



# MASQUERADE SYNDROME



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## MASQUERADE SYNDROME

1. Name the common syndromes that masquerade as anterior and posterior uveitis and their diagnostic tests  
5+5 J2010
2. Masquerade Syndrome. (2005)

### Introduction

- Masquerade syndromes are classically defined as entities which emulate inflammatory conditions but which are in fact due to a neoplastic process.
- It is the term is used for any malignant process that simulates benign disease.
- Malignant intraocular processes that present as chronic uveitis are termed as ‘masqueraders’
- Neoplastic masquerade syndromes may account for just 2%-5% of all patients seen in tertiary uveitis referral clinics.

### Masquerading conditions

| Malignant Disorders   | Nonmalignant Disorders   |
|---|--|
| <b>A. Lymphoid malignancies</b> <ol style="list-style-type: none"> <li>1. Primary Intraocular lymphomas (PIOL)</li> <li>2. Systemic lymphomas metastatic to eye non-Hodgkin’s/ Hodgkin’s lymphoma</li> <li>3. Secondary to Uveal Lymphoid Proliferations</li> <li>4. Leukemia</li> </ol> <b>B. Non-Lymphoid malignancies</b> <ol style="list-style-type: none"> <li>1. Uveal melanoma</li> <li>2. Childhood malignancies <ul style="list-style-type: none"> <li>• Retinoblastoma</li> <li>• Leukemia</li> <li>• Juvenile xanthogranuloma</li> </ul> </li> <li>3. Carcinoma metastatic to eye <ul style="list-style-type: none"> <li>• Lung</li> <li>• Renal</li> <li>• Breast</li> </ul> </li> <li>4. Bilateral Diffuse Uveal Melanocytic Proliferation</li> <li>5. Paraneoplastic syndromes</li> </ol> | <ol style="list-style-type: none"> <li>1. Retinitis pigmentosa</li> <li>2. Ocular ischemic syndrome</li> <li>3. Retinal detachment</li> <li>4. Intraocular foreign body</li> <li>5. Pigment dispersion syndrome</li> <li>6. Other syndromes <ol style="list-style-type: none"> <li>a) Infectious uveitis <ul style="list-style-type: none"> <li>• Whipples disease</li> <li>• Nocardia uveitis</li> </ul> </li> <li>b) Fungal endophthalmitis <ul style="list-style-type: none"> <li>• Candida</li> <li>• Aspergillus</li> <li>• Coccidioides immitis</li> </ul> </li> </ol> </li> <li>7. Myopic degenerations</li> <li>8. Post vaccine</li> <li>9. Topical PG</li> <li>10. Rifabutin</li> </ol> |

### Malignant disorders

#### Lymphoid malignancies

#### 1. Primary Intraocular lymphomas (PIOL) and Primary CNS lymphomas(PCNSL)

##### a. Primary Central Nervous System Lymphoma

1. Nearly all (98%) primary central nervous system lymphomas (PCNSLs) are non-Hodgkin B lymphocyte lymphomas.
2. Approximately 2% are T-lymphocyte lymphomas.
3. Median age of onset of PCNSL is in the sixth to seventh decade of life, with a peak incidence between the ages of 75 & 84
4. PCNSL also occurs rarely in adolescents and children.
5. The incidence of PCNSL appears to be increasing and is projected to occur in 1 of every 100,000 immunocompetent patients.
6. The PCNSL comprises approximately 5% of all primary CNS malignancies and 1% to 2% of all malignant lymphomas.

##### b. Primary Intraocular Lymphoma (PIOL)

1. Primary intraocular lymphoma (PIOL) is a high-grade malignant non-Hodgkin’s lymphoma (NHL), arising in the retina with involvement of the vitreous and, occasionally, optic nerve with or without concomitant CNS involvement.
2. PIOL is a subtype of Primary Central Nervous System Lymphomas (PCNSL).
3. PIOL can manifest along with cerebral disease but can also precede this or occur during the course of PCNSL.
4. The predominant histological appearance is of a diffuse, large B-cell lymphoma.
5. Only 2% are T-lymphocyte lymphomas
6. PIOL may be either unilateral or bilateral on initial presentation. Majority of patients will develop a bilateral manifestation.

