for treatment.

**Somasheila Murthy**:  
1. Any case with presence of anterior chamber (AC) reaction, active vitreous cells and snowballs  
2. Visual acuity < 20/20 (i.e. once the vision is affected to any extent, but inflammation in the eye is to be treated even with 20/20 vision)  
3. Dense vitritis  
4. Presence of CME

**Reema Bansal**: Visual loss and/or CME

**Parthopratim Dutta Majumder**: The decision of when and how to treat intermediate uveitis is guided by several principles. Being in a tertiary care eye institute, where majority of the cases present as referral or for second opinion, we usually investigate and treat all cases of intermediate uveitis. Though there are no standard guidelines, treatment is classically indicated in patients where visual acuity is worse than 6/12, presence of cystoid macular edema, vasculitis and/or in vitreous haze of 2+ or more. But there is a major drawback with this approach in our day to day clinical practice. For example, a patient with 6/6 visual acuity with floaters that interfere with daily activities of the patient should be treated. And it is very important to understand that majority of the complications, we encounter, are due to chronic or long-standing inflammation and its effective control on time can prevent these vision-threatening complications.

**Padmamalini Mahendradas**: Presence of active inflammation in the eye is an indication for treatment. Early and aggressive therapy is important than arbitrary level of visual acuity such as 20/30.

**Summary (Kirti Jaisingh):** Since chronic inflammation leads to various complications, most ophthalmologists prefer to treat active inflammation even if asymptomatic. This activity can be assessed on FFA and OCT.

**Kirti Jaisingh - Q. What are the options available for treatment and what are their indications?**

**Amit Khosla**: Various options available for treatment include periocular or systemic steroids, intraocular steroids, immunosuppressives, cryopexy, laser and vitrectomy. Periocular steroids are the primary modality in uniocular disease. If patient does not respond to periocular steroids then intravitreal implants or systemic steroids followed by systemic immunosuppressives can be given. In bilateral disease, systemic steroids followed by immunosuppressive is my preferred choice. In children, the disease is more severe and more likely to be bilateral, so I prefer to give systemic immunosuppressives. I reserve intraocular steroid implants for pseudophakic patients or those already with complicated cataract. Immunosuppressive is a good option for patients who do not respond to periocular steroids or systemic steroids within 3 months. I prefer to use immunosuppressives in bilateral cases, pediatric cases and steroid responders.

**Somasheila Murthy**:  
**Medical**  
**Corticosteroids: are the mainstay of treatment**

- Systemic – for binocular involvement or uniocular not improving with peri-ocular injections: Oral Prednisolone 1-2mg/kg
- Peri-ocular : posterior subtenon or transseptal–Triamcinolone acetonide (2 to 4mg/0.1ml), Methyl prednisolone acetate (40-80mg)  
- Intravitreal – Triamcinolone (2 to 4mg/0.1ml)
Intraocular steroid implants have the advantage of being able to penetrate the back of the eye. Exclusion of underlying systemic disease, treatment of the underlying disease is mandatory. Usually a stepwise graded approach including periocular steroid injection, systemic corticosteroids, immunosuppressive therapy and pars plana vitrectomy is used in such cases. Topical administration is usually ineffective, except for the management of spillover into the anterior chamber.

**Immunomodulator agents**

**Antimetabolites**

1. Azathioprine, Nucleoside analogue interferes with DNA replication and RNA transcription (up to 2mg/kg/day)
2. Methotrexate, Folic acid analogue inhibits dihydrofolate (starting 10-15mg/week gradually increasing to 15-25mg/week)
3. Mycophenolate mofetil, Isonine monophosphate inhibitor (1-1.5grams/BD)

**T-Cell Inhibitors**

1. Cyclosporine, IL -2 inhibitor (1-5mg/Kg/day)

**Biological response modifiers: have limited experience with only these two agents**

1. Etanercept, TNF alpha receptor blocker
2. Infliximab, TNF alpha inhibitor

The administration is co-managed by the rheumatologist. Topical steroids and cycloplegics are used if spill over is present.

