



# Hypertensive Retinopathy Secondary to Kidney Disease in a 9 Year Old

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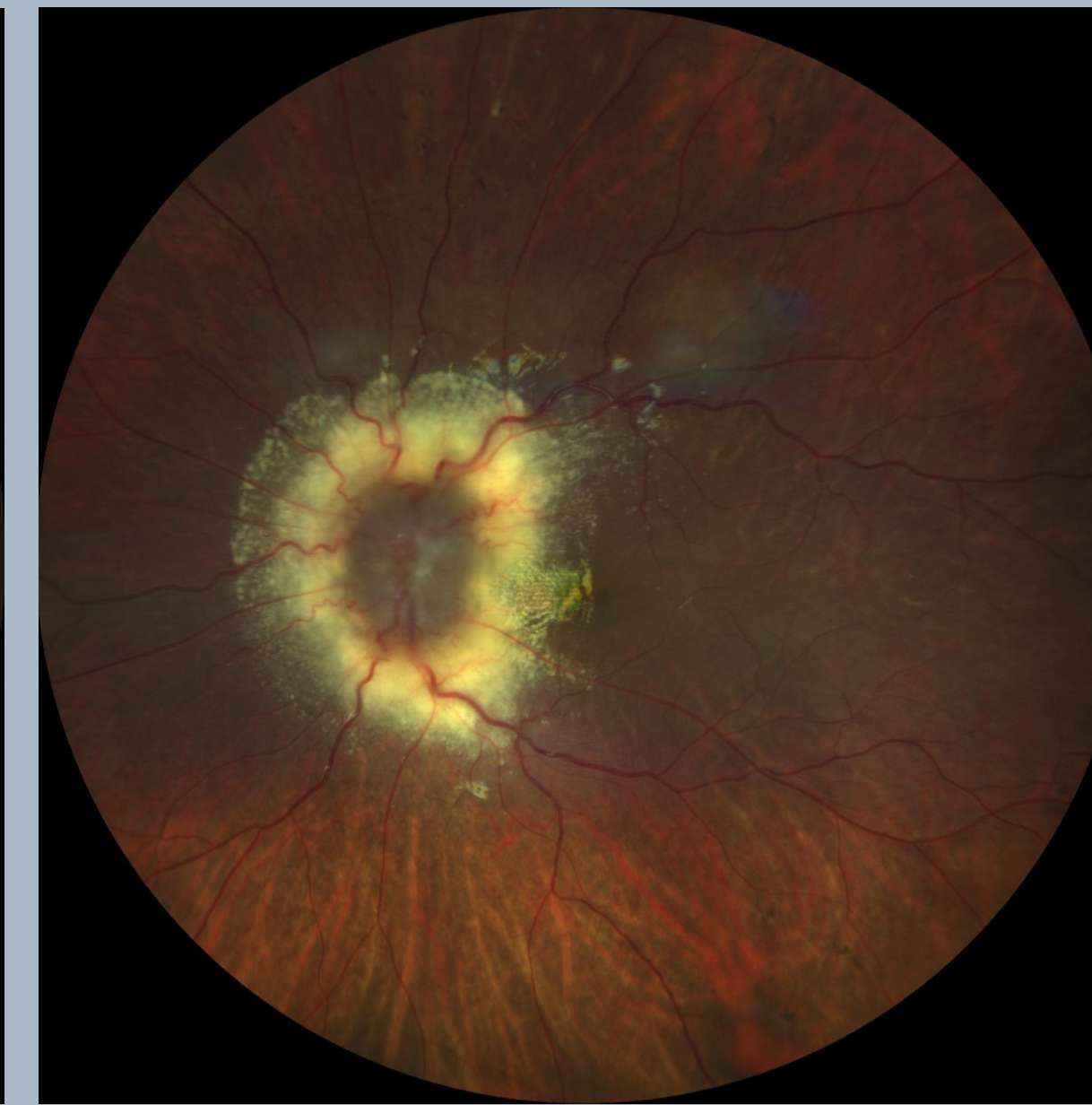
