

Uveitis: Management with Vitreoretinal Surgery?

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No Financial Interests to Declare

Love, Help & Health



In solidarity, we prevail!

Professor Ingrid Kreissig

The first woman in Germany who got a chair for Surgery in Ophthalmology (1979-2000)



Always Energetic and Enthusiastic

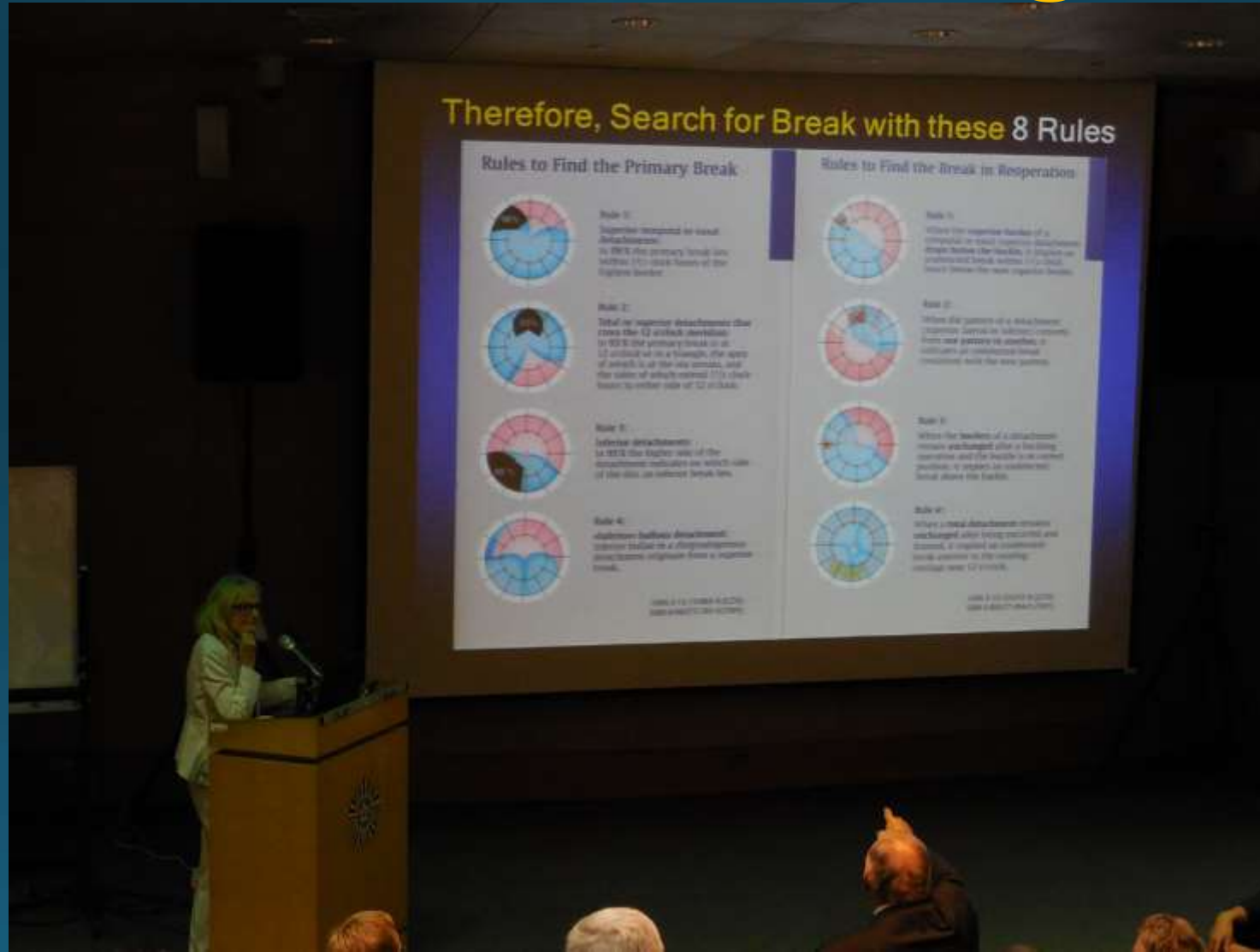


127. Teaching Course on Retinal and Vitreous Surgery
Kiev, Ukraine, March 1, 2018

Magic Course in 2015



Deeply touched by Professor Kreissig's Passion in Teaching



Dr. Kreissig is Enjoying the Contact with the Juniors



My Journey

- Trained as *vitreoretinal surgeon* at Taipei Veterans General Hospital, Taipei, Taiwan
- Research fellow at Doheny Eye Institute with Dr Steve Ryan
- President of Taiwan Retinal Society (2013-2015)
- President of Taiwan Ocular Inflammation Society (2020-)
- International society member: EURETINA, Jules Gonin Club, the Retinal Society, International Ocular Inflammation Society (IOIS)

Happy Learning Time at Doheny Eye Institute



Research meeting with Ryan's team



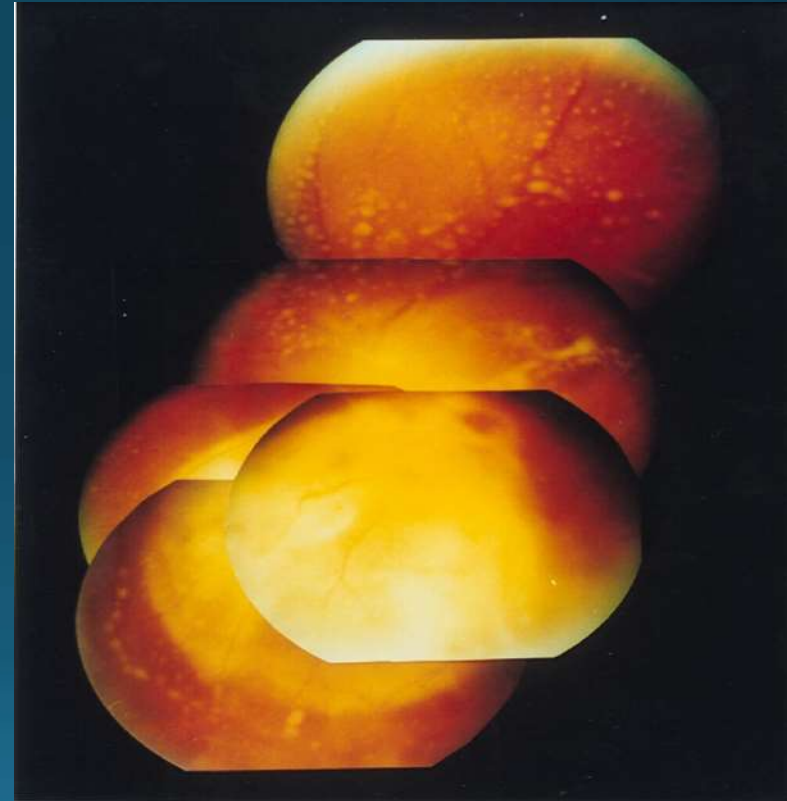
Professor Rao implant the concept of uveitis

Exciting Experience for a Surgeon



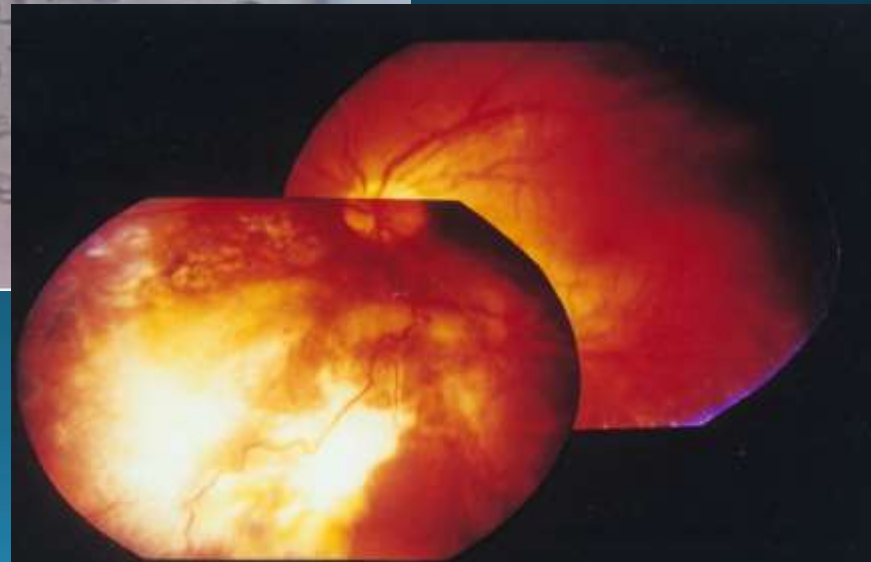
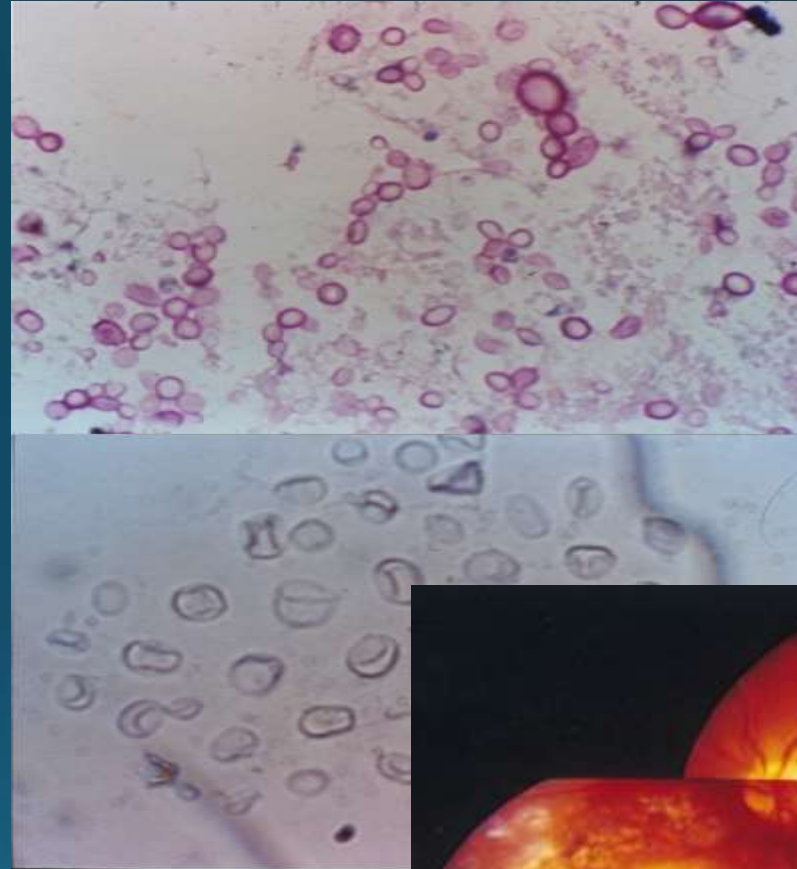
My First Retinal Biopsy for the Diagnosis of Uveitis

- 45 y/o female, SLE under steroid and cytotoxic agents
- Panuveitis with a huge retinal abscess
- No response to IV/IVI ceftazidime/vancomycin
- Pars plana vitrectomy with retinal biopsy



Cryptococcal Endophthalmitis

- 45 y/o female
- SLE under steroid and cytotoxic agents
- No response to IV/IVI ceftazidime/vancomycin
- Pars plana vitrectomy with retinal biopsy - *Cryptococcus neoformans*
- IV/IVI with amphotericin B
- Inflammation resolved



Vitreoretinal Surgery in Uveitis

◆ Diagnostic:

- Atypical clinical presentations
- Rapid progressive course with no conclusive results
- Non- or sub-optimal response with standard treatment and masquerade syndrome.