**Surgical**

1. Cryopexy of peripheral retina
   - Indications
     - Recalcitrant to immunosuppression
     - Raised IOP
     - Peripheral retinal neovascularisation with vitreous haemorrhage
2. Pars plana vitrectomy: for chronic cases, and those with VMT, ERM
3. Surgery in case of cataract, glaucoma, hypotony and band shaped keratopathy

**Reema Bansal:** May approach it as follows:-

1. Oral corticosteroids (bilateral involvement)
2. Steroid implants (unilateral involvement, or contraindications/intolerance to systemic steroids)
3. Posterior subtenon triamcinolone acetate (not willing or affording for steroid implants)
4. Immunosuppressive agents (resistant or intolerant to steroids)
5. Vitrectomy

**Pathropratim Dutta Majumder:** Exclusion of underlying diseases is the first criteria for management of intermediate uveitis. If intermediate uveitis is associated with any systemic disease, treatment of the underlying disease is mandatory. Usually a stepwise graded approach including periocular steroid injection, systemic corticosteroids, immunosuppressive therapy and pars plana vitrectomy is used in such cases. Topical administration is usually ineffective, except for the management of spillover.
4. Inadequate response to corticosteroids alone
5. Failure of therapy to steroids alone/ severe inflammation

Steroid Implants
Indications
1. Posterior uveitis
2. Retinal vein occlusion
3. Unocular uveitis
4. Contraindications for systemic steroids
5. Recurrent CME

Pars Plana Vitrectomy
Indications
1. Uveitic CME in presence of hyaloid traction on macula, dense epiretinal membranes
2. Dense vitreous opacities
3. Persistent vitreous haemorrhage
4. Resistance to medical therapy
5. Diagnostic in case of suspected lymphoma

Reema Bansal: Indications for
(a) Immunosuppressives: resistance or intolerance to steroids
(b) Steroid implants: unilateral involvement, or contraindications/intolerance to systemic steroids, or non-infective etiology

Padmamalini Mahendradas
• Bilateral cases, who need long term immunosuppression, who are not able to tolerate systemic steroids or have developed complications secondary to systemic steroid therapy and in steroid responders, we would like to start systemic immunosuppressive therapy.
• Patients who do not have any associated systemic disease or are not able to tolerate the oral steroids, unilateral cases and those who are not willing to take systemic immunosuppressive therapy are the indications for steroid implants.
• Presence of rhegmatogenous or tractional retinal detachment or long standing vitreous haemorrhage or refractory cases with significant vitreous opacities or epiretinal membrane and diagnostic vitrectomy are the indications for pars plana vitrectomy.

Summary (Kirti Jaisingh): By and large, immunosuppressives are indicated in chronic and recurrent cases, where long term steroid use can cause considerable ocular and systemic complications. Steroid implants are mainly used to treat unilateral cases without any known systemic disease. Whereas, vitrectomy is both diagnostic in cases of lymphomas, and therapeutic in cases of vitreous hemorrhage, vitromacular traction, epiretinal membranes and retinal detachments.

Kirti Jaisingh - Q. Do you have a different protocol for Pediatric cases?
Amit Khosla: Pediatric patients have severe disease, bilateral and even more aggressive. So I prefer immunosuppressives as the primary treatment for all pediatric cases.

Somasheila Murthy: Oral steroids are chosen as a last resort. We start with periocular injections and with immunomodulators such as Methotrexate or Mycophenolate Mofetil

Reema Bansal: Oral corticosteroids, followed by Immunosuppressive agents

Parthopratim Dutta Majumder: Pars planitis has been implicated as major cause of uveitis in pediatric group of patients. It is often bilateral, usually runs a prolonged course and is associated with complications like band shaped keratopathy, secondary glaucoma, cataract (Figure 5), CME and amblyopia. Pars planitis is one of the major cause of white eye uveitis in children and due to absence of symptoms like redness, ocular pain etc. they often present very late to ophthalmologists. Examination of pars plana in children is often difficult and presence of synechiae (Figure 5) makes it more difficult. Management of this group of patients requires a different approach altogether. Long-term use of topical and oral steroid is associated with considerable ocular and systemic side-effects and should be avoided. Growth retardation with corticosteroids is relevant in children prior to bone growth center closure. Increased psychomotor activity associated with oral corticosteroid may greatly reduce kids’ performance in school. Use of steroid-sparing agents after ruling out infectious etiology is the mainstay of treatment in these patients. In absence of any infectious etiology, we prefer to use oral methotrexate in this group of patients.

Padmamalini Mahendradas: There is no different protocol. However, we prefer to avoid steroid implants and long term oral steroid use in paediatric cases.

