

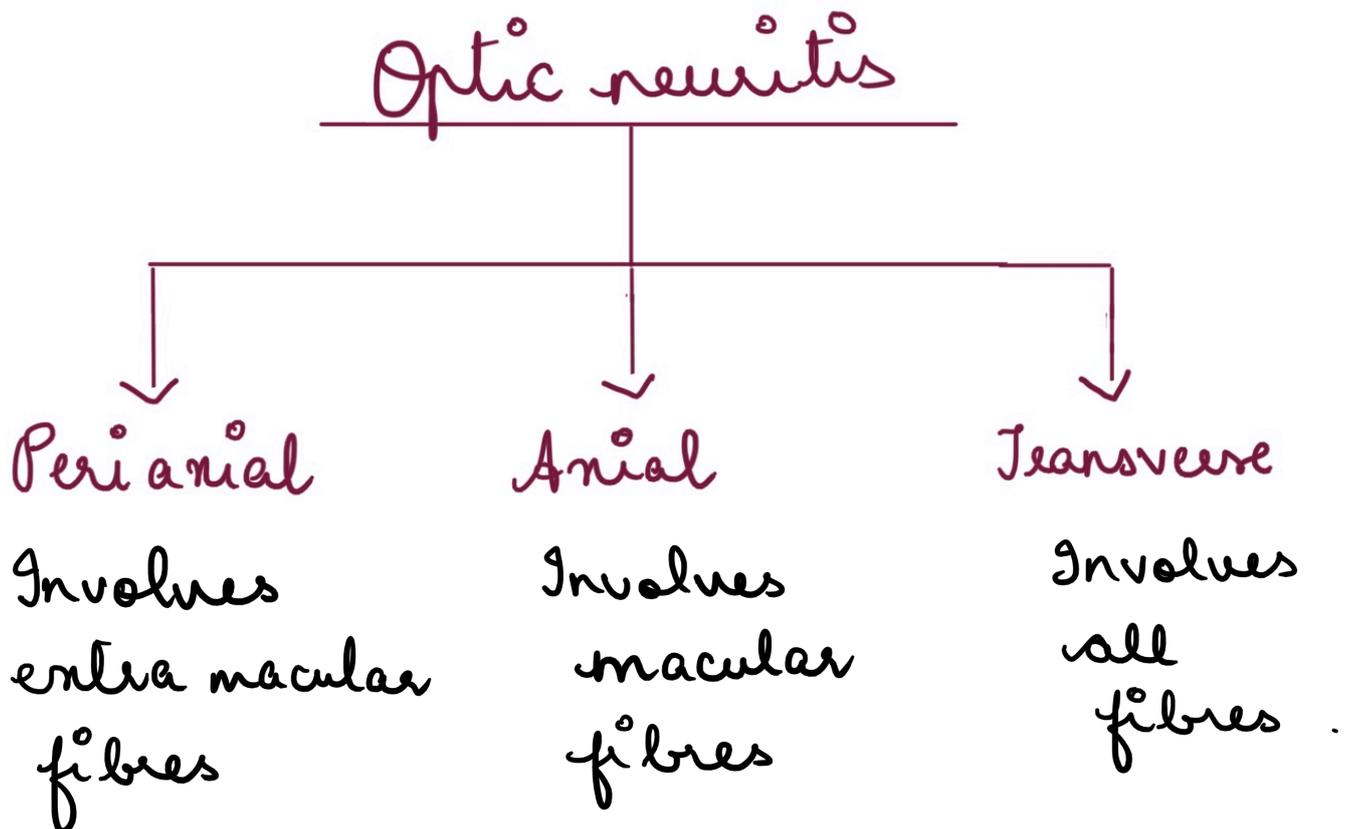
# Optic Neuritis



**Dr. Harinikrishna**  
Aravind eye hospital,  
Madurai

Optic neuritis is defined as inflammation of optic nerve associated with decrease in vision or visual fields

