



# **Diabetic retinopathy**

**(diagnostics, therapy, classification)**

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# Diabetes mellitus- definition

- **Diabetes mellitus** is disease with high glucose level (hyperglycaemia) due to absolute or relative lack of insulin produced in beta cells of Langerhans pancreatic islets

# Diabetes mellitus (late complications)

1. retinopathy
2. nephropathy
3. diabetic foot
4. neuropathy

# Diabetic retinopathy (definition)

- **Diabetic retinopathy is microangiopathy,**
- **HbA1c is very important**

# Classification of diabetic retinopathy

1. Nonproliferative DR (NPDR)

2. Proliferative DR (PDR)

3. Diabetic maculopathy (M)

(each level of diabetic retinopathy may or may not be accompanied by diabetic maculopathy)

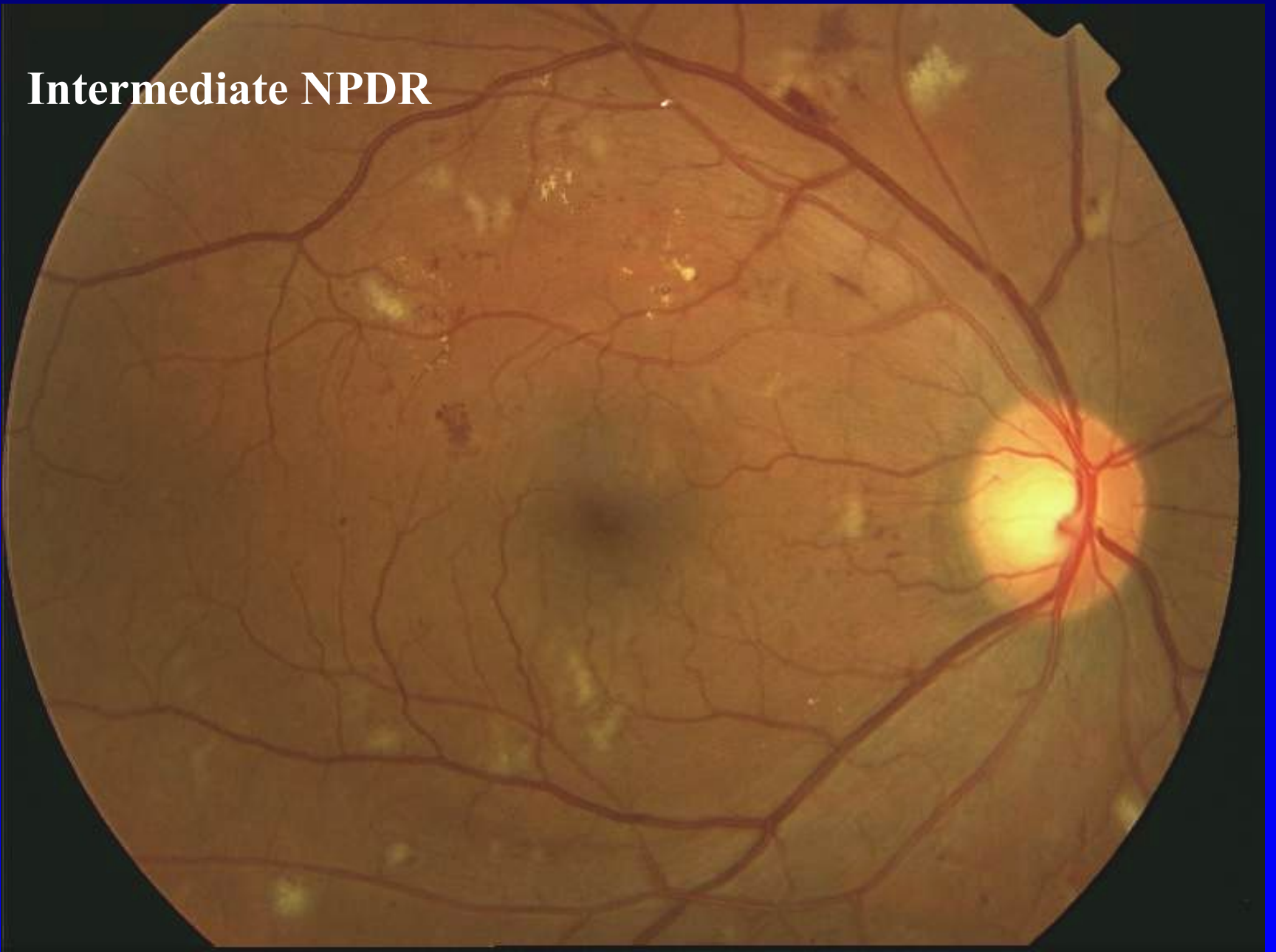
# Nonproliferative DR (NPDR)