##### c. PCNS & PIOL

1. Intracranial lymphoma develops in 60-85% of patients with initial ocular disease, usually within the 1<sup>st</sup> 2 years of diagnosis.
2. In turn, approximately 15–25% of patients with PCNSL will develop ocular disease (intraocular or vitreoretinal lymphoma)..

3. The site of origin of PCNSL is unknown since it is held that neither CNS nor eye contain lymphatic tissue.
4. It is postulated that lymphoma cells arise in a site external to CNS or eye but are able to grow unabated in these immunologically sequestered locations.
5. PIOL/ PCNSL is frequently associated with immunosuppression especially HIV infection.
6. 95% of HIV-positive patients with PIOL/PCNSL have evidence of antibodies to Epstein-Barr virus (EBV) compared to only 20% of immunocompetent patients.

### Clinical features

1. Sites of ocular involvement can include the vitreous, retina, subretinal pigment epithelium (sub-RPE), and any combination.
2. The most common presenting symptoms are decreased vision and floaters.

### Anterior segment

1. The frequency of anterior segment involvement reported in the literature varies.
2. Slit lamp findings include mild anterior inflammation with cells, flare and keratic precipitates.
3. Pseudohypopyon has been reported.
4. Iris or angle neovascularization with secondary glaucoma has been described.

### Posterior segment

1. Examination reveals a variable degree of vitritis.
2. Marked vitritis causes hazy media in many cases obscuring fundus details
3. Posterior segment involvement (retina) can appear as creamy yellow subretinal infiltrates with overlying RPE detachments
4. Discrete white lesions in the retina may mimic acute retinal necrosis, toxoplasmosis, “frosted branch” angiitis, or retinal arteriolar obstruction with coexisting multifocal chorioretinal scars and retinal vasculitis.
5. The lesions vary in thickness from approximately 1 mm to 2 mm.

### CNS

1. CNS signs may be present and vary in nature.
2. Involvement of the CNS by tumor cells causes non-specific symptoms and signs with the most frequent single symptom being “behavioral change”.
3. CNS lesions are most commonly found in the periventricular regions, and as a result the most common presenting features of PCNSL are personality alterations and changes in alertness.
4. Other features are raised intracranial pressure, hemiparesis, cerebellar signs, epileptic seizures and cranial nerve palsies.
5. Cerebrospinal fluid seeding of lymphoma cells occurs in 42% of patients with PCNSL

### Diagnostic dilemma

1. When occurring prior to CNS disease, PIOL frequently presents as bilateral idiopathic steroid-resistant chronic uveitis, possibly with accompanying vitritis.
2. Most patients are mistakenly diagnosed as a case of autoimmune uveitis and treated with anti-inflammatory medication.
3. This can improve the vitreous cellular infiltration, but the effect is not long lasting and the uveitis often becomes resistant to therapy.
4. High index of suspicion is required in such cases.

### Diagnostic testing

|                        |  |
|------------------------|--|
| <b>1. USG</b>          | It may indicate choroidal thickening, vitreous debris, elevated chorioretinal lesions, and serous RD   |
| <b>2. FA</b>           | <ol style="list-style-type: none"> <li>1. It may show hypofluorescent areas due to blockage from a sub-RPE tumor mass or from RPE clumping.</li> <li>2. Hyperfluorescent window defects may also be caused by RPE atrophy from resolved RPE infiltration.</li> <li>3. An unusual leopard-spot pattern of alternating hyperfluorescence and hypofluorescence may also be noted.</li> </ol>                                    |
| <b>3. MRI</b>          | <ol style="list-style-type: none"> <li>1. If the diagnosis of intraocular lymphoma is established 1<sup>st</sup>, an extensive search for CNS involvement done.</li> <li>2. MRI studies of the brain show isointense lesions on T1-weighted images and isointense to hyperintense lesions on T2-weighted images.</li> </ol>  |
| <b>4. CT</b>           | <ol style="list-style-type: none"> <li>1. CT without use of contrast shows multiple diffuse periventricular lesions.</li> <li>2. If intravenous contrast is used with CT, these periventricular lesions may be enhanced.</li> </ol>  |
| <b>5. CSF analysis</b> | <ol style="list-style-type: none"> <li>1. CSF analysis reveals lymphoma cells in one-third of patients.</li> <li>2. Lymphoma cells have been identified in the CSF of 25% of patients with known MRI lesions.</li> <li>3. CSF from lumbar puncture may lead to a diagnosis of PIOL and obviate the need for the higher morbidity procedure of vitreous biopsy.</li> </ol>  |
| <b>6. Vitreous Bx</b>  | <ol style="list-style-type: none"> <li>1. Tissue diagnosis is the definitive method for establishing the presence of PIOL.</li> <li>2. Vitreous sample is obtained by either aspiration or by vitrectomy.</li> <li>3. The presence of vitreous cells in cases of uveitis that do not respond to therapy necessitates a vitreous biopsy.</li> <li>4. Minimum 1 mL of undiluted vitreous sample should be obtained.</li> </ol> |