◆ Therapeutics:

- Management of uveitis: complications, cataract, glaucoma, hyphema, hypotony, epiretinal membrane, retinal detachment, vitreous hemorrhage.
- Clear visual opacities and decrease inflammation in cases of persistent inflammation.

Microincision Vitrectomy (MIVS)

- ◆ *Compared to traditional 20G, MIVS offers*
 - *smaller wound*
 - *less intra-operative bleeding*
 - *higher patient comfort postoperatively*
- ◆ *Compared to vitreous tap for vitreous sampling*
 - PPV can obtain larger sample volumes for diagnosis
 - avoids vitreous traction created by the needle
 - allows directly proceeding to therapeutic vitrectomy

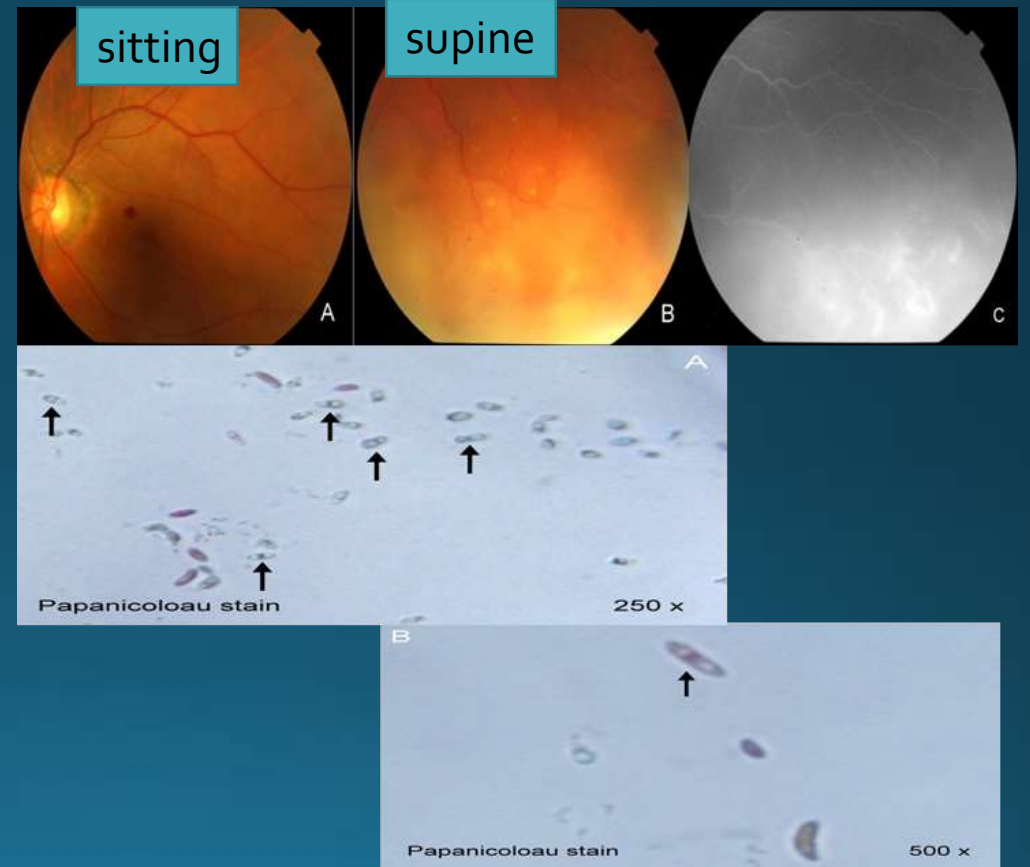
Most Common Etiologies for Diagnostic PPV

- 405 consecutive diagnostic PPV, 1973-1994
- **Infection** in 14.8% of all PPV
- **Neoplasm** in 14.3% (lymphoma) of all PPV
- Some examples: acute retinal necrosis, vitreo-retinal lymphoma, amyloidosis, sarcoidosis, endophthalmitis
- Overall positive rate: 14-64% (Infection: 67%, Lymphoma: 33%)

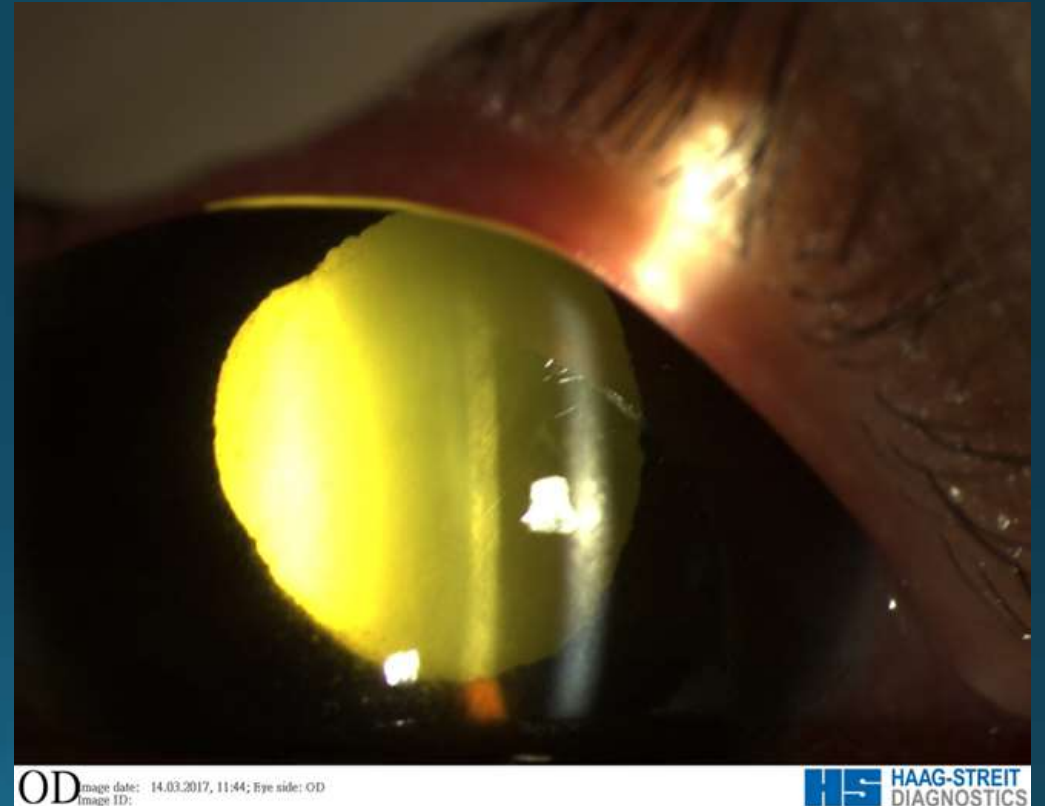
Diagnostic PPV for Infection

- Vitreous samples
 - **Smear**-positive rate (Gram stain): 66%
 - **Culture**-positive rate: 44%–67%
- Other examples for **molecular diagnosis**
 - PCR: viral retinitis, toxoplasmic chorioretinitis, tubercular uveitis, *Cutibacterium acnes*, and fungal/bacterial endophthalmitis
 - Multiplex PCR, DNA arrays or next generation sequencing

- 44 y/o male
- Intermittent blurred, OS for 2 yr
- Recurred 3 days after cataract surgery
- Presented as panuveitis with exudative RD initially, but progressed to RRD during systemic survey
- PPV with FGE and laser



- 50 y/o female
- CC: blurred painful eye, OD for 1 month treated with oral and topical steroid
- Received dental procedure about 2 months before onset of disease
- Systemic survey (-)