- **Beginning**
- **Intermediate**
- **Advanced**

**Beginning NPDR**

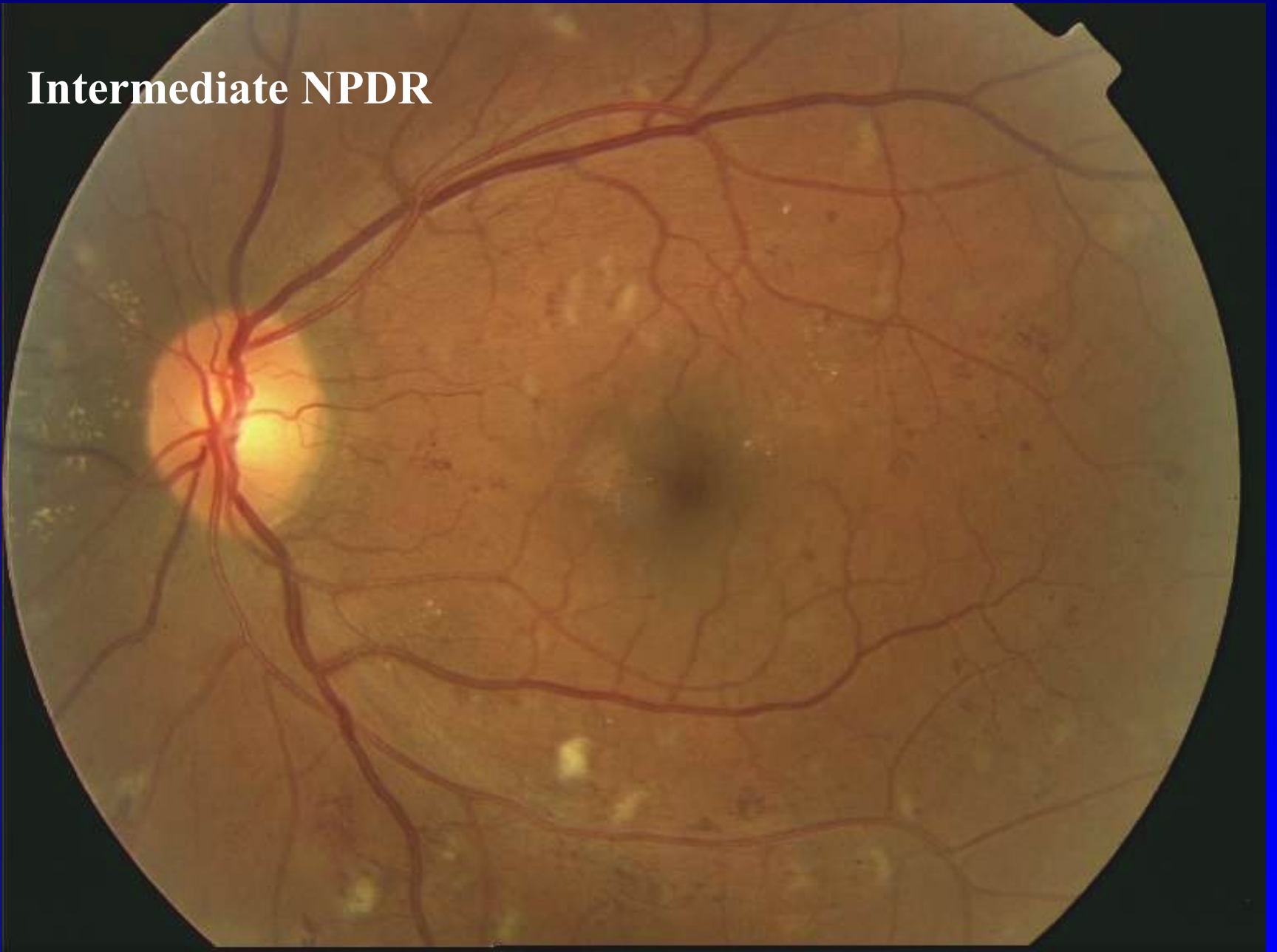


**Intermediate NPDR**

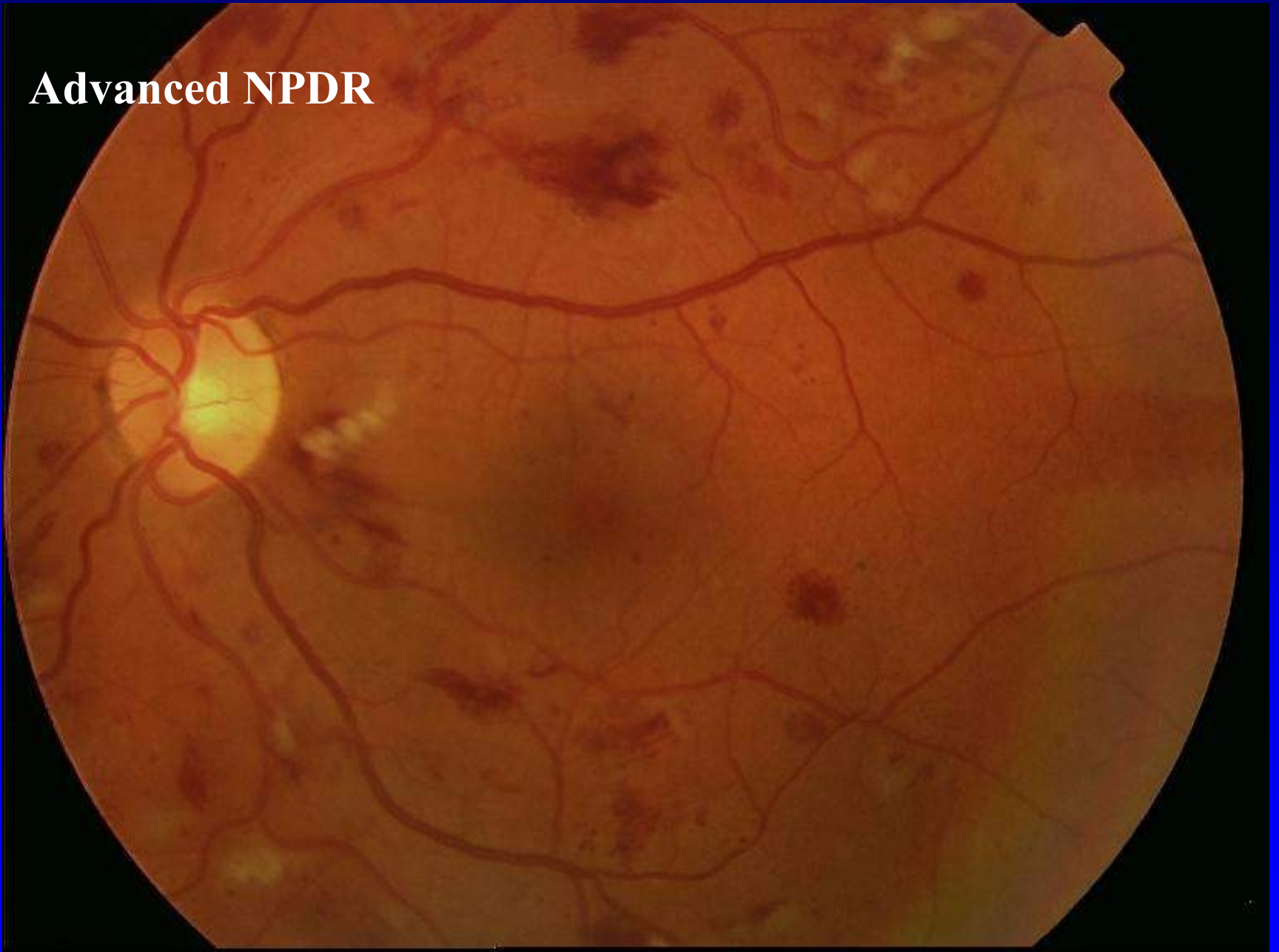




**Intermediate NPDR**



**Advanced NPDR**



# Proliferative DR (PDR)

- **Light**
- **Intermediate**
- **Fully advanced** VH- vitreous hemorrhage, PRH- preretinal hemorrhage, TRD- tractional retinal detachment at center of macula