|                             |  |
|-----------------------------|--|
|                             | <ol style="list-style-type: none"><li>5. Vitreous aspirates in PIOL are mildly to moderately cellular, and comprise mature inflammatory cells such as macrophages, small lymphocytes with scattered large atypical lymphocytes.</li><li>6. 1/3<sup>rd</sup> of vitreous biopsies incur a false-negative result; 2<sup>nd</sup> biopsy of the vitreous should be performed if the clinical picture warrants.</li></ol>  |
| <b>7. Retinal Bx</b>        | An aspirate of sub-RPE material, or both, may be considered when previous vitreous bx results have been negative.  |
| <b>8. Chorio retinal Bx</b> | If diagnosis by vitreous aspiration or subretinal aspiration cannot be established, either internal or external chorioretinal biopsy techniques may be used to aid in the diagnosis of PCNSL because recognition of malignant lymphocytes in the vitreous can be difficult.  |
| <b>9. Cytokine analysis</b> | <ol style="list-style-type: none"><li>1. Portions of the specimen are typically prepared for both cytologic examination and cell surface marker determination by flow cytometry.</li><li>2. Interleukin-10 (IL-10) levels are elevated in the vitreous of patients with lymphoma.</li><li>3. In contrast, high levels of IL-6 are found in the vitreous of patients with inflammatory uveitis.</li><li>4. Thus, the ratio of IL-10 to IL-6 is often elevated in intraocular lymphoma and supports the diagnosis.</li></ol>   |
| <b>10. Histology</b>        | <ol style="list-style-type: none"><li>1. The immunohistology, immunophenotyping with flow cytometry and molecular genetic analysis support the diagnosis made on the biopsy material.</li><li>2. Cytologic specimens obtained from the vitreous or subretinal space following vitrectomy</li><li>3. Specimens show pleomorphic cells with scanty cytoplasm, hyperchromatic nuclei with multiple irregular nucleoli, prominent, sometimes multiple, nucleoli and an elevated nuclear-to-cytoplasm ratio.</li><li>4. The cytoplasmic rim is usually narrow or absent.</li><li>5. Monoclonality of cells (monoclonal B lymphocytes) is likely to be present in PCNSL &amp; PIOL.</li><li>6. This can be established through immunophenotyping by immunohistochemistry or flow cytometry to demonstrate the clonality of B lymphocytes by the presence of abnormal immunoglobulin <math>\kappa</math> or <math>\lambda</math> light chain predominance, specific B-lymphocyte markers (CD19, CD20, and CD22), and/or gene or oncogene translocations or gene rearrangements.</li><li>7. The neoplastic cells are usually positive for B cell antigens, such as CD79a or PAX-5.</li></ol> |
| <b>11. PCR</b>              | Abnormal lymphocytes may be isolated manually or by laser capture and polymerase chain reaction (PCR)-based assays performed to improve the diagnostic yield of paucicellular samples.   |

## Treatment

- Because of rarity of the disease, published treatment studies are all small, nonrandomized and frequently retrospective. Best treatment has not yet been established. Treatment regimens vary among experts.