## Topographic classification :-

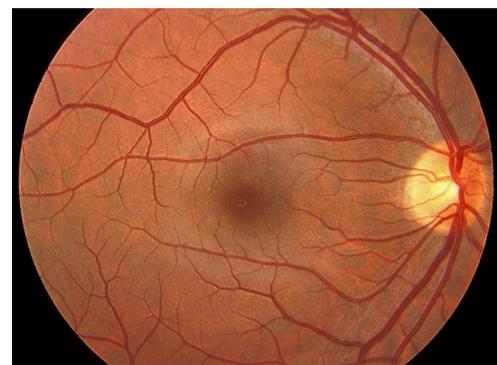


# Ophthalmoscopic classification :-

## Optic neuritis

### Retrobulbar

- The optic nerve head is normal



### Papillitis

- hyperemia and edema of optic disc

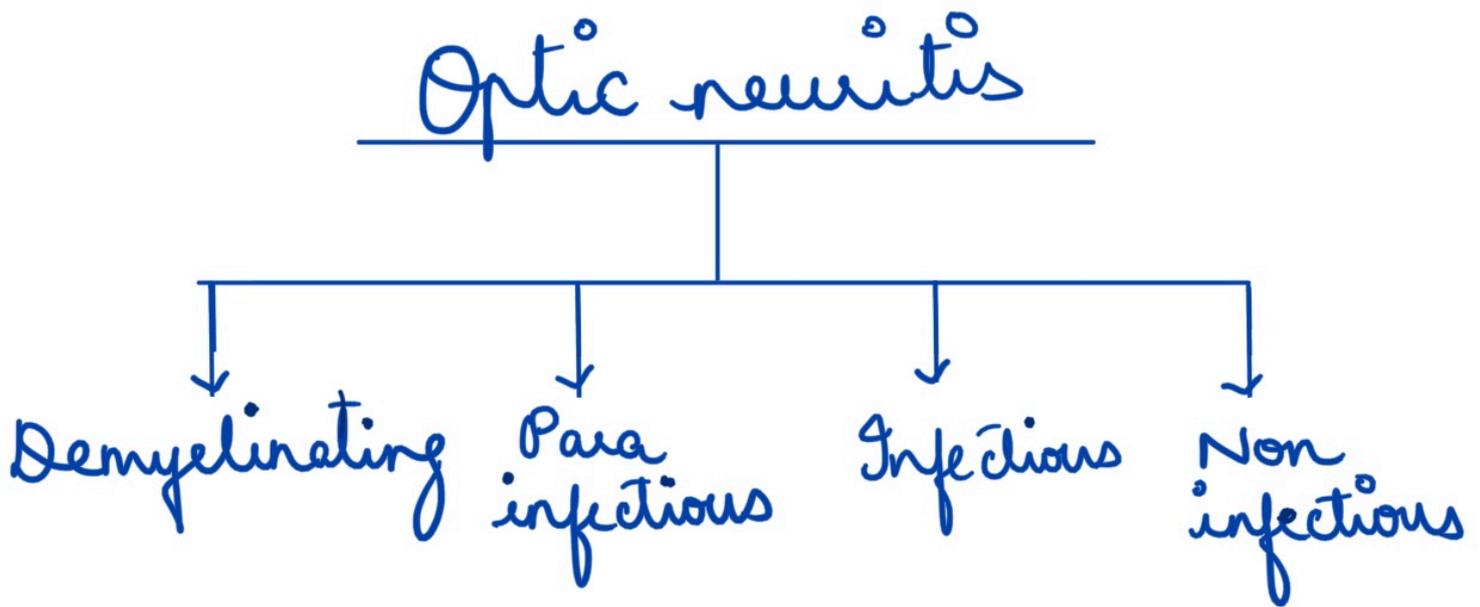


### Neuroretinitis

- papillitis  
• inflammation of retinal nerve fibre layer.