**Light PDR**

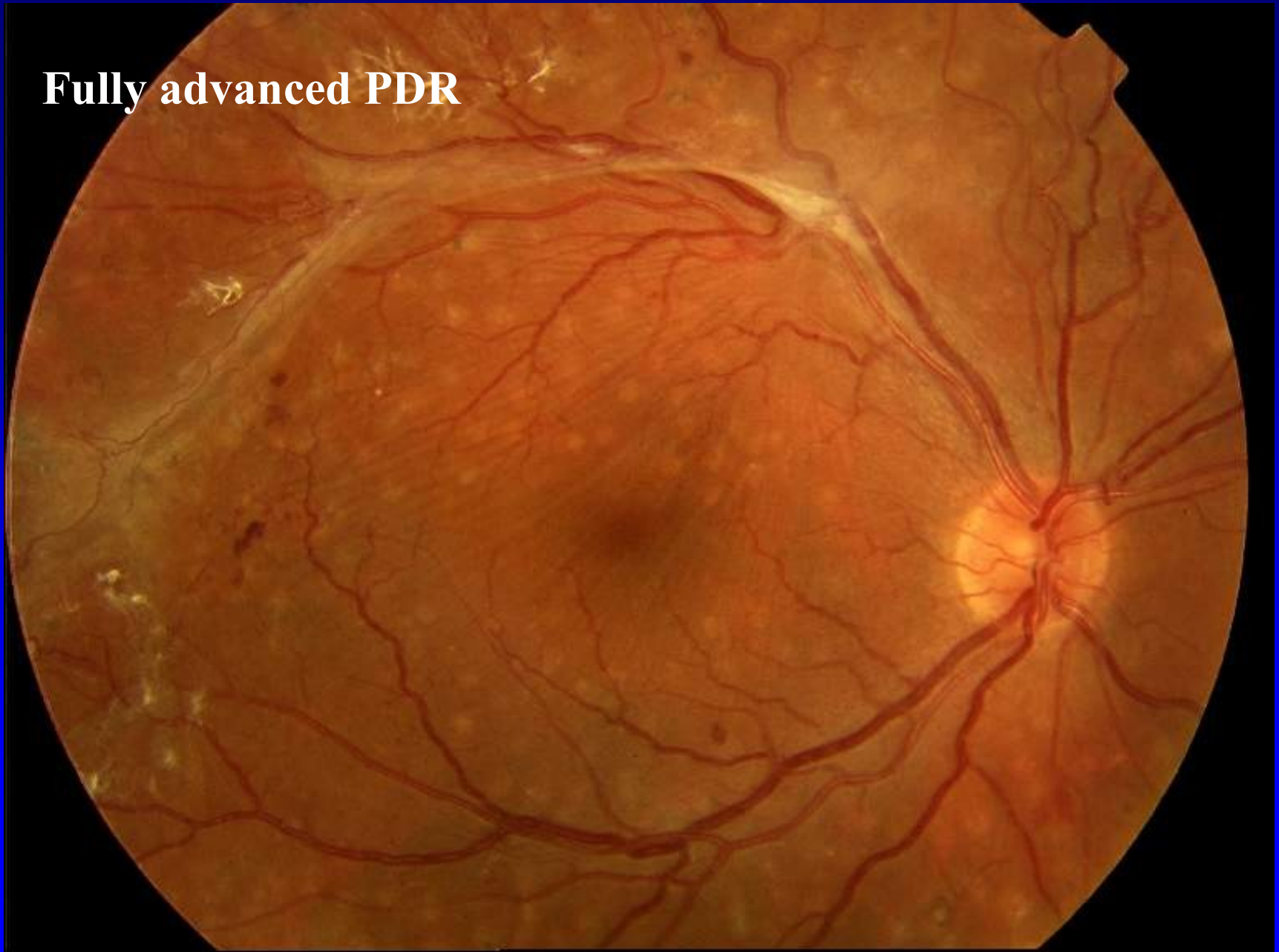


**Intermediate PDR**

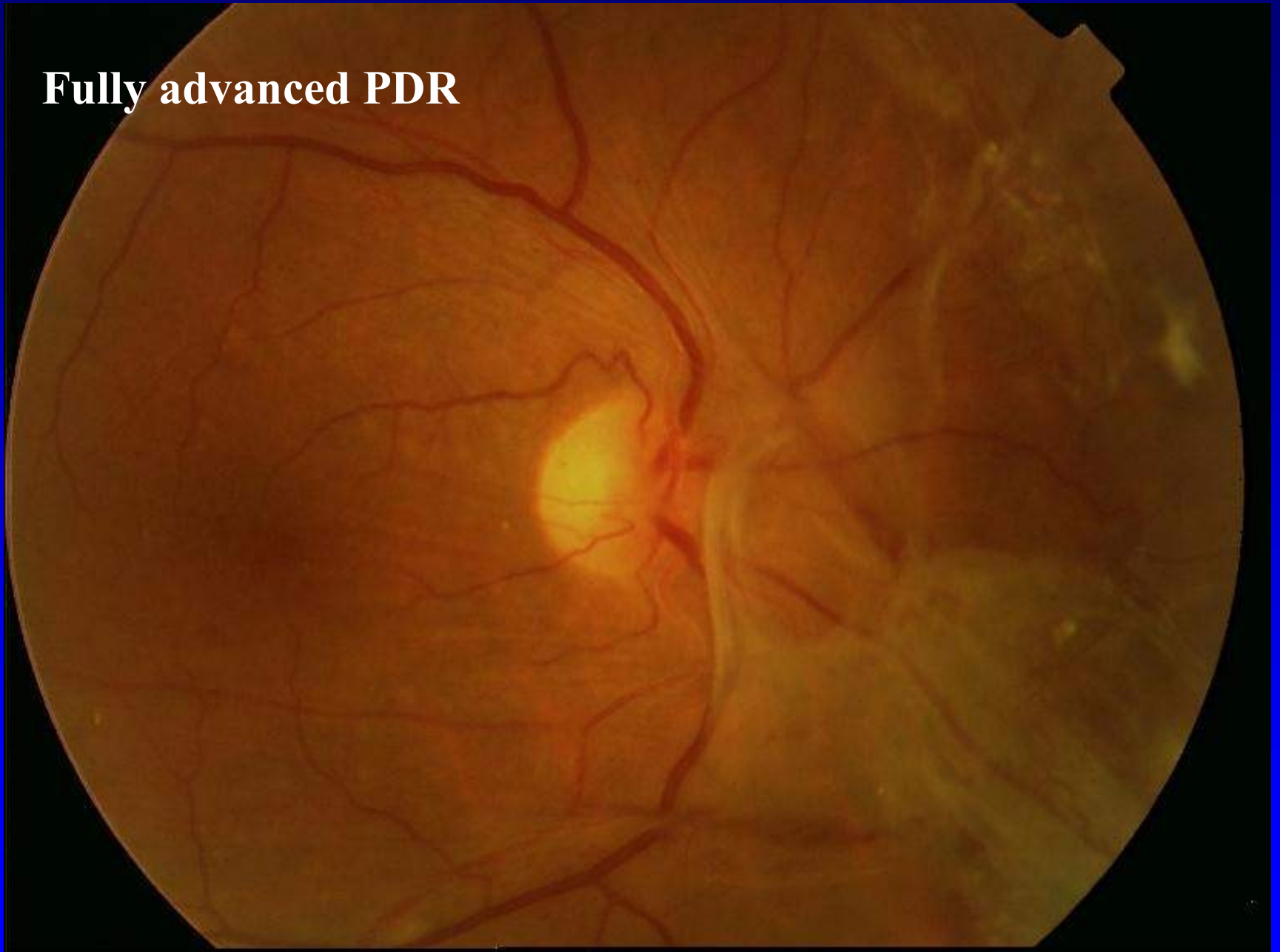