### A. PIOL

1. If only 1 eye is affected and there is no CNS involvement, intravitreal methotrexate or rituximab may be considered, although long-term survival studies are not available.
2. This modality does work for some eyes, but given the high rate of eventual CNS involvement, caution is indicated.
3. If both eyes are involved, intraocular treatment alone is even more controversial.
4. **Radiotherapy**
  - Local irradiation with doses upto 45Gy has been used.
  - Radiation therapy when used alone leads to early CNS progression.
  - Radiotherapy-associated ocular complications have been reported in several series.
5. **Systemic Chemotherapy**
  - Intravenous high-dose Methotrexate and high-dose Ara-C have both been used alone or in combination with other chemotherapeutic agents with reasonable success.
6. **Local chemotherapy**
  - With intravitreal injection of methotrexate has been advocated at the dose of 400  $\mu$ g.
  - Intravitreal Methotrexate has been used to treat both isolated and recurrent ocular lymphoma.
  - Intravitreal Methotrexate, unfortunately, does not treat CNS disease.
7. Classical chemotherapy regimens that are effective against systemic lymphomas are invariably ineffective in PIOL.

### B. PCNSL

1. In patients with CNS involvement, systemic therapy is indicated.
2. High-dose methotrexate has been used; it may be delivered intravenously, with or without intrathecal administration, and alone or in combination with brain radiation therapy and other chemotherapeutic drugs.
3. Because of the neurotoxicity of radiation, many experts do not use whole-brain radiation, especially in elderly patients.
4. 1/2 of patients with ocular involvement eventually develop CNS involvement, prompting some specialists to use prophylactic treatment of the CNS even in cases of seemingly isolated ocular disease.



5. The current consensus on treating PIOL with concurrent CNS disease is systemic high-dose Methotrexate – based chemotherapy with radiotherapy to the globes.

### Prognosis

1. PIOL has an unfavorable prognosis. The prognosis for survival depends on whether there is CNS involvement.
2. Factors that negatively influence outcome include advanced age, worse neurologic functional classification level, multiple rather than single lesions present in the CNS, and deep nuclei/periventricular lesions rather than superficial cerebral and cerebellar hemispheric lesions.
3. Despite the availability of multiple treatment modalities and regimens, the long-term prognosis for patients with PCNSL remains poor; the median survival with supportive care alone is 2–3 months, and with surgery alone, median survival is in the range of 1–5 months. The longest median survival in various reports approaches 40 months with treatment.

## 2. Neoplastic Masquerade Syndromes Secondary to Systemic Lymphoma

### Introduction

1. Secondary intraocular lymphomas are systemic lymphomas that have metastasized to structures within the eye.
2. They tend to involve the uveal tract, in contrast to PIOL.
3. They are invariably of non-Hodgkin's type, with Hodgkin's lymphoma presenting intraocularly being exceptional.
4. Secondary intraocular lymphoma typically occurs in older patients, although it can occur in young children.

### Presentation

1. Most patients have a known history of systemic lymphoma although intraocular disease may be the initial presentation.
2. Though rare, systemic lymphomas can spread hematogenously to the choroid, the subretinal space, the vitreous, and the anterior chamber.
3. Involvement is usually bilateral.
4. These entities can present with a pseudohypopyon, vitritis, creamy subretinal infiltrates of variable size, number, and extent
5. There may be retinal vasculitis, necrotizing retinitis, and diffuse choroiditis or uveal masses.
6. All T-lymphocyte lymphomas can present in this fashion.

**Treatment** is not established in these cases and carried on lines of systemic disease.

## 3. Neoplastic Masquerade Syndromes Secondary to Uveal Lymphoid Proliferations

- The uveal tract may be a site for benign reactive uveal lymphoid hyperplasia that can mimic chronic uveitis.
- These can range from benign reactive uveal lymphoid hyperplasia to frank lymphomas.

### Clinical presentation

- Presenting symptoms may include vision loss that is gradual, painless, and unilateral or bilateral.

#### 1. Anterior segment

- Anterior uveitis with acute symptoms of pain, redness, and photophobia may also be present.
- Glaucoma and elevated intraocular pressure (IOP) are common.
- Angle structures may be infiltrated by lymphocytes, resulting in elevation of IOP.