# Aetiological classification :-



## Demyelinating optic neuritis :

- most common cause of optic neuritis .
- Multiple sclerosis is the most common
- Devic's disease - Neuromyelitis optica
- B/L optic neuritis with transverse myelitis

- **Schilder's disease** - B/L optic neuritis + generalized demyelination. Death within 1-2 years of onset.

## Multiple sclerosis

- **Remitting, idiopathic, demyelinating disease of white matter.**
- **Presents in 3rd-4th decade**
- Can be relapsing/remitting episodes (or) can be a progressive disease.

# Signs and symptoms :-

## Central:

- Fatigue
- Cognitive impairment
- Depression
- Anxiety
- Unstable mood

## Visual:

- Nystagmus
- Optic neuritis
- Diplopia

## Speech:

- Dysarthria

## Throat:

- Dysphagia

## Musculoskeletal:

- Weakness
- Spasms
- Ataxia

## Sensation:

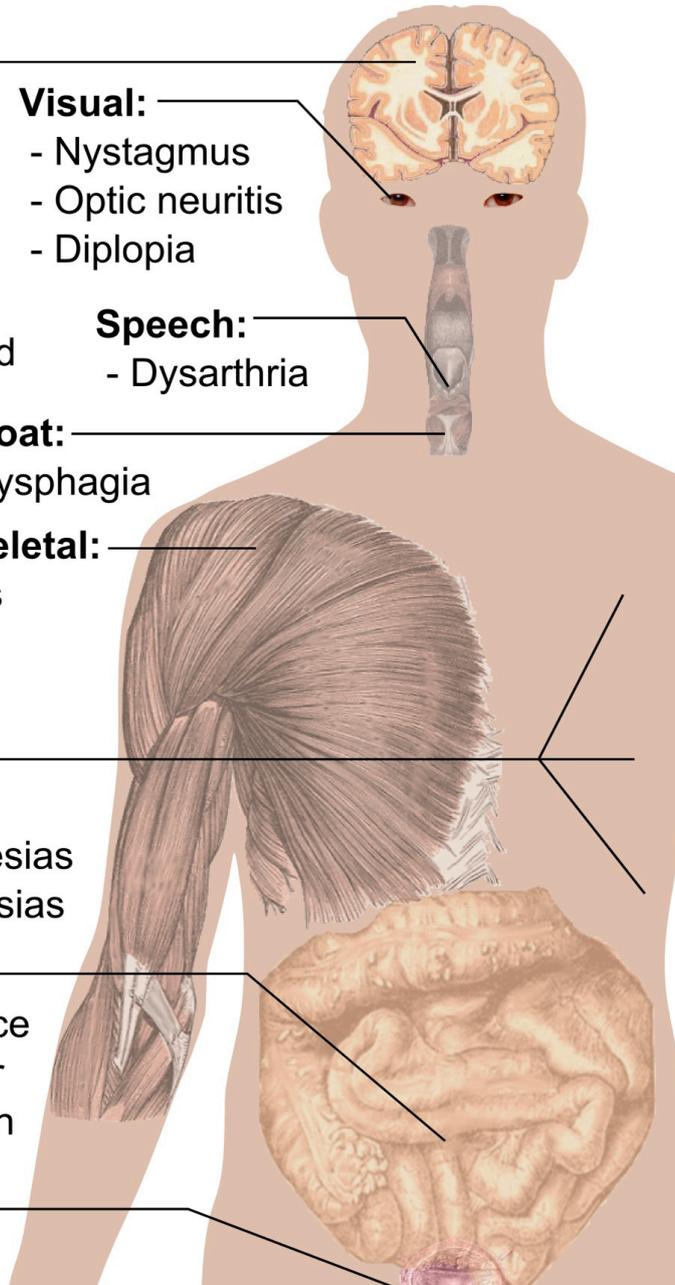