**Fully advanced PDR**



**Fully advanced PDR**

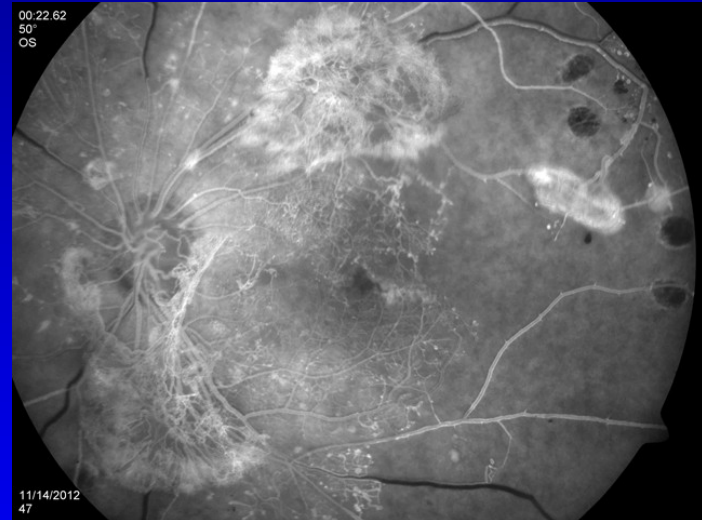
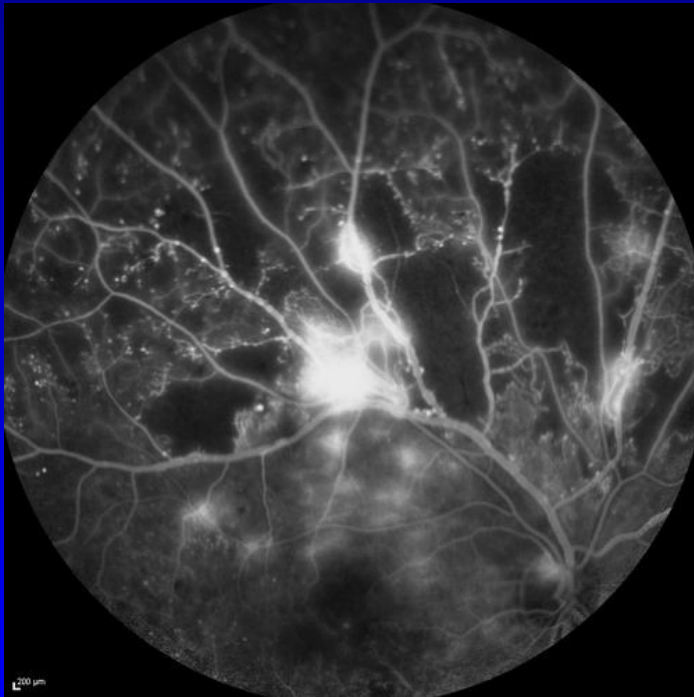