#### 2. Posterior segment

- Early-stage disease shows multifocal creamy choroidal lesions that may mimic sarcoid uveitis or birdshot uveitis.
- Cystoid macular edema (CME) may be present.

#### 3. Adnexa

- Fleshy episcleral or conjunctival masses that may appear salmon-pink may be present.
- Unlike subconjunctival lymphomas, these masses are not mobile and are attached firmly to the sclera.

### Differential diagnosis

1. There may be overlap in presentation with posterior scleritis and uveal effusion syndrome.
2. sarcoid uveitis
3. birdshot uveitis

### Diagnosis

Biopsy specimens demonstrate mature lymphocytes and plasma cells, quite different from the appearance of specimens with PCNSL.

### Treatment

1. Therapy using corticosteroids, radiation, or both has been used with variable results.
2. Systemic and periocular corticosteroid therapy can lead to rapid regression of the lesions, as can external-beam radiation.



#### 4. Neoplastic Masquerade Syndromes Secondary to Leukemia

##### Anterior segment

- Leukemia may present with a hypopyon or hyphema, iris heterochromia, or a pseudohypopyon, which can be gray-yellow.

##### Posterior segment

1. Patients with leukemia may have **retinal** findings, including intraretinal hemorrhages, cotton-wool spots, white-centered hemorrhages, microaneurysms, and peripheral neovascularization.
2. In rare instances, leukemic cells may invade the **vitreous** cavity.
3. If the **choroid** is involved, exudative retinal detachment may be present and is angiographically similar to Vogt-Koyanagi-Harada (VKH) syndrome.

**Diagnosis-** The presence of malignant leukemic cells may be confirmed by vitrectomy or aspiration of anterior chamber pseudohypopyon.

##### Non- lymphoid malignancies

###### 1. Uveal melanoma

**Presentation-** Approximately 5% of patients with uveal melanoma present with signs of ocular inflammation, including episcleritis, anterior or posterior uveitis, endophthalmitis, or panophthalmitis or panuveitis.

##### Diagnosis

1. Most tumors that present in this fashion are epithelioid-cell or mixed-cell choroidal melanomas.
2. Ultrasonography is useful in diagnosing atypical cases because of the characteristically low internal reflectivity of these lesions.
3. Other imaging modalities such as CT, MRI and CT/PET have been used for diagnostic purposes in uveal melanoma.

##### Treatment

1. Treatment is for the primary tumor once diagnosed.
2. Various treatment modalities include brachytherapy, proton beam radiotherapy, transpupillary thermotherapy, trans-scleral local resection and enucleation.

###### 2. Retinoblastoma

##### Introduction

1. Approximately 1%–3% of retinoblastomas may present with the appearance of inflammation, caused primarily by the relatively rare variant of diffuse infiltrating retinoblastoma.
2. Patients are usually between age 4 and 6 years at presentation.

##### Presentation

1. Patients may have conjunctival chemosis, pseudohypopyon, and vitritis.
2. The pseudohypopyon typically shifts with changes in head position and is usually white as opposed to the yellowish color of inflammatory hypopyon.

##### Diagnosis

1. These cases can be diagnostically confusing because of the limited visibility of the fundus and the lack of calcification on radiography or ultrasonography.
2. Diagnostic aspiration of the aqueous humor may be required, but there is a significant risk of tumor spread through the needle tract.

###### 3. Juvenile xanthogranuloma

##### Presentation

1. Juvenile xanthogranuloma is the result of a histiocytic process affecting mainly the skin and eyes rarely viscera.
2. Patients usually present before the age of 1 year with characteristic reddish-yellow skin lesions.
3. Ocular lesions can involve the iris and result in a spontaneous hyphema.
4. Other ocular structures may rarely be involved.
5. If the skin of the eyelids is involved, the globe is usually spared.

##### Diagnosis

1. Iris biopsy samples show fewer foamy histiocytes and fewer Touton giant cells than do skin biopsy specimens.
2. Histologic investigation of skin shows large histiocytes with foamy cytoplasm and Touton giant cells.

##### Treatment

- Intraocular lesions may respond to topical, periocular, or systemic corticosteroid therapy.
- Resistant cases may require local resection, radiation, or immunomodulatory therapy.