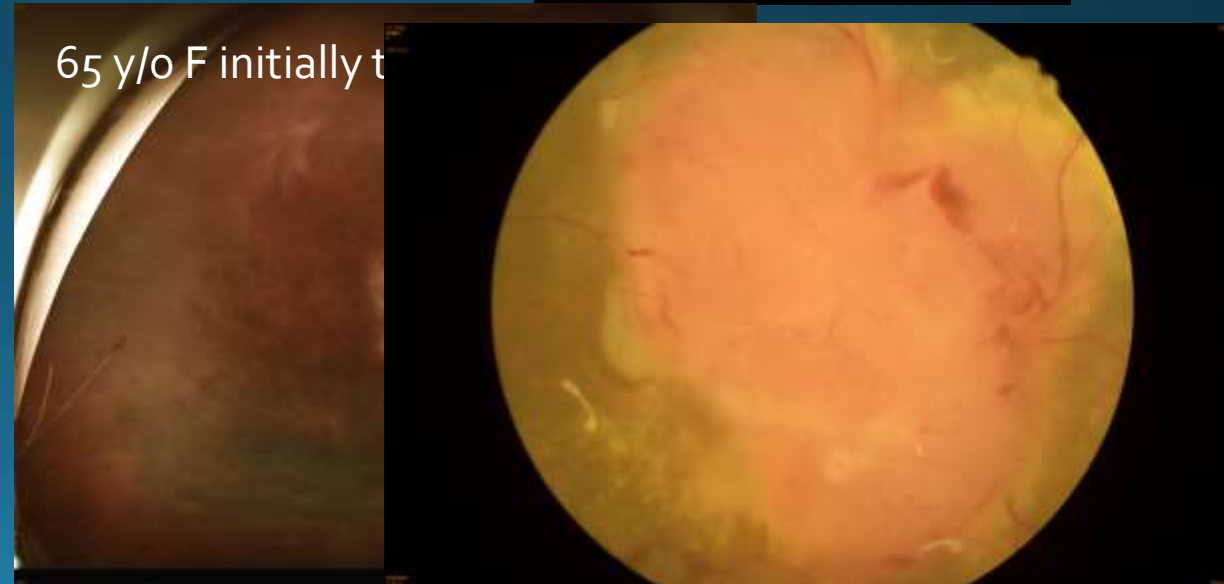
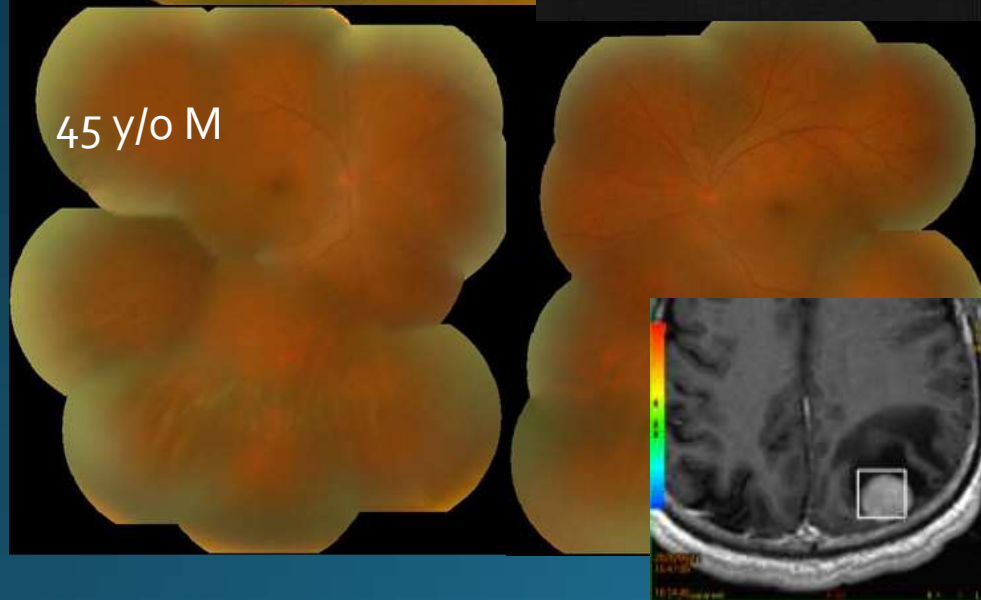
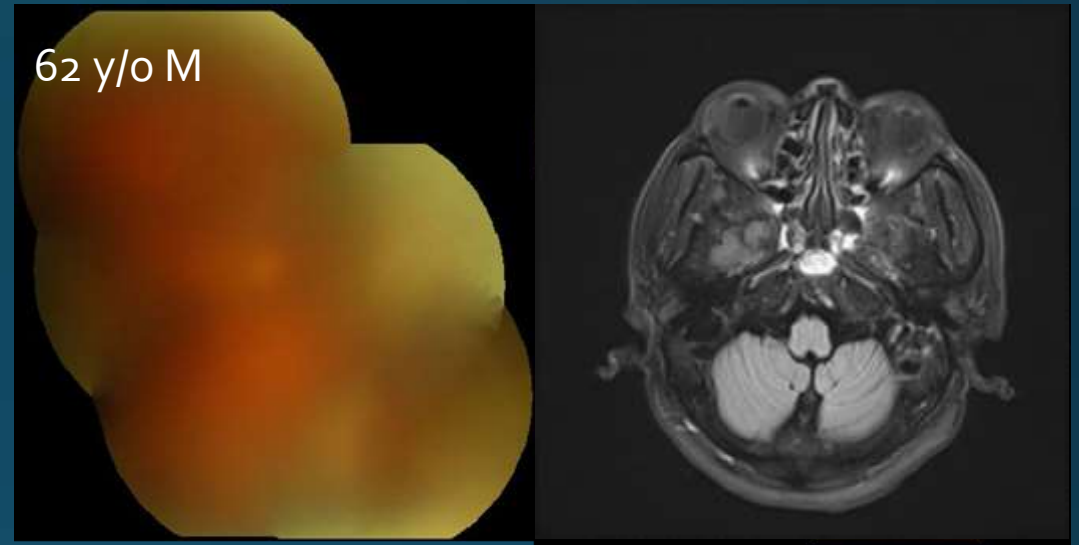
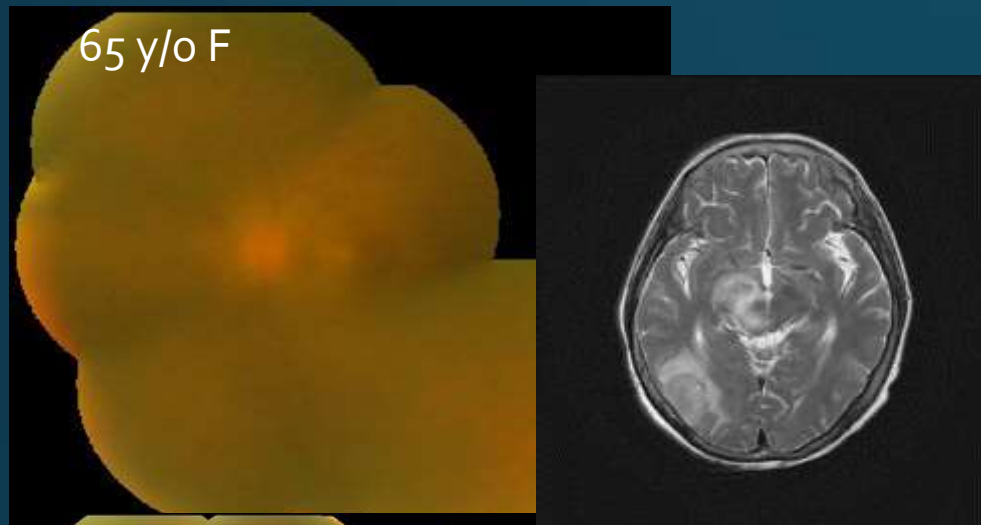
Masquerade Syndromes

- **One of the major indications for diagnostic vitrectomy**
 - Simulating a chronic idiopathic uveitis
 - Having an underlying primary cause that is not immune mediated, but with an apparent clinical picture of intraocular inflammation
- They are usually poorly, if not at all, responsive to corticosteroid treatment.
- Classification: **malignant/non-malignant**

Diagnostic PPV for Intraocular Lymphoma

- Patients who have been under systemic or local corticosteroids are advised to discontinue the corticosteroids for a few weeks to allow more vitreous infiltration.
- **Vitreous biopsy specimens need to be transported quickly for laboratory analysis**
 - Lymphoma cells immediately undergo morphological degradation
- Cytokine analysis: IL10:IL6 ratio >1 suggestive of intraocular lymphoma