Summary (Kirti Jaisingh): Intermediate uveitis is often detected too late in children when the complications have already set in. This warrants the use of steroid sparing agents after ruling out any infections. Systemic steroids are used only for short term initially in acute cases, till the immunomodulators take over.

Figure 5: Cataract and posterior synechiae in an eye with intermediate uveitis
Kirti Jaisingh - Q. What is the natural course of the disease?

Amit Khosla: The natural course of the disease is quite variable. About one third present with very mild, non-recurrent disease. Another one third present with mild to moderate symptoms that would be recurrent. Whereas, the rest one third present as a progressive relentless disease which requires aggressive therapy.

Somasheila Murthy: If the inflammation is well controlled, the patients do well and we can expect remission after two to three years on immune-modulator therapy. In case of recurrent disease and cases where there is dependency on oral steroids, the disease may follow a relentless downhill course leading to cyclitic membranes and hypotony, complicated cataracts and BSK. Most patients have recurrent and persistent disease and can develop one or more complications during the disease course.

Reema Bansal: Relapsing and remitting disease.

Parthopratim Dutta Majumder: Intermediate uveitis is usually a benign form of uveitis. Most of the time its complications are due to chronicity of the disease process. The inflammation typically involves ciliary body and is marked by the aggregates of white or yellow exudates more commonly seen in the inferior vitreous base and ora serrata. Inflammatory cells and exudates are seen in vitreous and manifests as vitritis. If inflammation is not controlled, these inflammatory aggregates can coalesce to form plaques over pars plana called a snowbank. Snowbank, thus represents a severe form of the disease. Usually vessels of the peripheral retina are involved in this inflammatory process. Clinically significant vasculitis can be seen and can induce neovascularization. It has been reported that presence of vasculitis, especially periphlebitis is more likely to be associated with multiple sclerosis or optic neuritis. Most common cause of vision-robbing event in intermediate uveitis is development of cystoid macular edema. Cystoid macular edema occurs when blood retinal barrier is damaged by the products of inflammation, leading to accumulation of fluid in retina. Such chronic edema can lead to degeneration, epiretinal or sub retinal membranes and formation of macular hole.

Padmamalini Mahendradas: The course of the disease is usually chronic. Prolonged course without exacerbations can be seen in intermediate uveitis. After three years on immune-modulator therapy. The inflammation typically involves ciliary body and is marked by the aggregates of white or yellow exudates more commonly seen in the inferior vitreous base and ora serrata. Inflammatory cells and exudates are seen in vitreous and manifests as vitritis. If inflammation is not controlled, these inflammatory aggregates can coalesce to form plaques over pars plana called a snowbank. Snowbank, thus represents a severe form of the disease. Usually vessels of the peripheral retina are involved in this inflammatory process. Clinically significant vasculitis can be seen and can induce neovascularization. It has been reported that presence of vasculitis, especially periphlebitis is more likely to be associated with multiple sclerosis or optic neuritis. Most common cause of vision-robbing event in intermediate uveitis is development of cystoid macular edema. Cystoid macular edema occurs when blood retinal barrier is damaged by the products of inflammation, leading to accumulation of fluid in retina. Such chronic edema can lead to degeneration, epiretinal or sub retinal membranes and formation of macular hole.

Padmamalini Mahendradas: The course of the disease is usually chronic. Prolonged course without exacerbations or chronic smoldering course with multiple exacerbations can be seen in intermediate uveitis.

Summary (Kirti Jaisingh): Intermediate uveitis usually runs a chronic course with multiple relapses and remissions. Immunosuppressives are required to be continued for more than a year. Even when the inflammation subsides, complications like cataract and CME have already set in.

Kirti Jaisingh - Q. When do you use cryotherapy or laser?

Amit Khosla: I do not use cryopexy or laser on regular basis. My previous experience with cryotherapy has not been as satisfactory as immunosuppressives.

Somasheila Murthy:
- Steroid resistant intermediate uveitis
- Neovascularization of the vitreous base
- History of vitreous haemorrhage

Reema Bansal: Never

Parthopratim Dutta Majumder: The primary aim of these techniques is to destroy the vascular component of inflammation. Cryotherapy has been advocated in literature for the cases where the drug therapy with corticosteroids has failed. Complications associated with cryotherapy are transitory worsening of vitritis, cataract development, hyphema, macular edema, retinoschisis and rhegmatogenous or tractional retinal detachment. With the advent of immunosuppressives and because of its possible risk for complications, cryotherapy is rarely used now a days. We use laser photocoagulation to ablate the peripheral retina in presence of neovascularization.