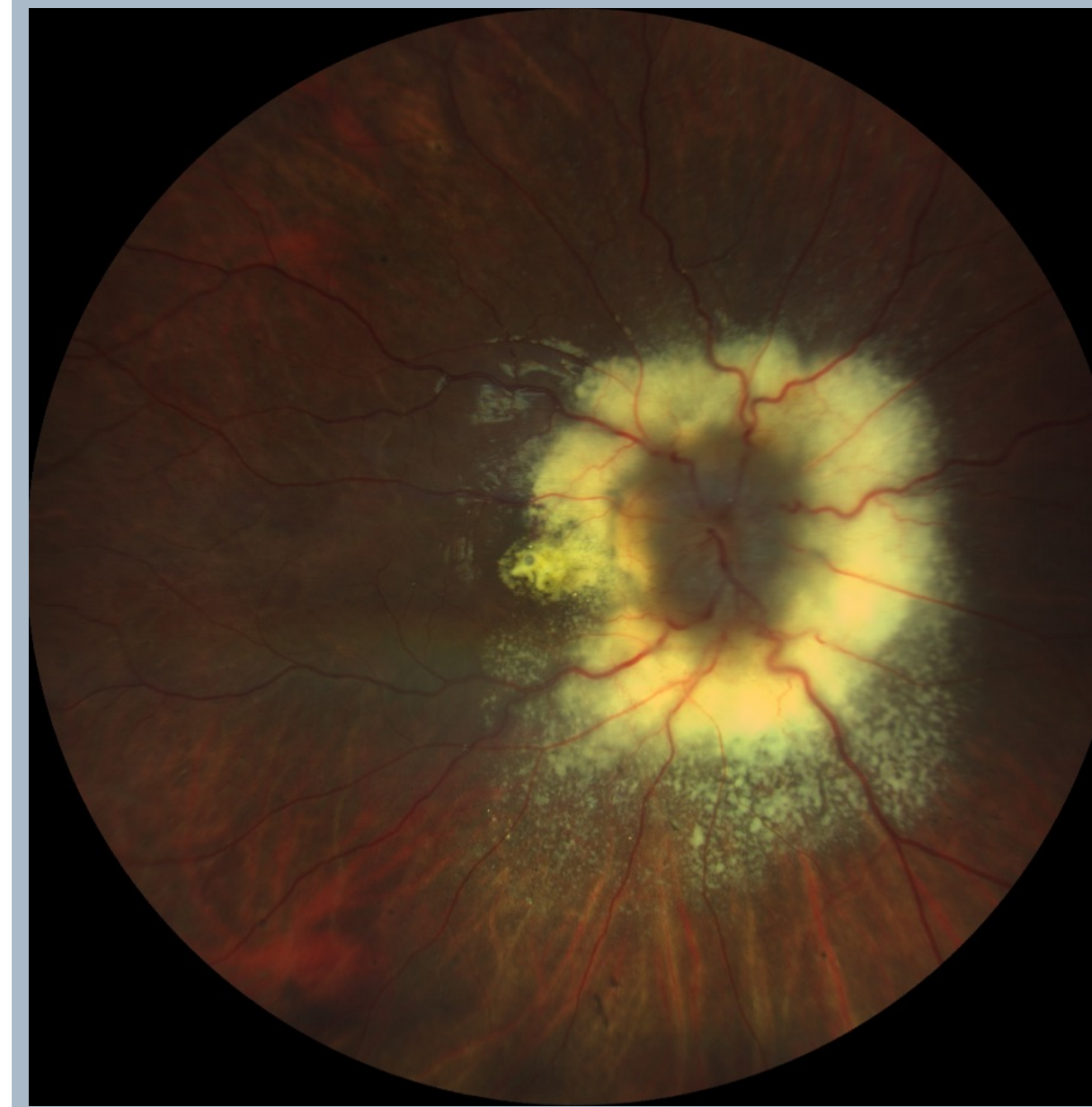
## Case Report

- HPI:** 9 year old female with progressively worsening vision in both eyes over a few months with associated headaches, photophobia, and nausea.