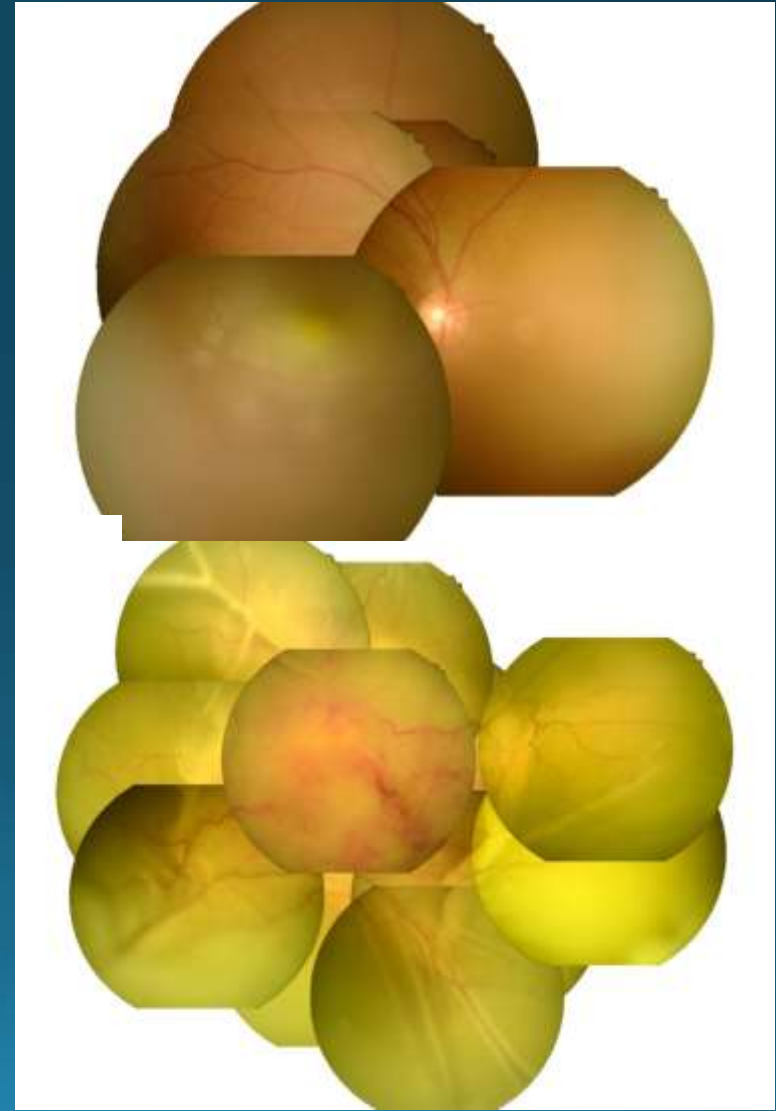
Intraocular Lymphoma



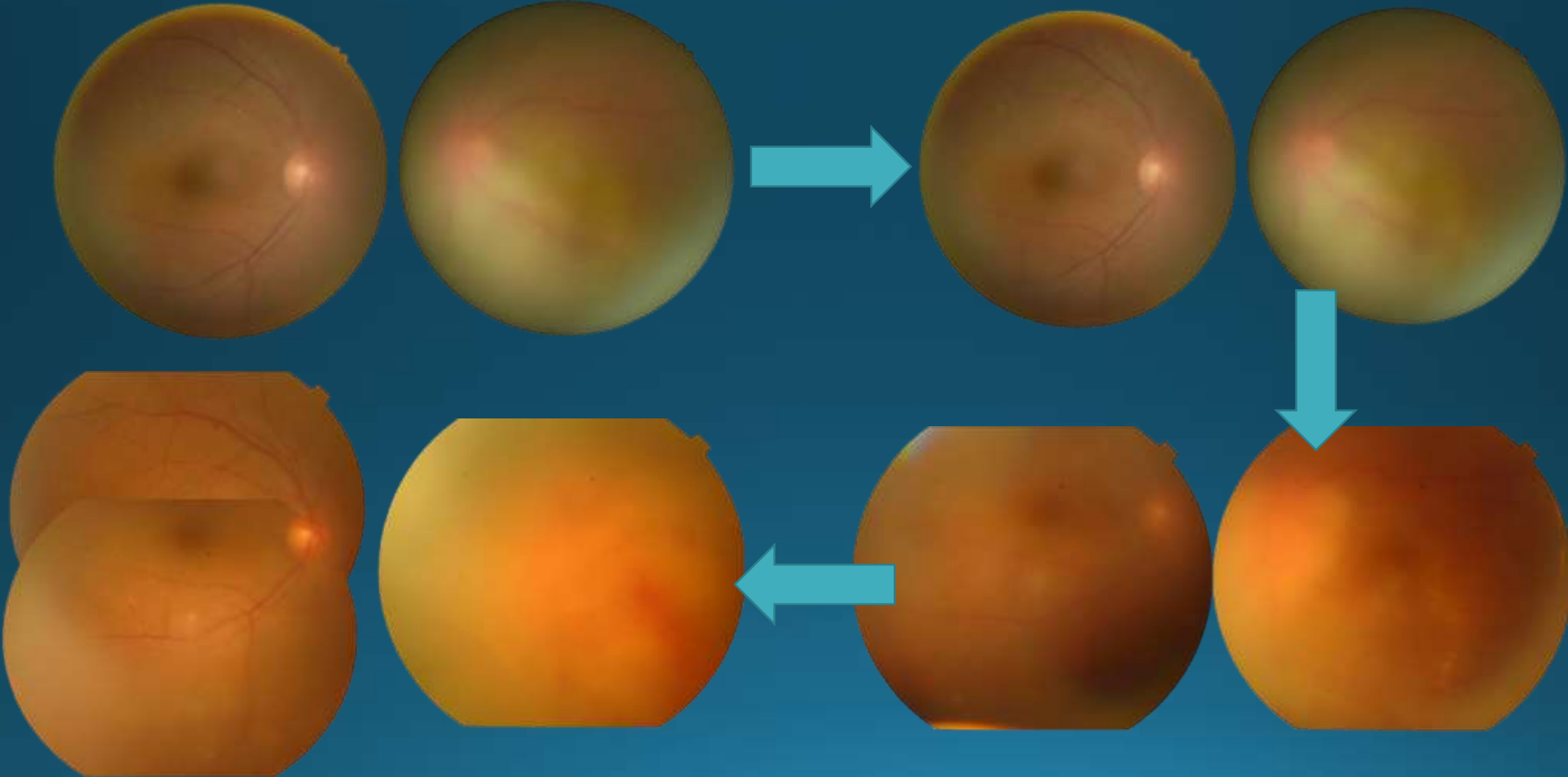
62 y/o female, blurred OS->OD 1½ yr

- DM(+), HT(-), cataract op, OU
- Ever treated as panuveitis by other center but in vain, even progressed
- **Diagnostic PPV OS 20210324: culture (-), malignant cell (-)**
- 20210412 (first visit)

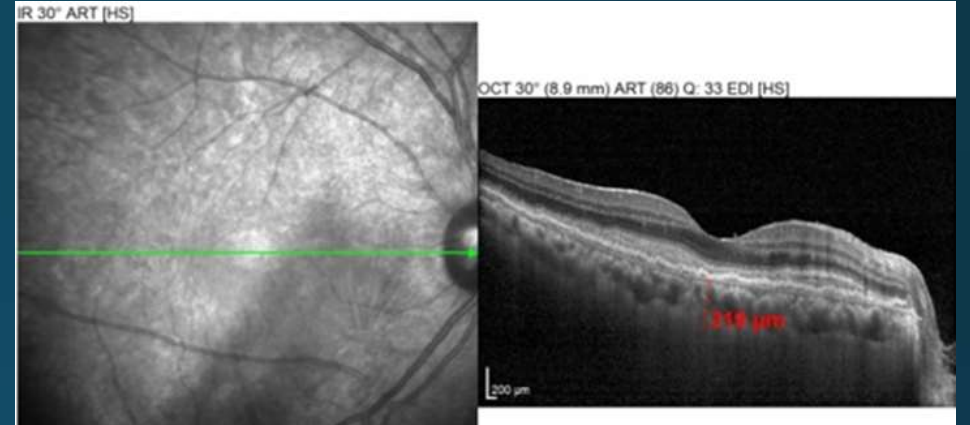
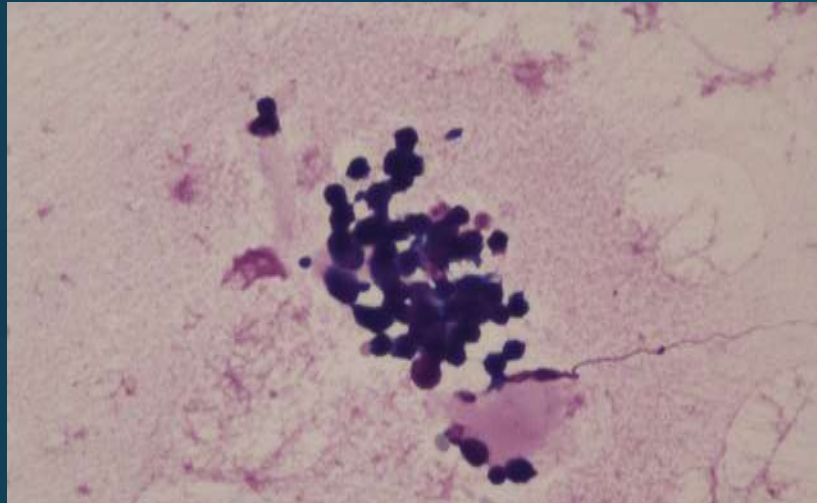
Va o.6/SL-, AC cell+-, vitreous cell++ OU



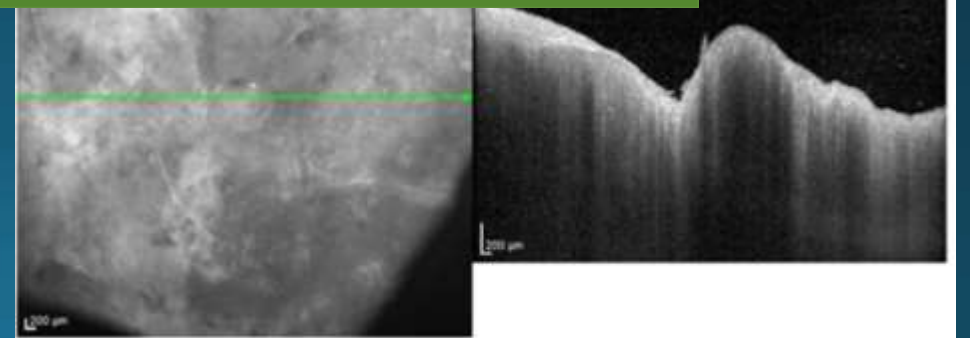
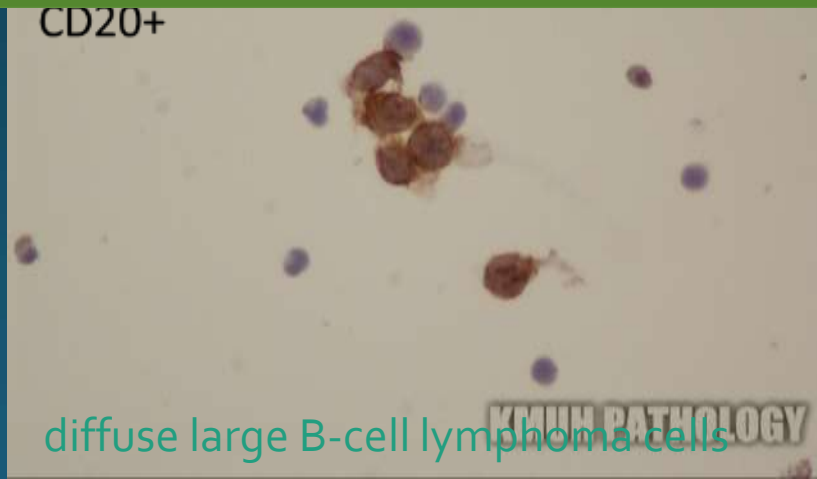
HLA B27+, HSV/VZV/CMV IgG+, vitreous sample-
prednisolone, ciclosporin, mycophenolate, valacyclovir



Vitreous aspiration for cytology OS



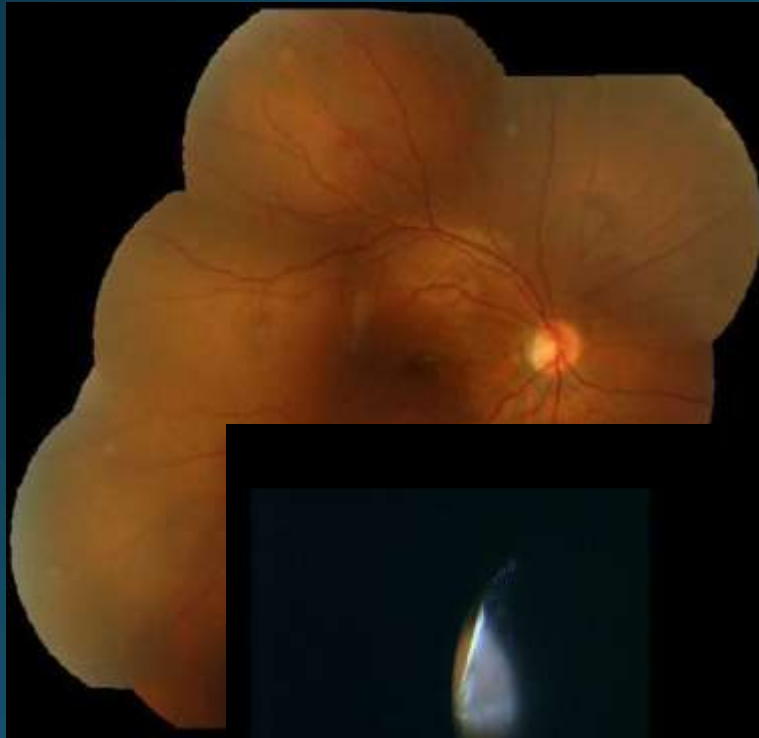
Repeated aspiration cytology should be tried in highly suspected cases even when the vitreous sample from PPV did not get positive results.