**Vitreous hemorrhage in  
fully advanced PDR**





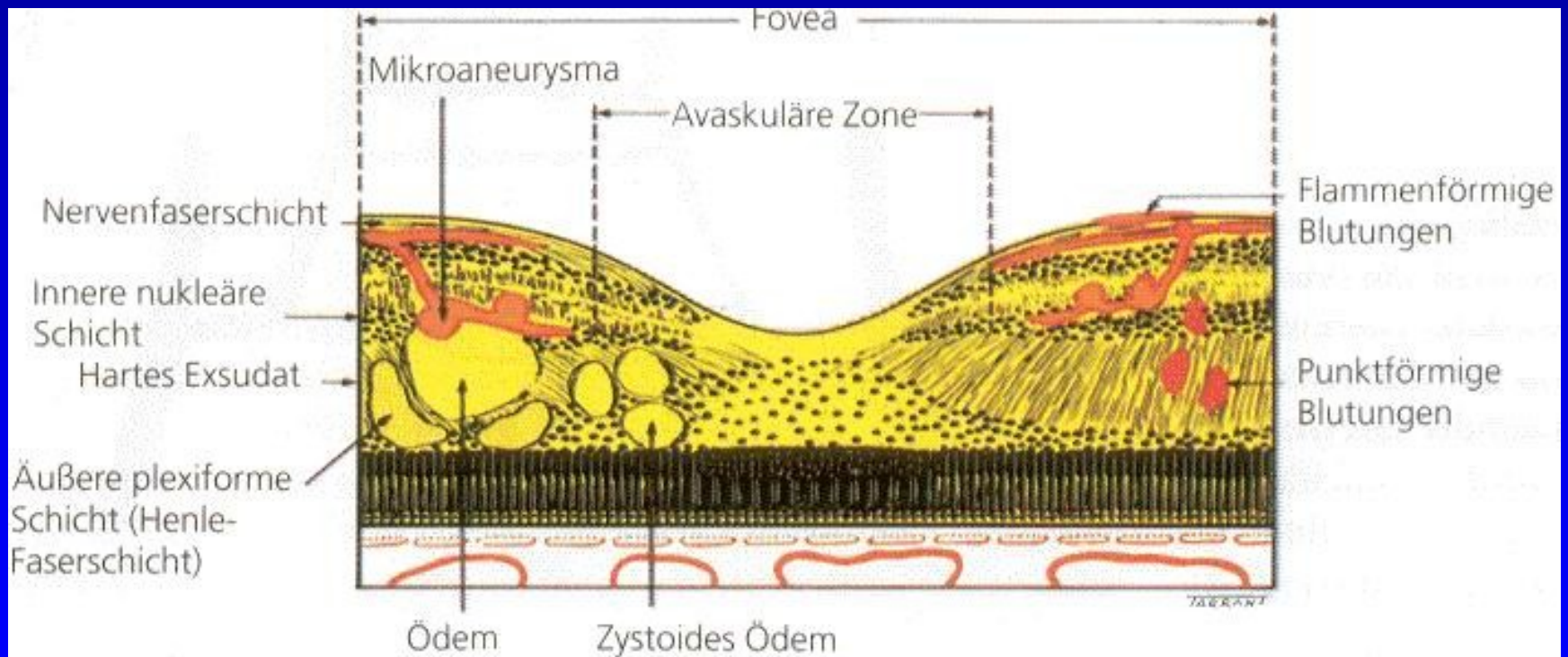
# Fluorescein angiography



# Diabetic maculopathy (M)

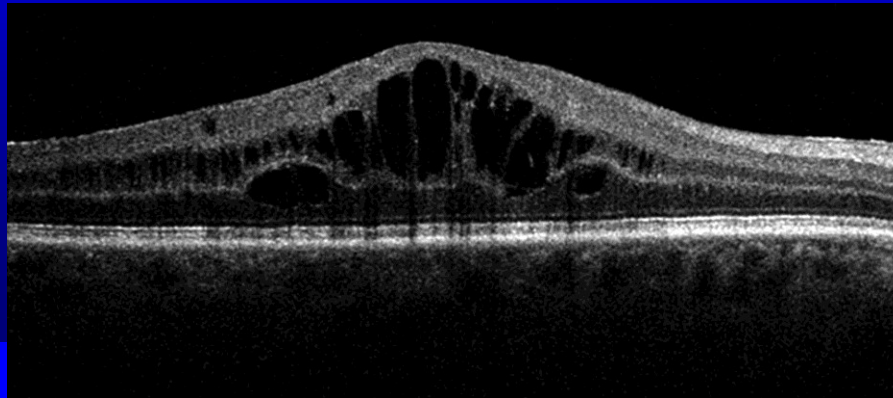
- Macular area is a predilection site for edema formation
- Microangiopathy leads to ischemia, fluid accumulation, formation of microcysts and cysts
- Hard exudates (lipid accumulation) occur on the boundary of ischemic and normal retina