- Pain
- Hypoesthesias
- Paraesthesias

## Bowel:

- Incontinence
- Diarrhea or constipation

## Urinary:

- Incontinence



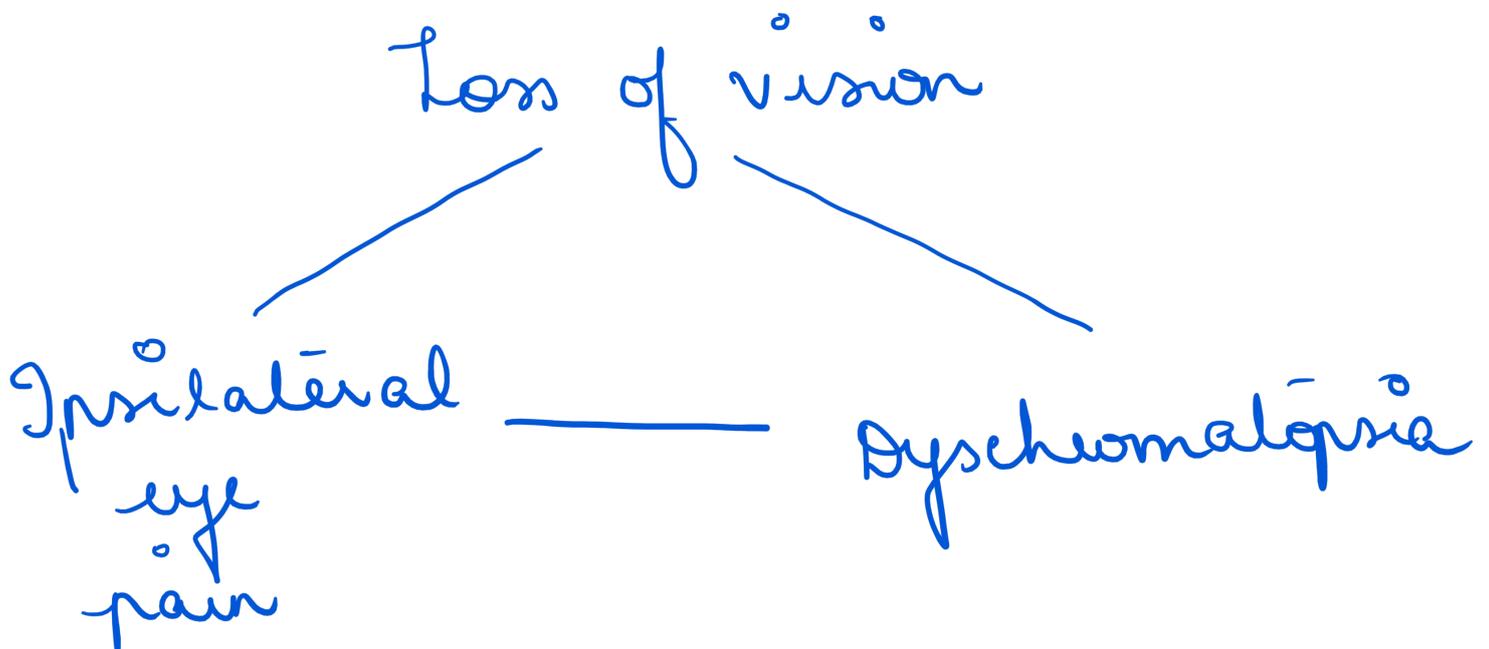
## Thermite sign :-

Electrical sensation on flexion of neck due to hyperexcitability of nerves

## Mitthoff phenomenon :-

Worsening of symptoms during increase in body temperature. (Because heat decreases nerve conduction)

## optic neuritis



- Visual acuity varies from 6/9 to no perception of light

- Pain on ocular movements.

**Whitnall hypothesis** - Traction of origin of medial & superior recti on optic nerve sheath at the orbital apex

- **Impaired color vision** is always present.

- **Movement phosphenes** - flashes of light due to spontaneous discharge from demyelinated nerve fibres when subjected to mechanical stress.

- **Sound induced phosphenes**.