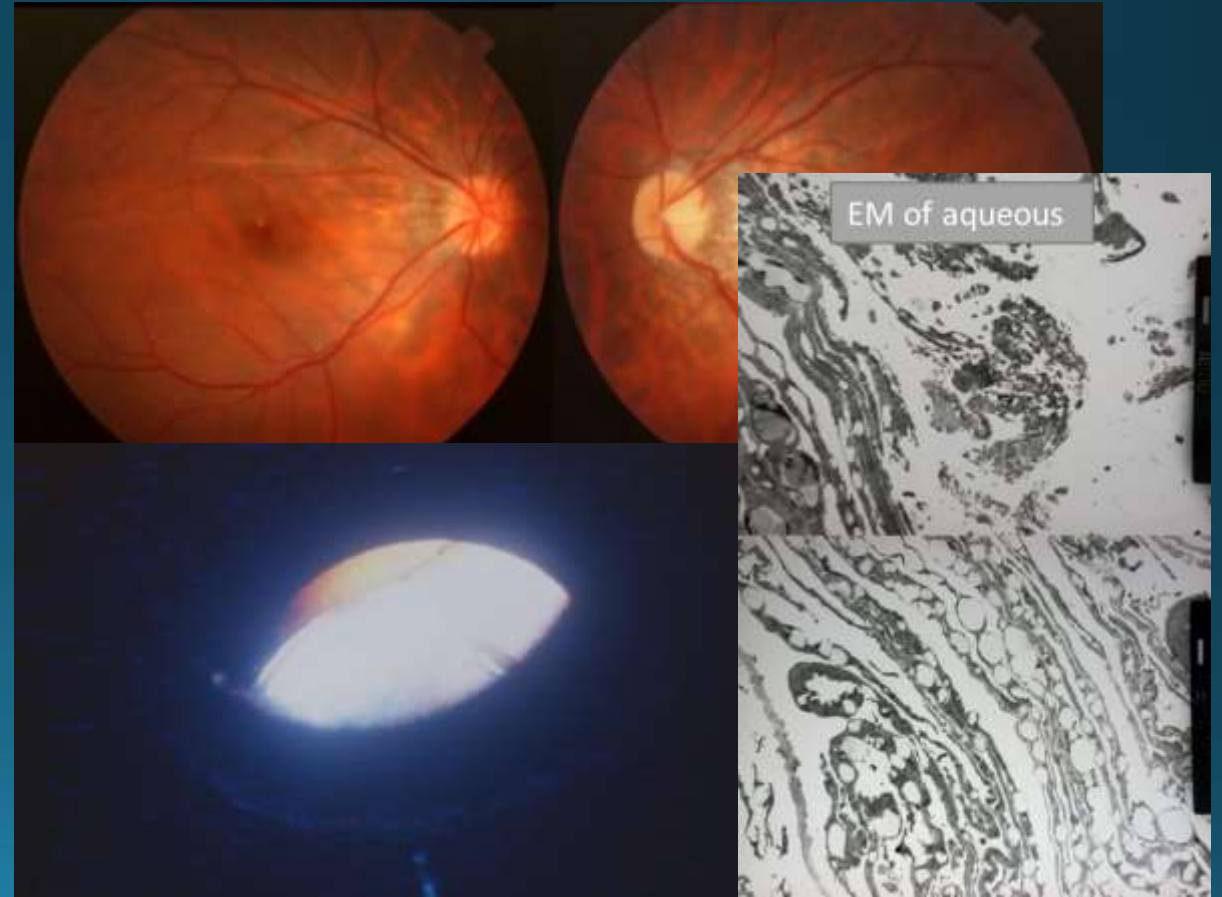
diffuse large B-cell lymphoma cells

Schwartz Matsuo Syndrome

13 y/o boy **atopia**, panuveitis with RD

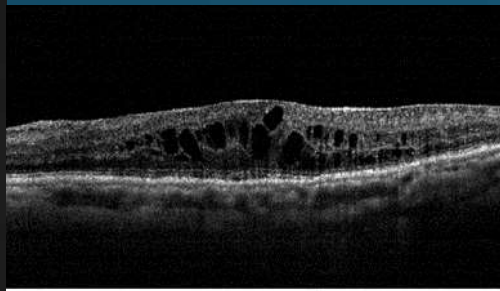
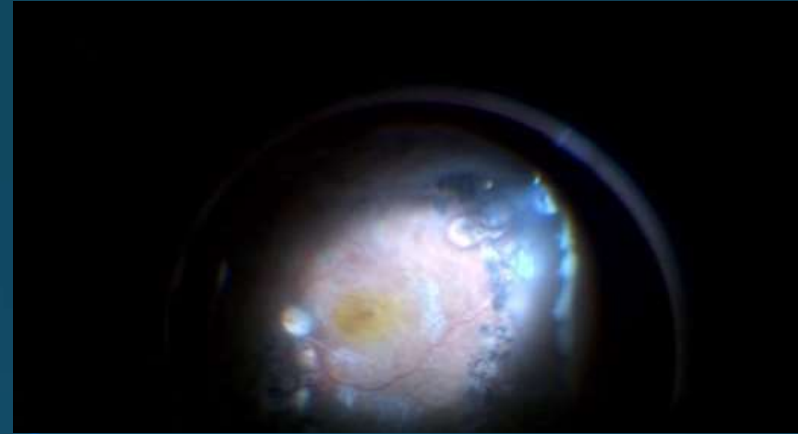


17 y/o M **atopia**, panuveitis with RD

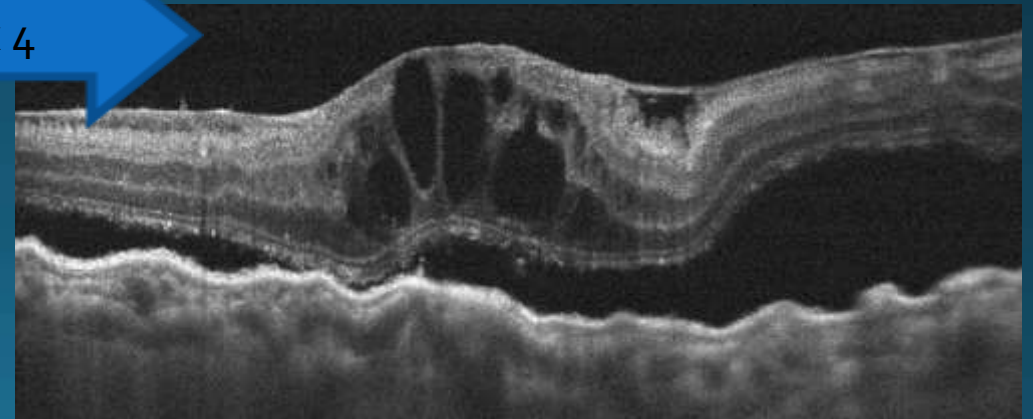


Chronic RD Masquerading as Uveitis

- 63 y/o F
- ME developed 8 yrs after phacovitrectomy for PDR & TRD
- Panuveitis with shallow RD



s/p IVIL x 4



Preoperative Inflammation Control

- Previous experience suggests aggressive control of perioperative inflammation using topical, regional, and systemic steroids with or without systemic steroid-sparing immunomodulatory therapy for at least 3 months
- Recent studies showed that PPV is effective even if complete control of intraocular inflammation is not achieved prior to the surgery
- It depends on how urgent of the PPV is.

Reduce Inflammation

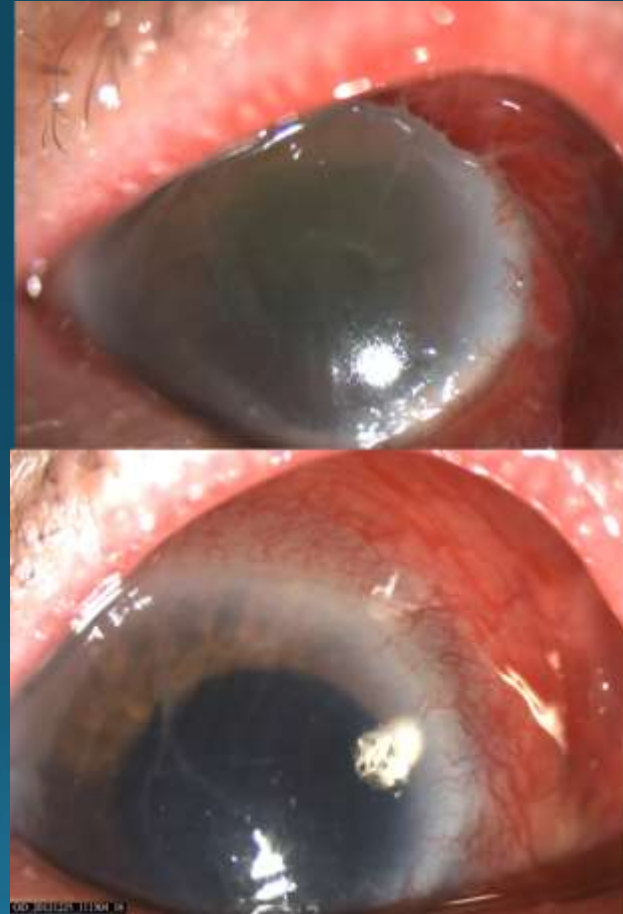
- PPV may decrease inflammation in eyes with noninfectious uveitis by presumably **removing the inflammatory cytokines**
- PPV and lensectomy are used for control of inflammation in **lens-associated uveitis**
- PPV may be an alternative to immunomodulatory therapy, where **44%** can be stopped after PPV
- PPV can **reduce recurrence** of intermediate, posterior and panuveitis

Post-operative Endophthalmitis

- The most common indication for PPV to be done in an inflamed eye.
- Modern **MIVS** in exogenous endophthalmitis with much better initial vision than light perception is regarded safe and with low rate of complications
- The timing and indication of **MIVS PPV** should be **earlier than those suggested by the EVS study.**
- Vitrectomy can be considered once the clinical presentation progresses after standard intravitreal antimicrobial injections or for those with dense vitritis or fulminant appearance regardless of initial vision

Acute Post-operative Endophthalmitis

- 90 y/o male
- DM+
- Acute visual loss and pain, OD 6 days after cataract surgery
- Has been on topical and subconjunctival antibiotics for one week
- Va - LP