Padmamalini Mahendradas: I use laser in cases of peripheral retinal neovascularization associated with significant areas of capillary drop outs. I do not use cryotherapy.

Summary (Kirti Jaisingh): Peripheral retinal neovascularization is the most important indication for laser. Cryotherapy is avoided these days due to its high complication rate.

Kirti Jaisingh - Q. What are the complications and sequel you encounter?

Amit Khosla: Patients taking steroids for more than 3 months are more likely to suffer from complications like chronic macular edema, epiretinal membranes, vitreous hemorrhage, tractional retinal detachment, chronic hypotony, cataract, glaucoma.

Somasheila Murthy: Complications and sequel
- CME
- Vitreous opacities
- Cataract
- Glaucoma
- Hypotony
- Calcific Band shaped keratopathy
- Cystic membranes
- Retinal detachment (Rhegmatogenous or tractional)
- Retinal and choroidal neovascularisation

Reema Bansal: Steroid responder, recurrence, cataract

Parthopratim Dutta Majumder: Cataract is a very common complication in patients with intermediate uveitis. Undoubtedly topical and systemic corticosteroid contribute to this complication. Secondary glaucoma can occur and cystoid macular edema remains the major cause of visual loss in patients with intermediate uveitis. Cystoid macular edema is common in elderly individuals and those with chronic inflammation. Band shaped keratopathy is typically observed in children and often reflects the disease activity.
Neovascularization and eventual vitreous hemorrhage can occur in children. Tractional or rhegmatogenous retinal detachments are relatively uncommon, but can occur.

**Padmamalini Mahendradas:** Cystoid macular edema, cataract formation, raised intraocular pressure, disc edema, periphelebitis, peripheral neovascularization, epiretinal membrane. Rarely optic disc neovascularization and optic atrophy. Untreated or poorly treated long standing cases can develop phthisis bulbi. Cyclic membrane causing ciliary body traction and hypotony eventually lead to phthisis bulbi.\(^4\)\(^5\)\(^7\)

**Summary (Kirti Jaisingh):** Commonly seen complications of intermediate uveitis are cataract, glaucoma, hypotony, cystoid macular edema, epiretinal membranes and peripheral retinal neovascularization. Band shaped keratopathy is another common sequel encountered in children. Long standing and poorly treated cases can result in vitreous hemorrhage, retinal detachments, optic atrophy and phthisis bulbi.

**Kirti Jaisingh - Q. When do you stop treatment and what are the risk factors for recurrence?**

**Amit Khosla:** Recurrence is usually seen in patients where the treatment is tapered too rapidly, especially in paediatric and more aggressive cases. It is important to taper the immunosuppressives slowly over a period of 6 months to 1 year. My protocol is to use immunosuppressants till 6-12 months after control and then the drug is tapered over a year. Even in case of steroid implants, we need to inject at least one more time even when the eye is quiescent, to achieve complete remission.

**Somasehila Murthy:** In case of a prolonged period of no recurrence (generally well controlled disease for one or two years on maintenance therapy), we can consider stopping the therapy.

**Risk factors for recurrence:**
- Rapid taper
- Primary disease: well known to recur in young patients, classical pars planitis, and infectious causes (presumed Ocular tuberculosis)

**Reema Bansal:** I stop treatment with stabilization of (1) visual acuity to 6/6, (2) media clarity grade 1, (3) no CME, (4) a repeat FFA showing no vascular leakage

**Parthopratim Dutta Majumder:** Resolution of inflammation in vitreous is an important factor and slow tapering of oral medications is essential in these group of patients. Cells in anterior vitreous is an important finding which can help us to evaluate the inflammatory activity. But persistence of cells in anterior vitreous, even after successful remission of the disease activity can be seen and many a times, it becomes difficult to differentiate between new and old cells in anterior vitreous. Thus, resolution of pars plana exudates and absence of vitritis is an important marker which can help us to decide about the treatment. As with any other forms of uveitis, recurrent nature of the inflammation should be discussed in details with the patients. While dealing with this clinical entity one must keep in mind that intermediate uveitis has a prolonged course with alternating periods of exacerbation and remission. Many patients require long-term immunosuppressive therapy, continuation of which can be decided only by periodical eye examination and titrating the dose of oral medications.