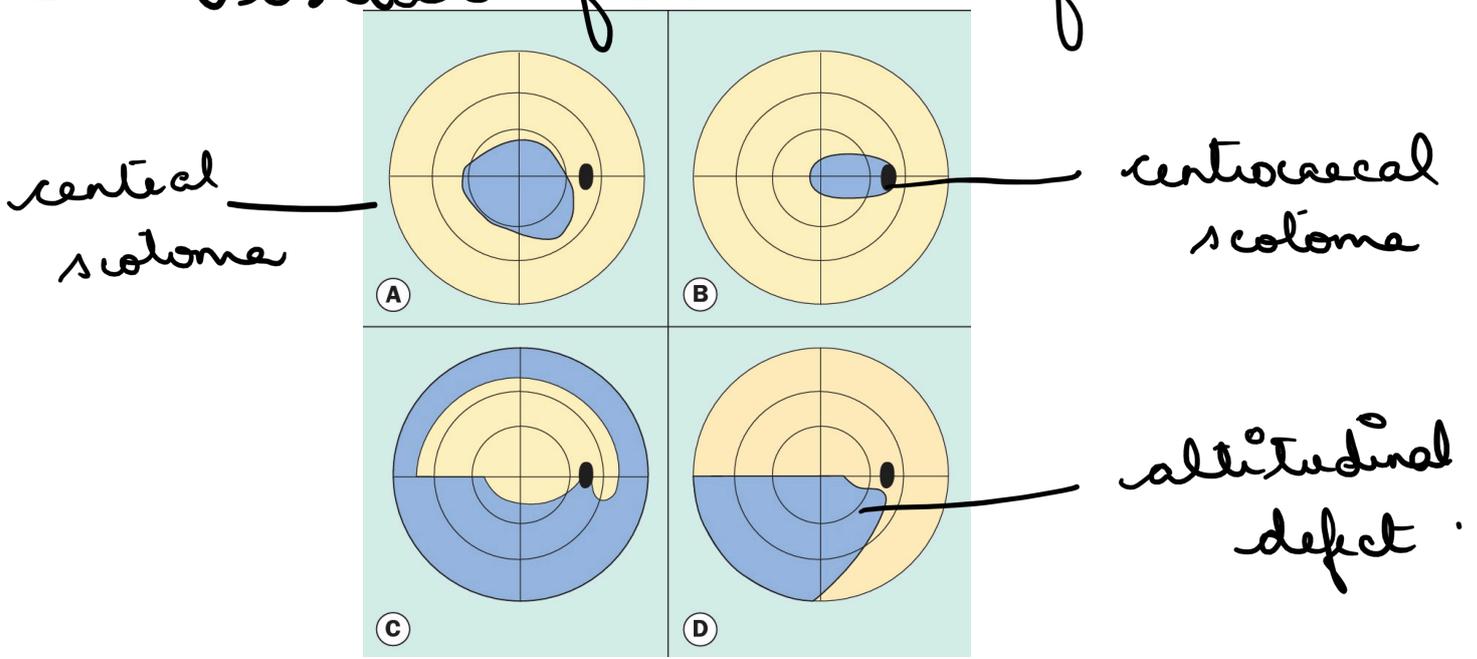
- Visual field defects

# mc - depression of sensitivity in the central 30°

Acuate defects, central scotomas can occur.

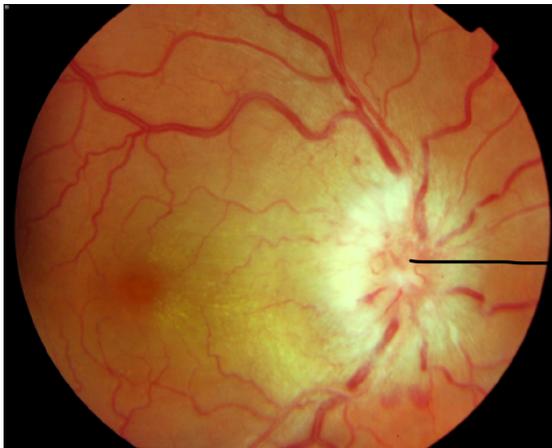
## Signs

- ↓ visual acuity
- Defective color vision
- RAPD
- Decreased contrast sensitivity
- visual field defects