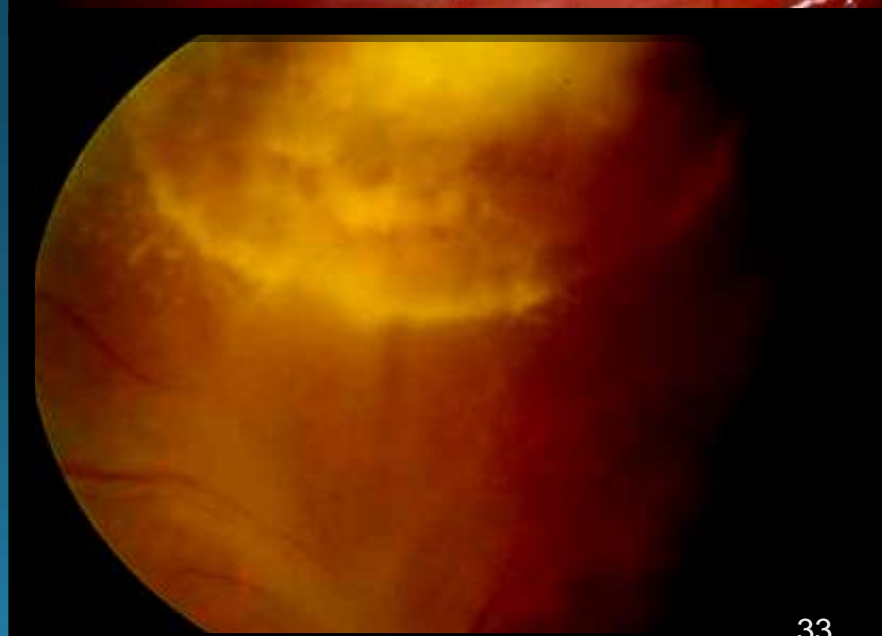
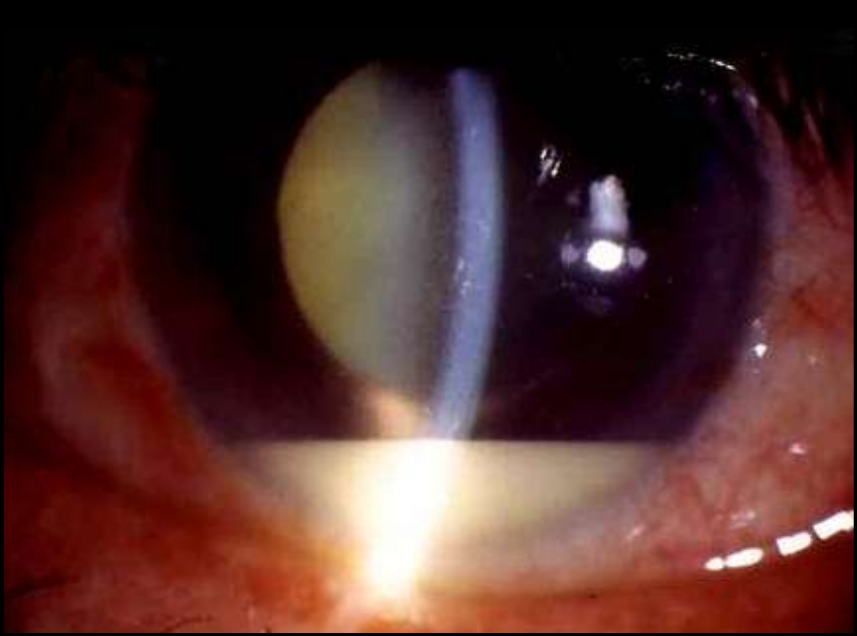
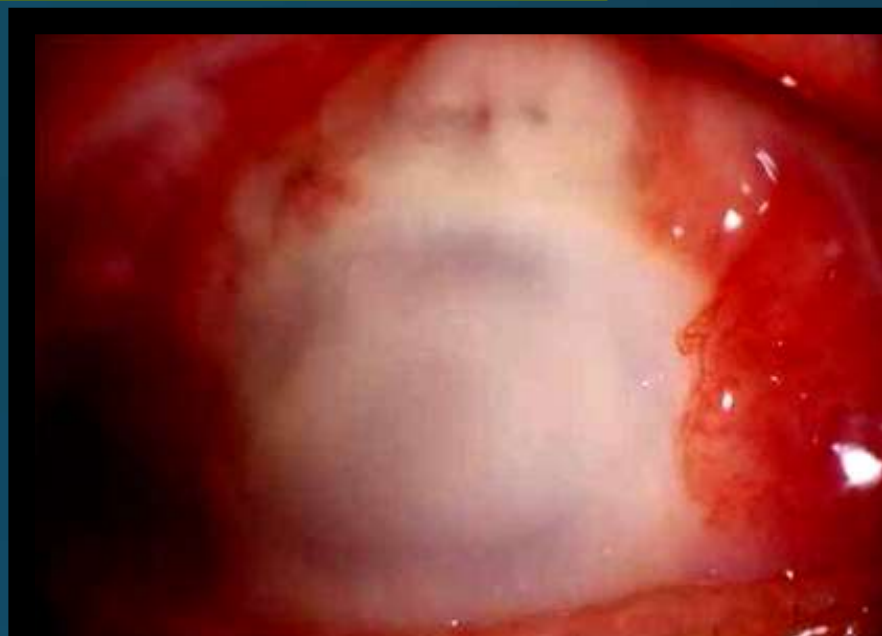
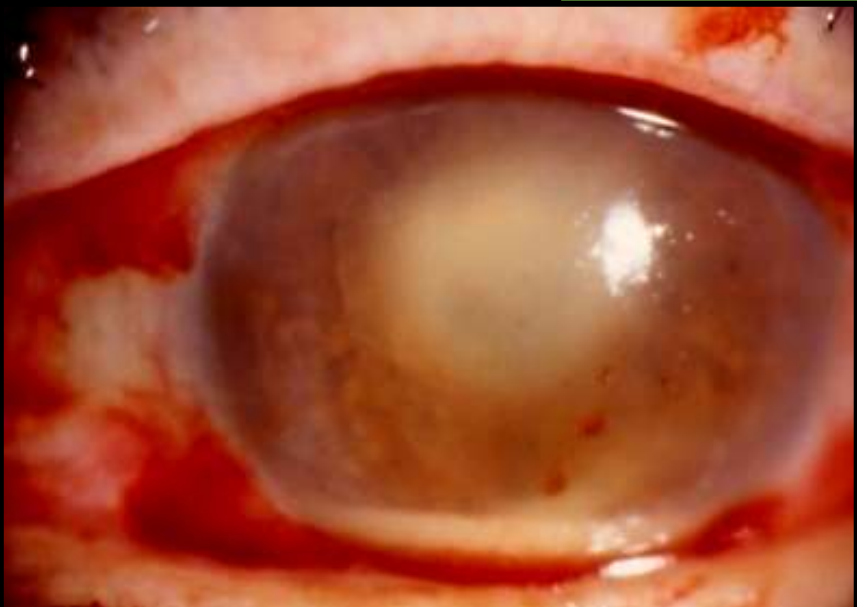




Endogenous Endophthalmitis

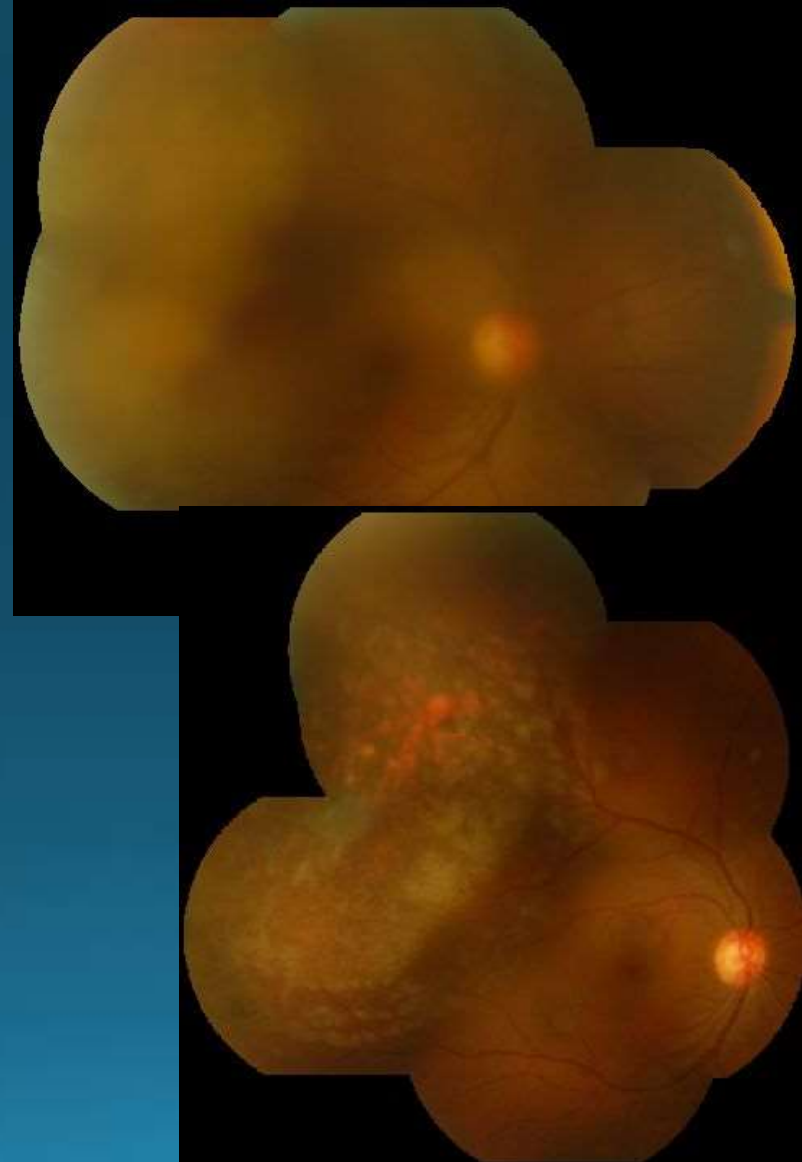
- Systemic symptoms are usually non-specific and easily missed causing a delayed diagnosis leading to possibly devastating outcomes.
- **Klebsiella pneumoniae (KP) EBE most common cause of endogenous endophthalmitis in Asia, including Taiwan.**
- Diabetes was significantly associated with the endophthalmitis (Sheu, 2011)
- *8/42 (19%) had ocular symptoms before diagnosis of liver abscess (Sheu 2011).*