**Padmamalini Mahendradas:** If the eye has been quiet for more than three months (remission), then I taper and stop the treatment. If the patient develops recurrence of systemic disease or superadded infections, then the chances of recurrence of eye inflammation are high.

**Summary (Kirti Jaisingh):** Clinically no vitritis, no leakage on FFA and no CME on OCT for more than 3 months is considered as remission. However, since recurrences are more likely to occur with rapid taper and recurrence of systemic diseases or infections, most ophthalmologists prefer to gradually taper the drugs over a quiescent period of 1-2 years.

**Kirti Jaisingh - Q. How do you monitor the disease in the presence of cataract?**

**Amit Khosla:** Monitoring the disease in the presence of cataract is difficult since vitreous cavity cannot be examined. USG B scan and UBM helps in assessing any gross activity in vitreous and at pars plana respectively.

**Somasehila Murthy:** AC reaction is an indicator of ongoing inflammation. USG helps to detect increase or decrease in the vitreous echoes and can also detect gross macular thickening. UBM is done to look for cyclitic membranes and status of ciliary body in case of hypotony.

**Reema Bansal:** If cataract is not dense, and allows FFA, patient can be monitored on FFA (for any diffuse vascular leakage) and OCT (for CME). If cataract is dense enough to preclude any retinal examination, a routine USG B-scan can be done to look for gross posterior segment information, without any details on intermediate uveitis. In this case, an early cataract surgery is beneficial (under steroid cover) for allowing monitoring of retinal disease.

**Parthopratim Dutta Majumder:** Monitoring the disease activity in presence of cataract is indeed a challenge in these patients. For diagnostic evaluation in a patient who presents with complicated cataract in presence of ring/annular synchiae, ultrasound biomicroscopy (UBM) is an important tool which can demonstrate pars plana exudates and membranes. In a diagnosed patient of intermediate uveitis, where cataract hinders the complete fundus examination, it is important to achieve complete resolution of inflammation and to plan for cataract surgery.

**Padmamalini Mahendradas:** If the fundus view is not clear, I monitor the disease by B scan ultrasound and Ultrasound biomicroscopy.

**Summary (Kirti Jaisingh):** Ultrasound B scan and UBM are two important diagnostic modalities which help in disease monitoring even in the presence of dense cataract. Any gross increase in
vitreous inflammation or macular thickening can be detected on Ultrasound B scan. And UBM can detect the resolution or recurrence of pars plana exudates.

Kirti Jaisingh - Q. What are the pre operative preparations for cataract surgery in case of intermediate uveitis?

Amit Khosla: Cataract surgery should be done when the diseases is quiet for at least 3 months. I prefer to give oral immunosuppressive 3 months before cataract surgery. Other options include giving oral steroids pre-operatively and post-operatively. However, in case of diabetics, steroid responders, or other known contraindications of steroids, immunosuppressive are a good option.

Somasheila Murthy:
- Well-controlled inflammation, for as many months or possible or at least three months.
- Patient is compliant and is on oral immunomodulators.
- In case of known recurrent disease and patient with chronic CME, Ozurdex injection can be combined with cataract surgery.

Reema Bansal: Oral steroids (0.5-1.0 mg/kg/day), or Injection Ozurdex can be combined with cataract surgery in non-infectious uveitis.

Parthopratim Dutta Majumder: Cataract surgery is preferably indicated when the inflammation is controlled for at least 3 months. Oral corticosteroids are usually started 4 to 7 days before the surgery and should be added to any other systemic immunosuppressive therapy. If there is any contraindication to systemic therapy, pericocular injection can be considered. A subconjunctival injection of corticosteroids and antibiotics should be injected at the end of the surgery and intensive topical corticosteroid and mydriatics are started after the surgery.

Padmamalini Mahendradas: Eye has to be quiet for three months\(^1\), then I would like to operate under systemic steroid cover with or without systemic immunosuppressive therapy.

Management: Kaplan regimen\(^2\):
1. Corticosteroid therapy
2. Cryotherapy or indirect laser photocoagulation
3. Pars plana vitrectomy
4. Systemic immunosuppressive agents

Summary (Kirti Jaisingh): A period of quiescence of at least 3 months is required before being taken for cataract surgery. Oral corticosteroids should be started a week before the surgery or any on-going systemic immunosuppressive therapy should be stepped up. Some even advocate the use of intravitreal steroid implants along with cataract surgery.