#### 4. Metastatic Tumors

##### Introduction

1. Most intraocular malignancies in adults are metastatic tumors but these rarely mimic intraocular inflammation.
2. Most patients with metastatic ocular lesions are systemically ill with advanced disease.
3. However, approximately one-third of patients have no history of primary cancer at the time of ocular diagnosis.
4. Lung metastases are most common in men and breast metastases are the most common in women.

##### Presentation

1. The uveal tract is most commonly affected, but retinal metastases are extremely rare.
2. The most common primary cancers include lung and breast.
3. Patients with renal and lung carcinomas have the highest frequency of presenting with eye symptoms as the initial complaint.

##### Anterior segment

1. Anterior uveal metastasis may present with cells in the aqueous humor, iris nodules, rubeosis iridis, and elevated IOP
2. Anterior chamber paracentesis may help confirm the diagnosis.

##### Posterior segment

###### 1. Retina

- Retinal metastases are extremely rare.
- Primary cancers metastatic to the retina include cutaneous melanoma (the most common), followed by lung, gastrointestinal, and breast cancer.
- Metastatic melanoma often produces brown spherules in the retina, whereas other metastatic cancers appear white to yellow and may result in perivascular sheathing, simulating a retinal vasculitis or necrotizing retinitis.

###### 2. Choroid

- Choroidal metastasis may be marked by vitritis, serous retinal detachment, and, occasionally, CME.
- These lesions are often bilateral and multifocal.
- Usually, intraocular metastases are solid, posterior, amelanotic, choroidal tumors that can simulate a benign intraocular inflammation.

#### 5. Bilateral Diffuse Uveal Melanocytic Proliferation

- Bilateral diffuse uveal melanocytic tumors have been associated with systemic malignancy.

##### Presentation

- Such tumors can be accompanied by rapid vision loss, cataracts, multiple pigmented and non-pigmented placoid iris and choroidal nodules, and serous retinal detachments.

**DD-**This condition can mimic VKH syndrome.

##### Diagnosis

1. Histologic investigation shows diffuse infiltration of the uveal tract by benign nevoid or spindle-shaped cells.
2. Necrosis within the tumors may be present, and scleral involvement is common.
3. The cause of this entity is unknown.

**Treatment** should be directed at finding and treating the underlying primary lesion.

#### 6. Paraneoplastic syndromes

- Paraneoplastic syndromes may cause intraocular inflammation with an autoimmune retinopathy and as a uveitis

##### Presentation

1. Cancer-associated retinopathy (CAR) is a paraneoplastic syndrome that was initially described in three patients with oat cell carcinoma of the lung but has now been reported with a number of malignant conditions.
2. Patients usually have loss of vision, and although the fundus can appear normal early in the course of the disease, vascular sheathing, disturbances of the RPE, and optic disc pallor may ensue.

##### Diagnosis

1. Histologic studies show destruction of the photoreceptors.
2. Retinal autoantibodies have been identified in patients with CAR suggesting the retinal destruction may be immune mediated.

**Treatment** -Patients respond favorably to corticosteroid therapy

#### Non-neoplastic Masquerade Syndromes

##### 1. Retinitis Pigmentosa

##### Presentation

- Patients with retinitis pigmentosa (RP) often have variable numbers of vitreous and anterior chamber cells, posterior subcapsular cataract, and can develop CME.



## Diagnosis

- Features of RP that differentiate it from uveitis include nyctalopia, positive family history, and on fundus examination, waxy disc pallor, attenuation of arterioles, and a bone-spicule pattern of pigmentary changes in the midperiphery.
- Electroretinographic responses of patients with RP often appear severely depressed or extinguished, even early in the disease.
- However, these findings can be found in late posterior uveitis, making differentiation between the entities very difficult in some cases

## 2. Ocular Ischemic Syndrome

- Ocular ischemic syndrome results from hypoperfusion of the entire eye and sometimes the orbit, usually because of carotid artery obstruction.
- Patients with ocular ischemic syndrome are typically men aged 65 years or older.

### Presentation

- Patients present with decreased vision and mild ocular pain.