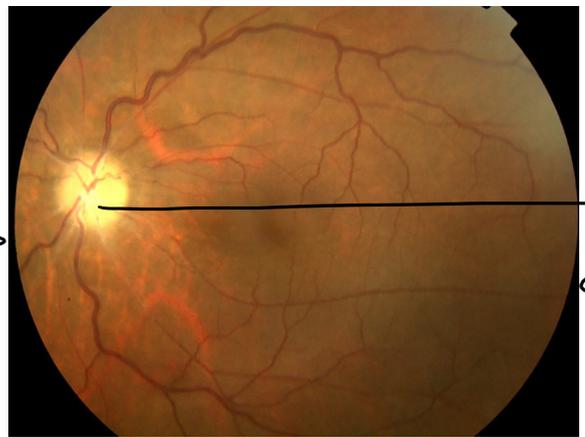


## Optic disc findings :-

- hyperemic, edematous
- peripapillary hemorrhages.
- Dirty white pallor sets in after 3-6 weeks.



papillitis

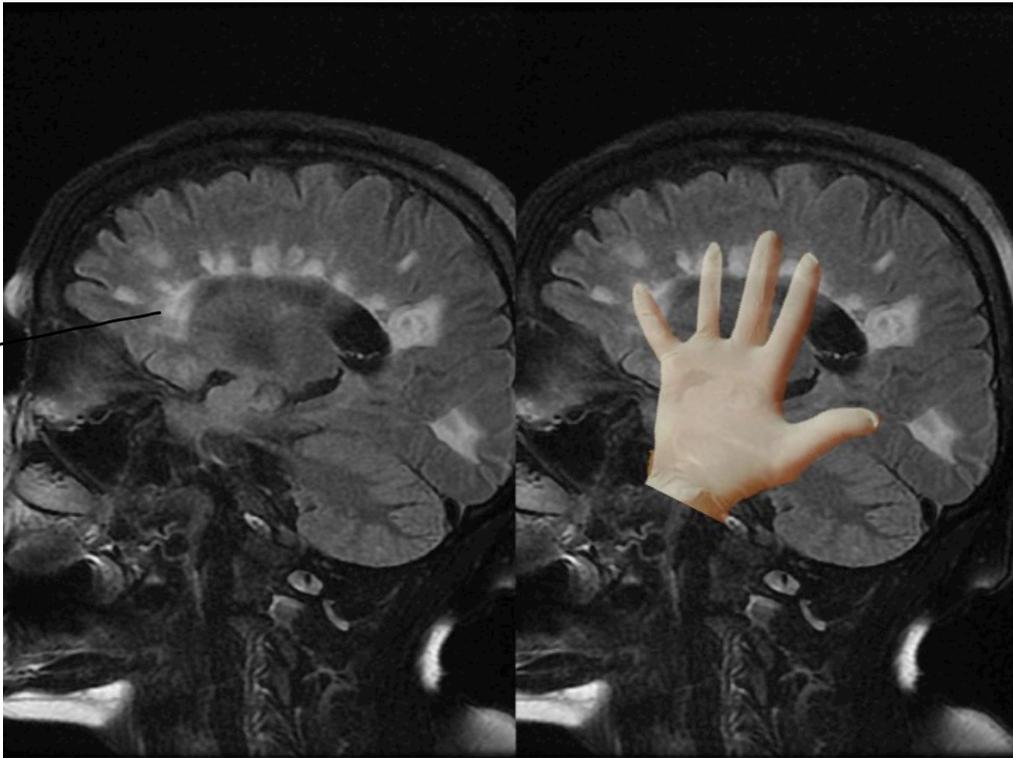


optic atrophy

## Investigations

→ Neuro imaging - (MRI) shows periventricular and corpus

callosum plaques, their axes  
perpendicular to the ventricular  
margins - DAWSONS FINGERS.