References
1. Jabs DA, Nussenblatt RB, Rosenbaum JT; Standardization of Uveitis Nomenclature (SUN) Working Group. Standardization of uveitis nomenclature for reporting clinical data. Results of the First International Workshop. Am J Ophthalmol 2005; 140:509-16.
2. Rathinam SR, Namperumalsamy P. Global variation and pattern changes in epidemiology of uveitis. Indian J Ophthalmol 2007; 55:173-83.
3. Sabhapandit S, Murthy SI, Singh VM, Gaitonde K, Gopal M, Manosonia K, et al. Epidemiology and Clinical Features of Uveitis from Urban High-Risk Population. Ocul Immunol Inflamm 2016; 24:1-7.
4. Donanda L, Donanda R, John RK, McCarty CA, Rao GN. Population based assessment of uveitis in an urban population in Southern India. Br J Ophthalmol 2000; 84:706-9.
5. Babu B M, Rathinam S R. Intermediate uveitis. Indian J Ophthalmol 2010; 58:21-7.
6. Bonifoli AA, Damico FM, Curi AL, Orefice F. Intermediate uveitis. Semin Ophthalmol 2005; 20:147-54.
7. Ozdal PC, Berker N, Tugal-Tutkun I. Pars planitis: Epidemiology, clinical characteristics, management and visual prognosis. J Ophthalmic Vis Res 2015; 10:469-80.
8. Lee FF, Foster CS. Pharmacotherapy of uveitis. Expert Opin Pharmacother 2010; 11:1135-46.
9. Foster C, Vitale A. Diagnosis and Treatment of Uveitis. New Delhi, Jaypee Brothers Medical Publishers; 2nd ed, 2013
10. Jabs DA, Rosenbaum JT, Foster BS, et al. Guidelines for the use of immunosuppressive drugs in patients with ocular inflammatory disorders: recommendations of an expert panel. Am J Ophthalmol 2000; 130:492-513.
11. Okada AA. Immunomodulatory therapy for ocular inflammatory disease: a basic manual and review of the literature. Ocul Immunol Inflamm 2005; 13:335-51.
12. Durra K, Zakka FR, Ahmed M, Memon M, Siddique SS, Foster CS. Systemic Therapy With Conventional and Novel Immunosuppressant Agents for Ocular Inflammatory Disease. Surv Ophthalmol 2011; 56:474-510.
13. Kruh J, Foster CS. Corticosteroid-sparing agents: conventional systemic immunosuppressants. Dev Ophthalmol 2012; 51:29-46.
14. Carson T, Nussenblatt RB, Sen HN. Emerging drugs for uveitis. Expert Opin Emerg Drugs 2011; 16:309-22.
15. Foster BS, Kothari S, Anesi SD, Vitale AT, Chu D, Metzinger JL, Cero’s O. The Ocular Immunology and Uveitis Foundation preferred practice patterns of uveitis management. Surv Ophthalmol 2016; 61:1-17.
16. Rossetto JD, Nascimento H, Fernandes DD, Belfort Jr R, Muccioli C. Treatment of cystoid macular edema secondary to chronic non-infectious intermediate uveitis with an intravitreal dexamethasone implant. Arq Bras Oftalmol 2015; 78:190-3.
17. Multicenter Uveitis Steroid Treatment (MUST) Trial Research Group., Kempen JH, Altaweel MM, Drye LT, Holbrook JT, Jabs DA, Sugar EA, Thorne JE. Benefits of Systemic Anti-inflammatory Therapy versus Fluocinolone Acetonide Intraocular Implant for Intermediate Uveitis, Posterior Uveitis,
and Panuveitis: Fifty-four-Month Results of the Multicenter Uveitis Steroid Treatment (MUST) Trial and Follow-up Study. *Ophthalmology* 2015; 122:1967-75.

18. Kaplan HJ. Intermediate uveitis (pars planitis, chronic cyclitis)- a four-step approach to treatment. Uveitis Update. Amsterdam. *Excerpta Medica* 1984; 169-72.

19. Ganesh SK, Babu K, Biswas J. Phacoemulsification with intraocular lens implantation in cases of pars planitis. *J Cataract Refract Surg* 2004; 30:2072-6.

20. Smith RE, Godfrey WA, Kimura SJ. Chronic cyclitis. I. Course and visual prognosis. *Trans Am Acad Ophthal Mol Otolaryngol* 1973; 77:OP760-8

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