Different Presentations of KP EBE



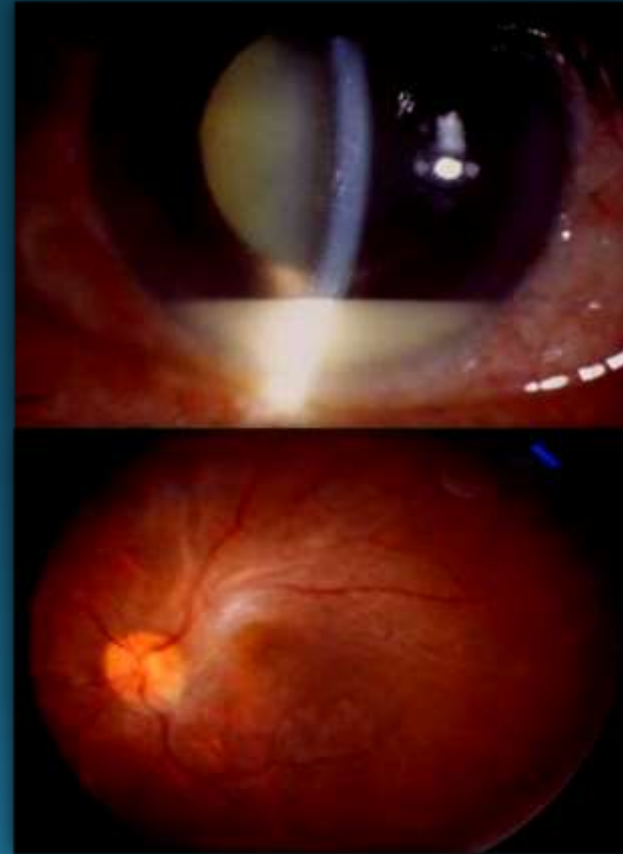
35 y/o M

- Blurred OD for one month
- Liver chirossis, HBV, alcoholism, multiple site KP infection
- 6/20, AC – cell++
- Fd – retinitis patch with retinal hemorrhage and vitreous opacity
- PPV+ pc+ IVI with ceftazidime 2.25mg/0.1cc
- Va at last follow up (1/2 yr) – 6/7.5



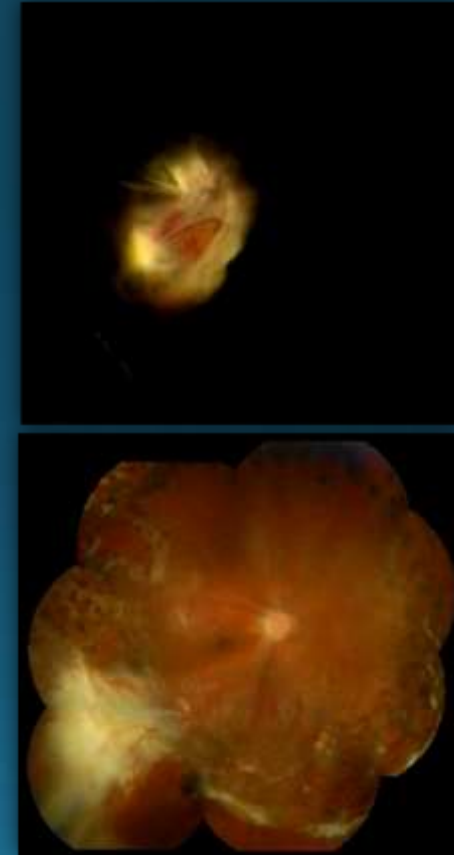
63 y/o M

- Hypertension+, CAD+, **DM-**
Endocarditis, KP liver abscess
- Diagnosed and treated at 90 days after onset of KP PLA
- IVI with ceftazidime 2.25mg and vancomycin 1mg
- Phacovitrectomy then 2nd IOL, OS
- VA: HM → 4/60



48 y/o M plastic surgeon

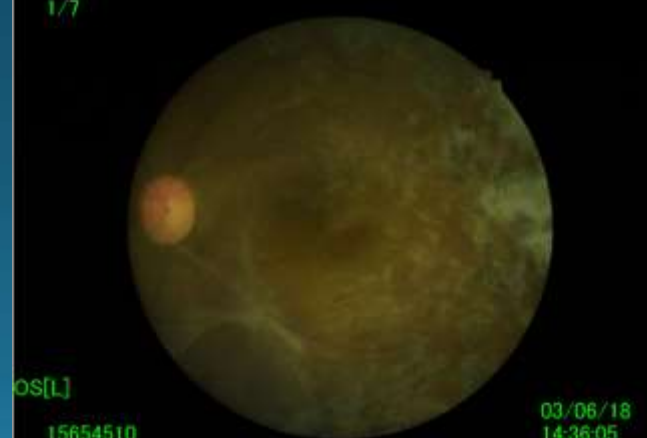
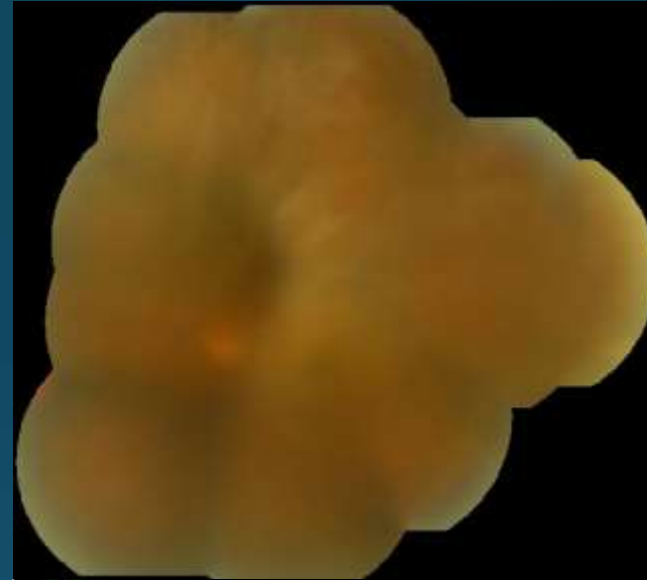
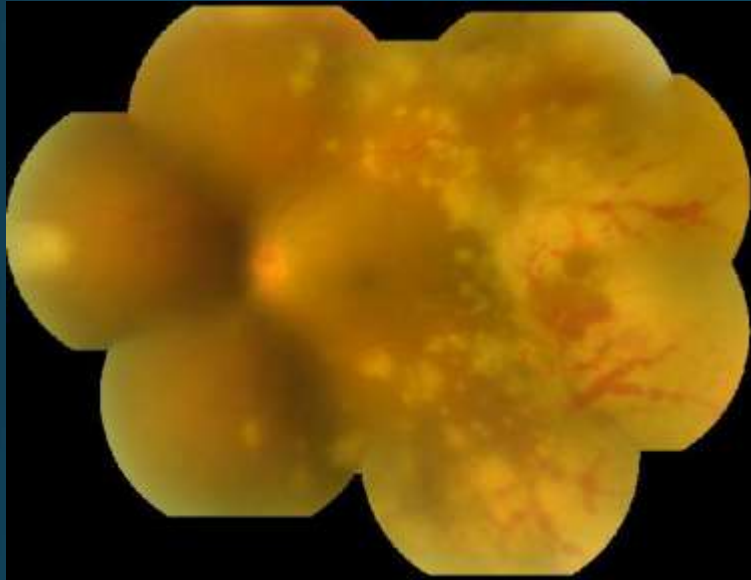
- Initially treated as uveitis with steroid then, IVI & VT/cat op for complicated RD and cataract due to KP endophthalmitis at other hospital
- Presenting as panuveitis with small fixed pupil and PVR
- 3rd op: vitrectomy + relaxing retinotomy + silicon oil tamponade at 67 days after onset



Retinal Detachment

- **Uveitis is an independent risk factor for RRD**
- Panuveitis and infectious uveitis are the most common entities
- Proposed maneuver to prevent RD in ARN (with conflicting evidence)
 - Prophylactic laser photocoagulation
 - Early vitrectomy
- RD after ARN: High risk of PVR, multiple holes in an atrophic thinned retina and the presence of ischemic optic neuropathy.
- **MIVS PPV with silicon oil tamponade is the treatment of choice.**