# Diabetic makulopathy (M)



# Diabetic makulopathy (classification)

- **Focal edema**
- **Difuse edema**
- **Ischemic edema** (rare)- avascular zone in macula



**Focal edema**





**Difuse edema**



**Ischemic edema**

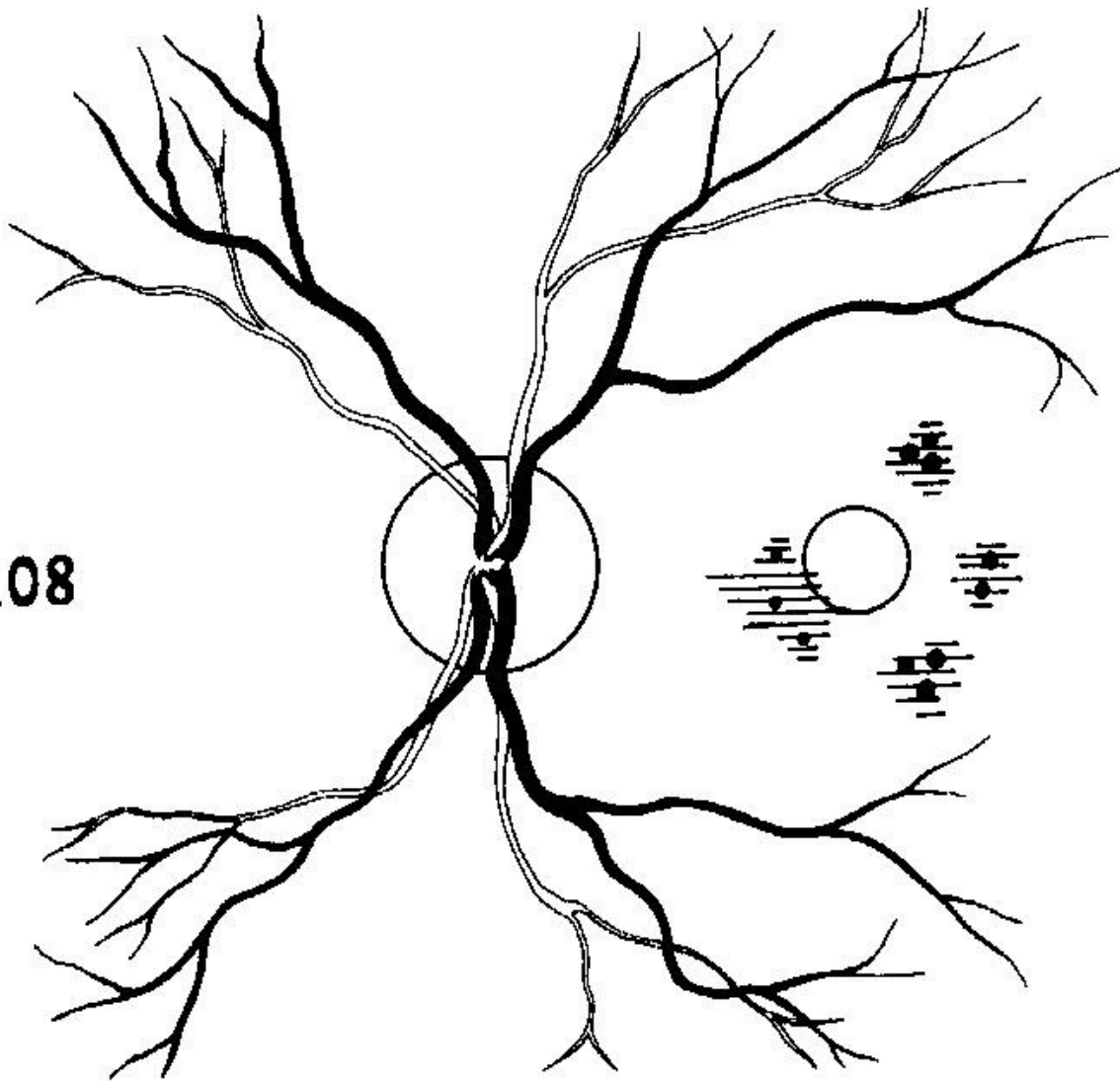


# Macular oedema – laser therapy

1. Focal
2. Grid

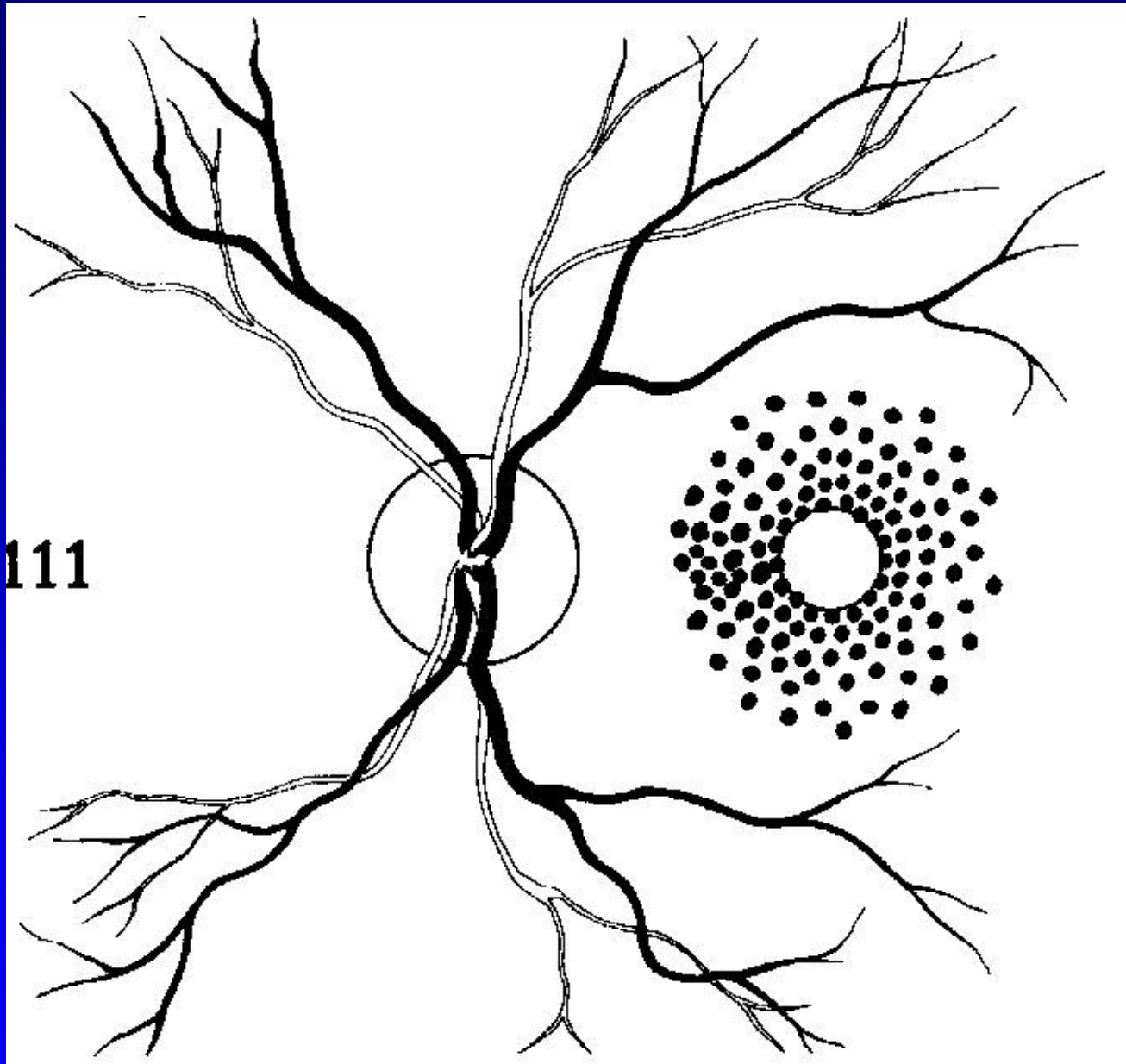


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Focal laser





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Grid laser