### Anterior segment

1. Corneal edema, anterior chamber cells, and moderate flare, the latter often greater than and out of proportion to no of cells.
2. Anterior segment neovascularization may be present.
3. IOP may be low from decreased aqueous production due to ischemia or high due to neovascular glaucoma.
4. A cataract may be more prominent on the involved side.

### Posterior segment

1. The vitreous is usually clear.
2. Dilated fundus examination may show mild disc edema associated with dilated tortuous retinal venules, narrowed arterioles, and medium to large intraretinal scattered blot hemorrhages in the midperiphery and far periphery of the retina.
3. Neovascularization may be present on the disc or elsewhere in the retina.

### Diagnosis

1. Fluorescein angiography shows delayed arteriolar filling, diffuse leakage in the posterior pole as well as from the optic disc, and signs of capillary nonperfusion.
2. Retinal vascular staining may be present in the absence of any physical vascular sheathing on examination.
3. Diagnostic studies include carotid Doppler ultrasonography; ipsilateral carotid stenosis greater than 90% supports the diagnosis of ocular ischemic syndrome.

### Treatment

1. Definitive treatment involves carotid endarterectomy.
2. Local treatment consists of topical corticosteroids and cycloplegics, as well as panretinal photocoagulation, especially if rubeosis or retinal neovascularization is present.
3. Intraocular injection of vascular endothelial growth factor (VEGF) inhibitors may also be considered.

### Prognosis

1. The 5-year mortality rate of patients with ocular ischemic syndrome is 40%, primarily from cardiovascular disease and myocardial infarction.
2. The visual prognosis is guarded, and many patients improve transiently with treatment but eventually worsen.

## 3. Chronic Peripheral Rhegmatogenous Retinal Detachment

1. Chronic peripheral rhegmatogenous retinal detachment can be associated with anterior segment cell and flare and vitreous inflammatory and pigment cells.
2. Patients often have good vision that can sometimes deteriorate because of CME.
3. Careful dilated fundus examination with scleral depression is of paramount importance in establishing the diagnosis.
4. Findings may include peripheral pigment demarcation lines, subretinal fluid, retinal breaks, subretinal fibrosis, and peripheral retinal cysts.
5. Photoreceptor outer segments liberated from the subretinal space may be present in the anterior chamber, simulating inflammatory cells.
6. In such situations, IOP may be elevated, as these photoreceptor outer segments are phagocytosed by the endothelial cells in the trabecular meshwork, resulting in **secondary open-angle glaucoma**.
7. This condition is called **Schwartz syndrome**.

## 4. Intraocular Foreign Bodies

1. An intraocular foreign body may elicit an anterior or a posterior uveitis.





2. Retained intraocular foreign bodies may produce chronic intraocular inflammation as the result of mechanical, chemical, toxic, or inflammatory irritation of uveal tissues (particularly the ciliary body).
3. Patients with unioocular uveitis should be questioned about possible antecedent trauma
4. A high index of suspicion followed by a careful history; clinical examination; and ancillary testing, including gonioscopy, ultrasonography, and CT of the eye and orbits, are essential.
5. If this condition is suspected and recognized quickly, identification and removal of the foreign body often results in a cure.
6. If the diagnosis is delayed, ocular complications such as proliferative vitreoretinopathy and endophthalmitis result in a poorer visual prognosis.

#### 5. Pigment Dispersion Syndrome

- Pigment dispersion syndrome is characterized by pigment granules that have been released from the iris, ciliary body, or both and are floating in the anterior chamber; these granules may be confused with the cells of anterior uveitis

#### 6. Other Syndromes

1. Certain infectious uveitic entities may also be mistaken for immunologic uveitis.
  2. Thus, non-neoplastic masquerade syndromes can also include bacterial uveitis caused by infection with *Nocardia* species or *Tropheryma whippelii* (Whipple disease)
  3. Fungal endophthalmitis due to infection with *Candida* species, *Aspergillus* species, or *Coccidioides immitis*
7. **Myopic degeneration** can produce cream-colored atrophic lesions that may be confused with a focal choroiditis.
  8. Uveitis may occur after **vaccination**
  9. Topical **prostaglandin** analogues can lead to inflammatory response.
  10. Drugs like **Rifabutin** are known to cause ocular inflammatory response with hypopyon uveitis.