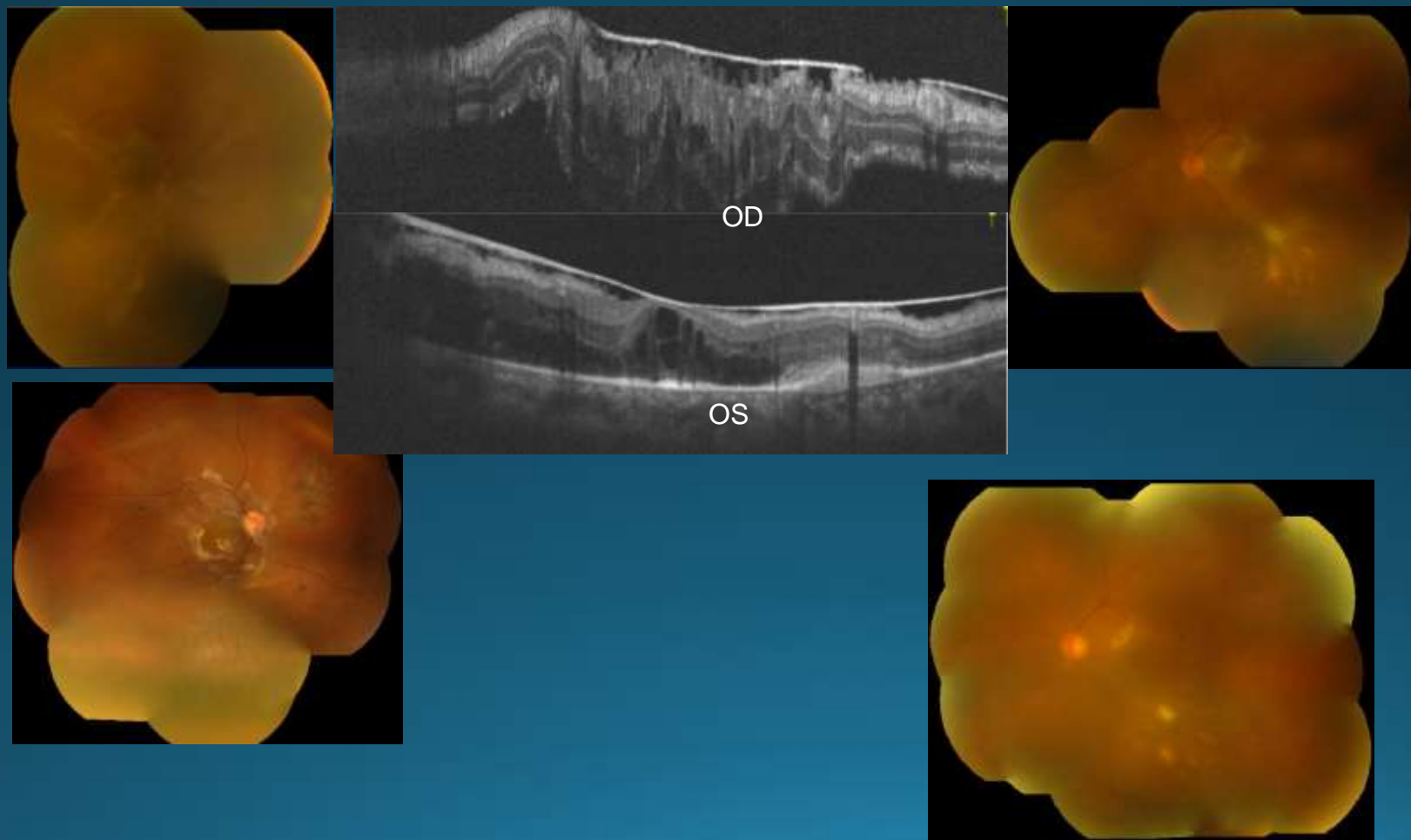
37 y/o F, ARN followed by RRD with PVR

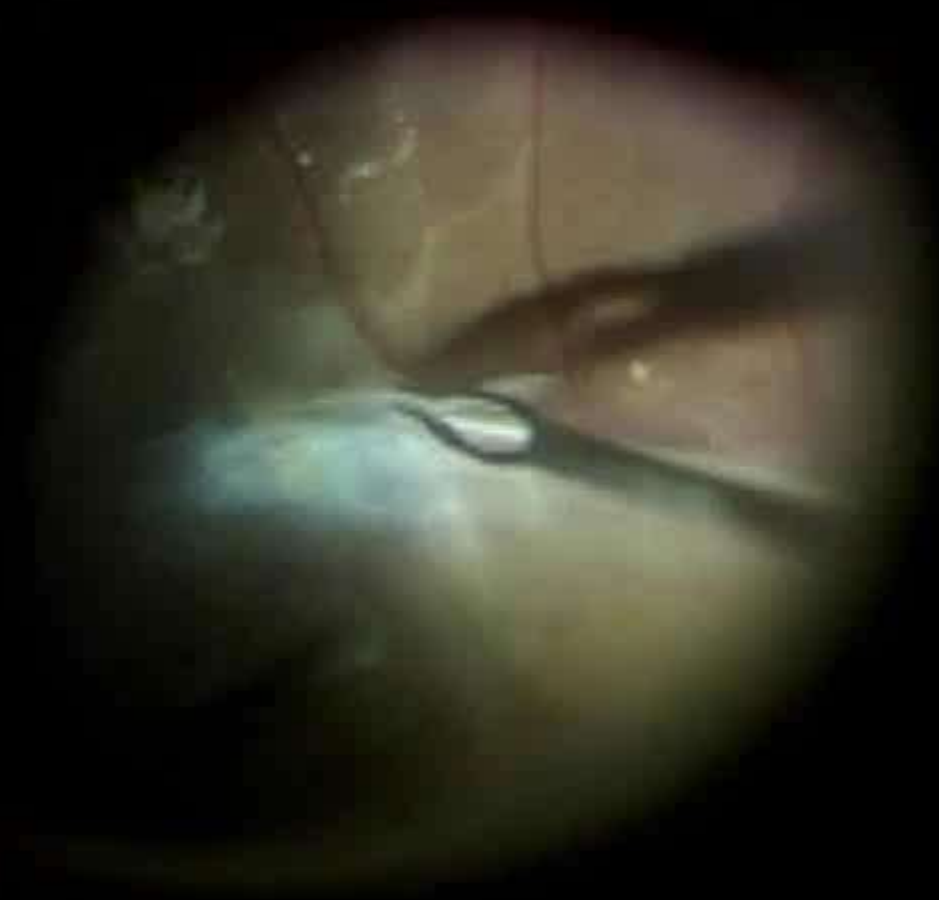


Epiretinal Membrane (ERM) in Uveitis

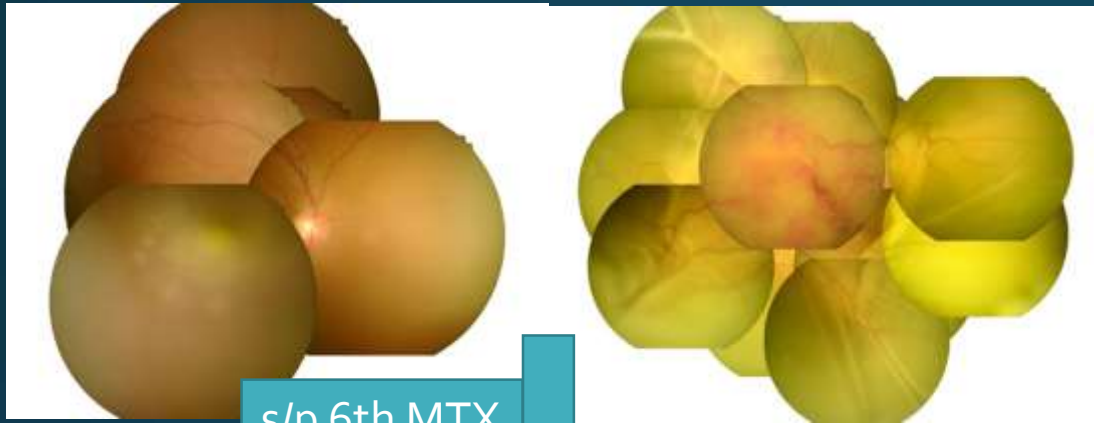
- ERM represents a **common complication** of uveitis
- ERM 2nd to uveitis is pathogenically distinct from those that are idiopathic.
- **PPV is indicated in ERM with sight-threatening macular edema or if progression occurs despite maximal medical treatment.**
- **Tangential traction is usually stronger in uveitis-related ERM.**

Macular Pucker following CMV Retinitis

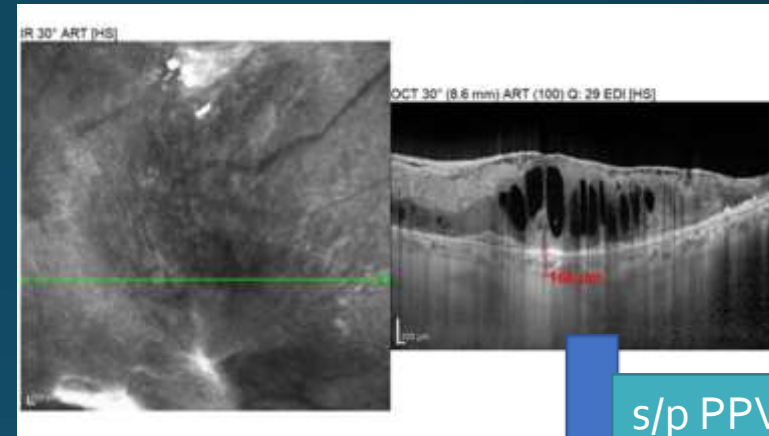
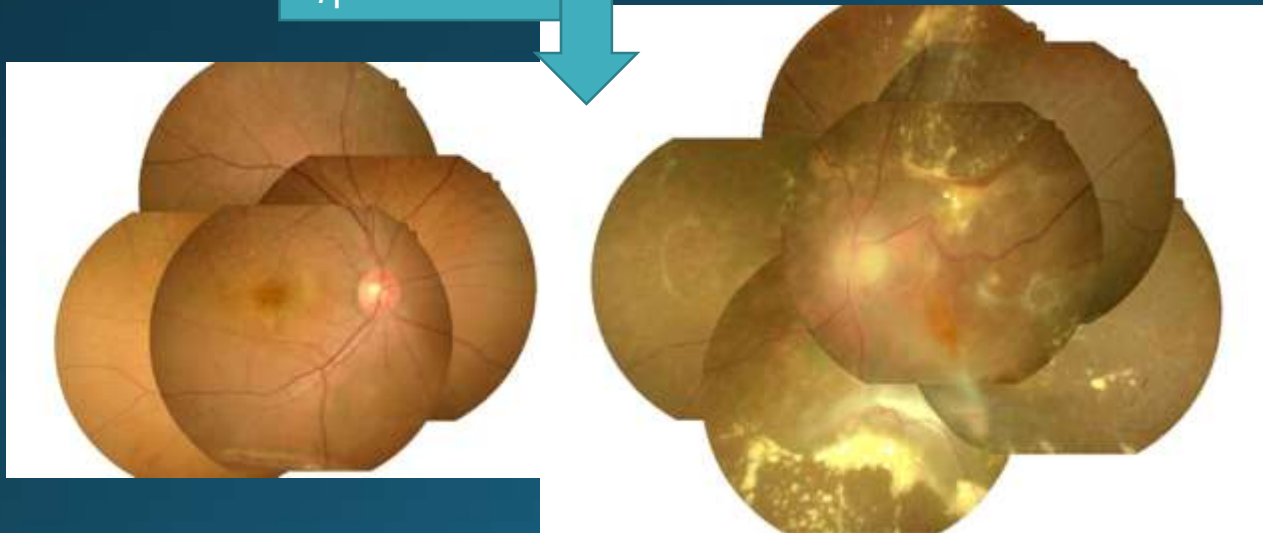




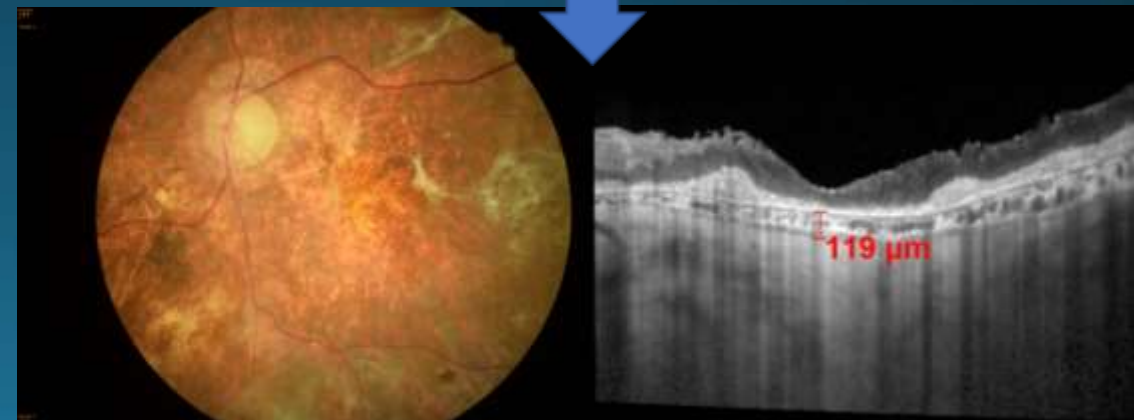
PVR in Intraocular Lymphoma



s/p 6th MTX



s/p PPV+MP+PC





Complications of PPV in Uveitic Eyes

- Overall complication rate: 42-54% - hypotony, VH, RD, ERM, cataract or worsen inflammation (Bansal 2017; Oahalou 2014)
- Generally more risk in those associated with systemic risk factors.
- We must weigh the benefit and risk of the surgery for the patients.

Conclusions



- VR surgeries provide more choices in the management of uveitis.
- MIVS makes the procedure easier, harbors less complications and more patients' comfort.
- Achieving optimum control of inflammation before PPV is recommended for non-emergent therapeutic indications.
- Recent indications are extended to include some active inflammation for diagnostic vitreous sampling or medically unresponsive inflammation.