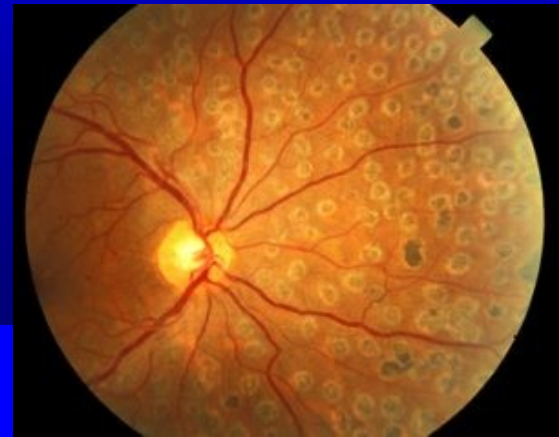


# Macular oedema - anti VEGF

1. DME without reaction to laser therapy
2. Good compensation of DME
3. Lasting of DME < 2 years

# Therapy of diabetic retinopathy

- Gold standard is laser photocoagulation of ischemic retinal parts – panretinal photocoagulation
- Laser can't be performed in central macular zone





Laser spots in retina  
suffered from NPDR



# Surgical therapy of DR

- **Pars plana vitrectomy**- (Machemer, Parel – 1970) – tractional retinal detachment, haemophthalmus