Dawson's  
fingers

- Lumbar puncture shows
- leukocytosis
  - IgG level more than 15%  
of total protein
  - oligoclonal bands on

# protein electrophoresis .

→ VEP - Prolongation of P100 latency .

→ HFA - to document the visual field defects

→ Aquaporin-4 antibody testing .

## Treatment :-

• Intravenous methyl prednisolone

1 g daily x 3 days



oral prednisolone  
(1 mg/kg/day) for 11 days



tapered . .

- Interferon beta-1a (im)

Balances the pro and anti-inflammatory cytokines and decreases neuroinflammation.

- Immunomodulators - Glatiramer and teriflunomide have also been tried.

## OPTIC NEURITIS TREATMENT TRIAL (ONTT)

- Recommends treatment with IV methylprednisolone x 3 days
- Avoid prednisone orally until AFTER treatment with IV (10-14 days)
- Hastens visual recovery but not final visual outcome
- Prolongs time to development of MS
- Do not use oral steroids alone

## Prognosis :-

- Most of the patients (60-80%) regain visual acuity of 6/9.
- Colour vision, contrast sensitivity remain abnormal.
- Recurrences are very common.

## Differential diagnosis :-

- Optic nerve compression due to tumour
- ANION
- papilledema
- LHON
- Toxic amblyopia.

## Parainfectious optic neuritis

- Occurs **post viral infections** like mumps, measles, chicken pox, rubella.
- Occurs 1-3 weeks after the infection
- B/L papillitis is present.
- Spontaneous visual recovery occurs.

## Infectious optic neuritis

seen in

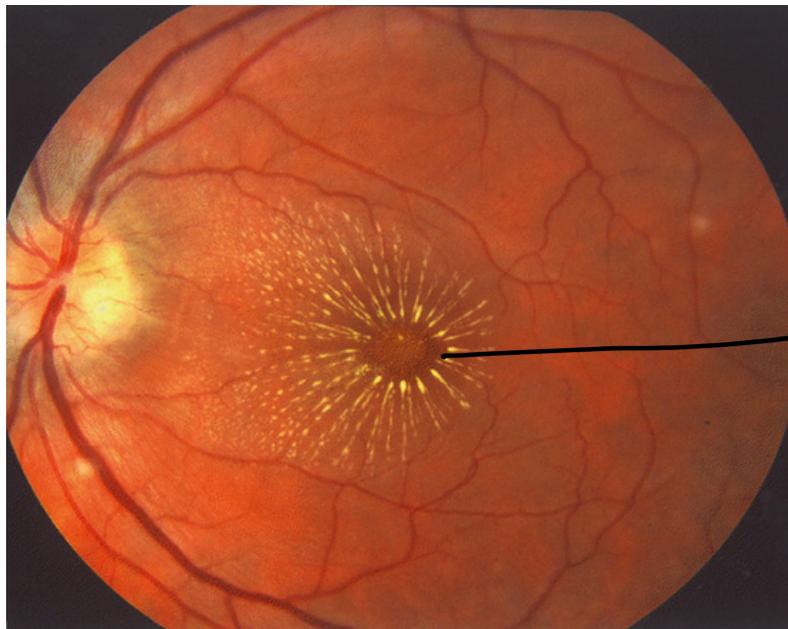
- sinusitis
- = **cat scratch disease**  
(*Bartonella henselae*)

= Syphilis

- Lyme disease (Borrelia burgdorferi)
- Cryptococcal meningitis

→ Usually present as **neuroretinitis**.

- papillitis & peripapillary hemorrhages.
- **Macular star** develops.



Macular star.

Treatment :-

Treatment of the underlying infection.

# Non-infectious optic neuritis

## Sarcoid :-

- Affects 1-3% of patients with neurosarcoid.
- **Lumpy appearance** of optic nerve head with vitritis.



- Treatment with steroids / methotrexate.

## Autoimmune :-

- Autoimmune retro bulbar neuritis can occur.
- Treatment is steroids or immunosuppressants.