- PMHx:** Frequent UTI's, migraines, anxiety, obesity
- Ocular hx:** none
- Meds:** None
- FHx:** Migraines, great grandmother with glaucoma and grandmother with "retinal issue," HTN in mother and father
- Allergies:** No Known Allergies
- Social hx:** no recent travel, no sick contacts.
- Systemic exam:** Unremarkable

Ophthalmic Exam	OD	OS
Vision	20/200 ph NI	20/30 ph NI
Pupils	Briskly reactive, no APD	Briskly reactive, no APD
EOM	Full	Full
Visual Field	Full	Full
IOP	9	10
Lids/Lashes	WNL	WNL
Ishihara CP	9/14	14/14
Conj/Sclera	White & Quiet	White & Quiet
Cornea	Clear	Clear
Anterior Chamber	Deep & Quiet	Deep & Quiet
Iris	Flat, Round	Flat, Round
Lens	Clear	Clear
Vitreous	Trace cell	Trace Cell
Nerve	4+ Edema;exudates (see photo)	4+ Edema;exudates (see photo)
Macula	Exudates	Exudates
Vessels	Normal	Normal
Periphery	Flat x 4 quad	Flat x 4 quad

## Findings Initial Presentation

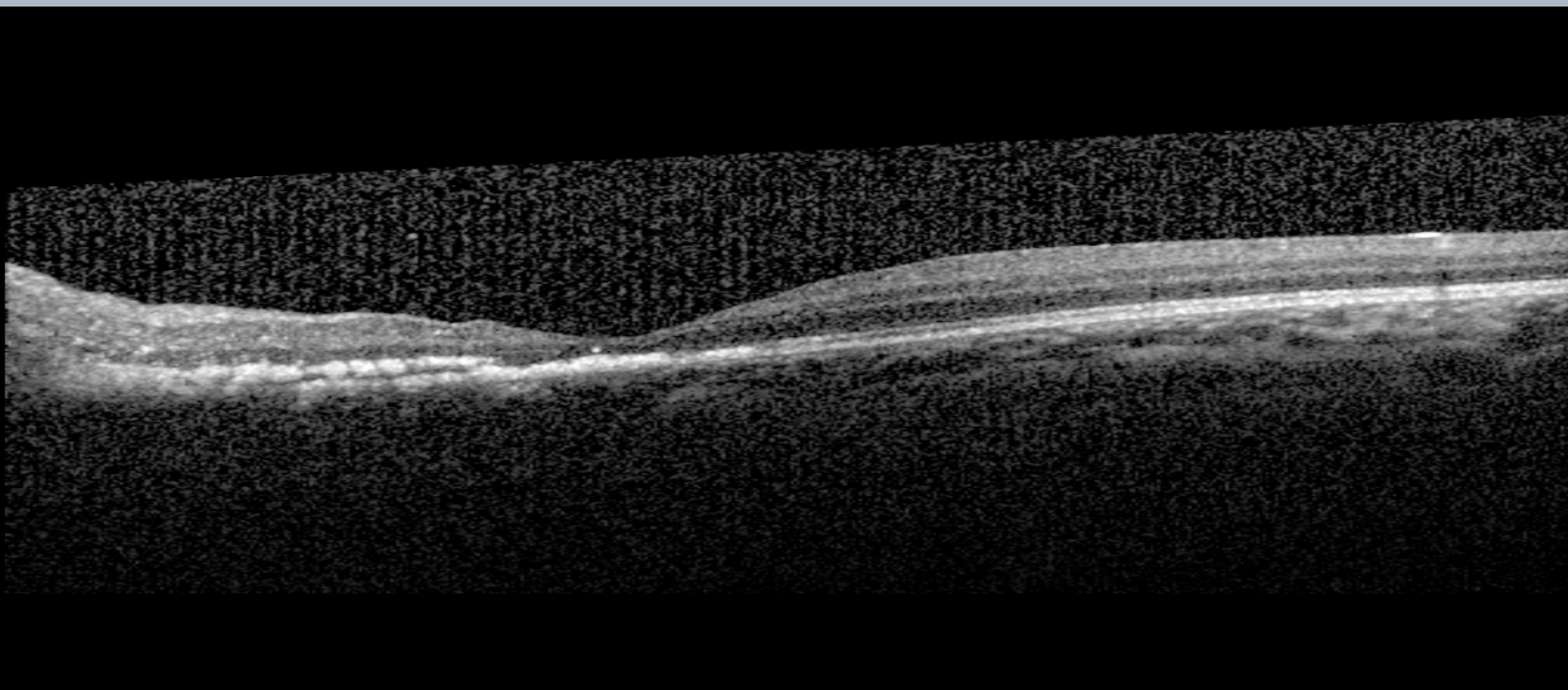
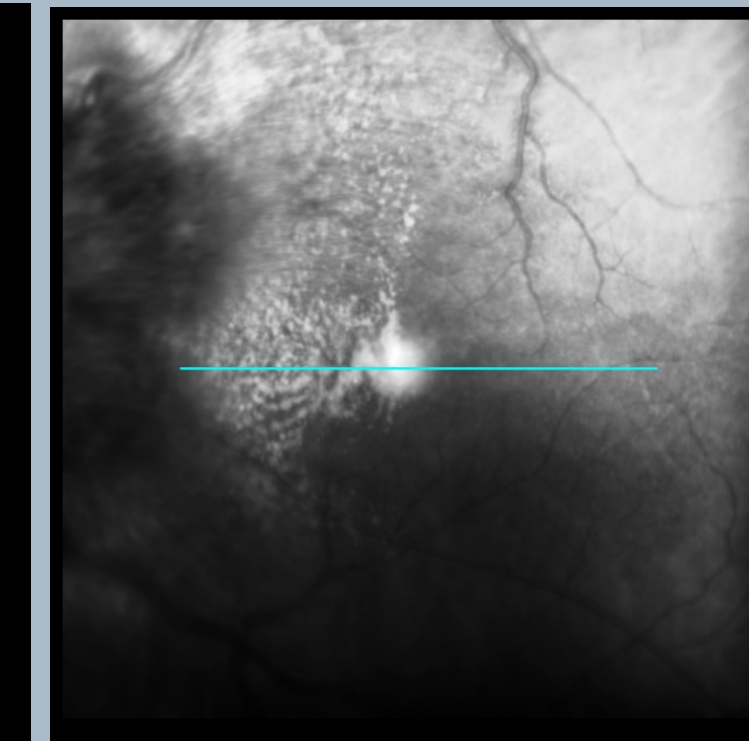
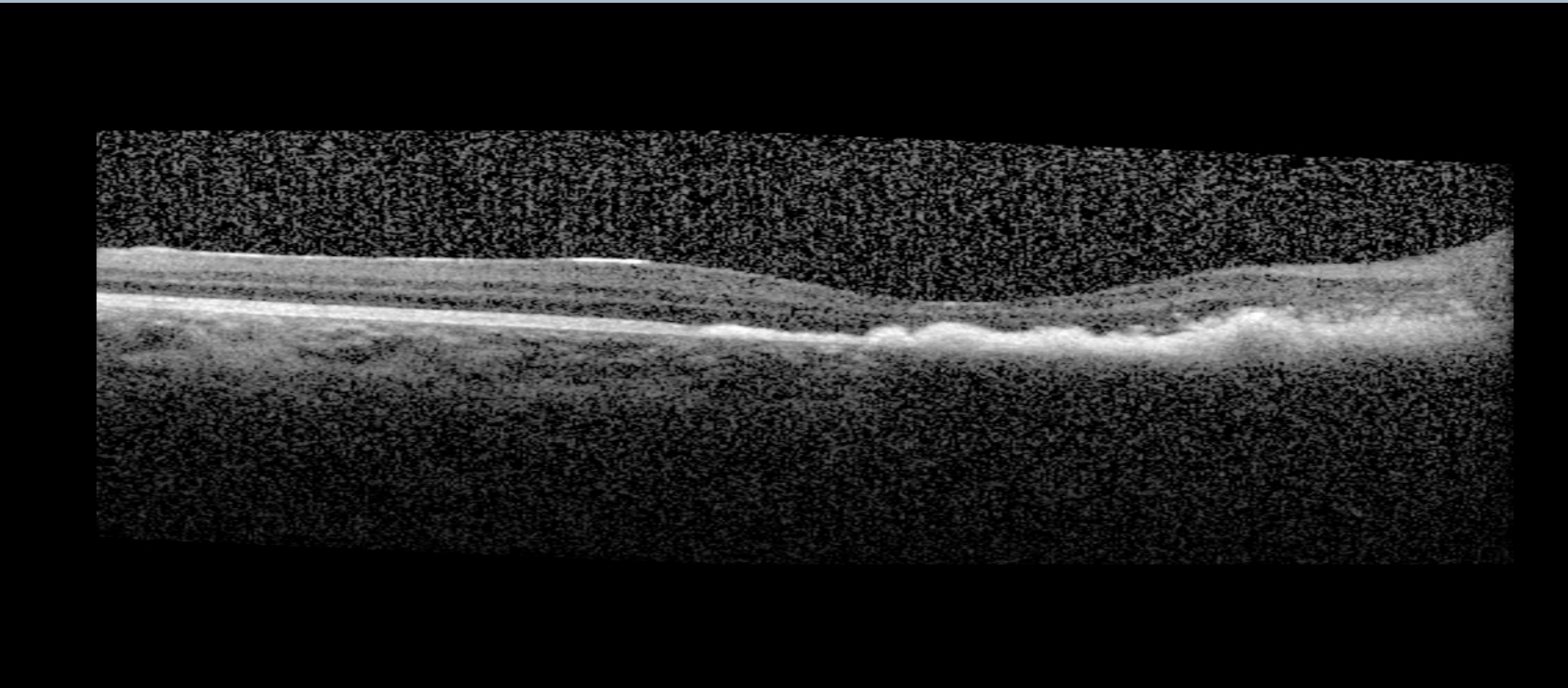
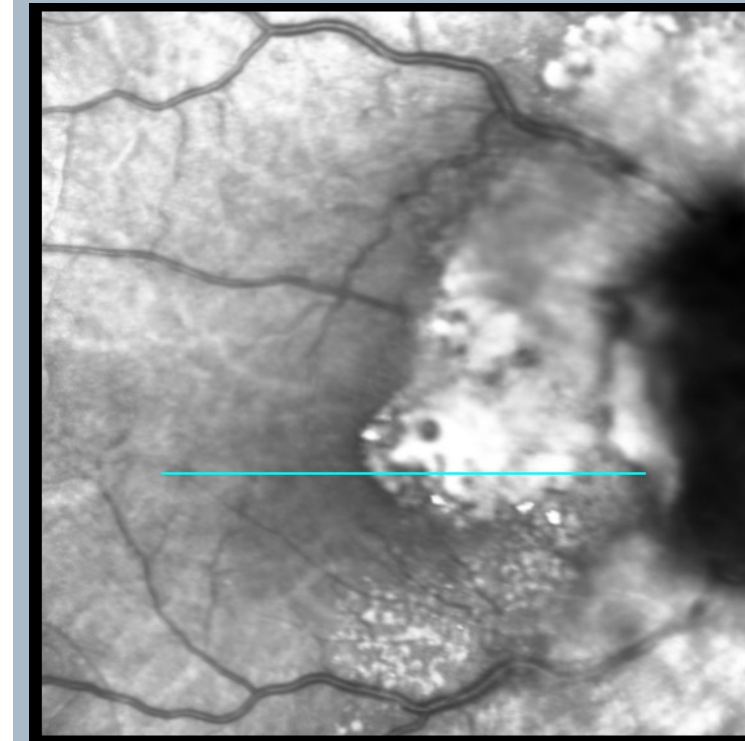
**Fundus Photo: 4+ Optic Nerve Head Edema with peripapillary exudates encroaching on fovea OD > OS. Tortuous vasculature**



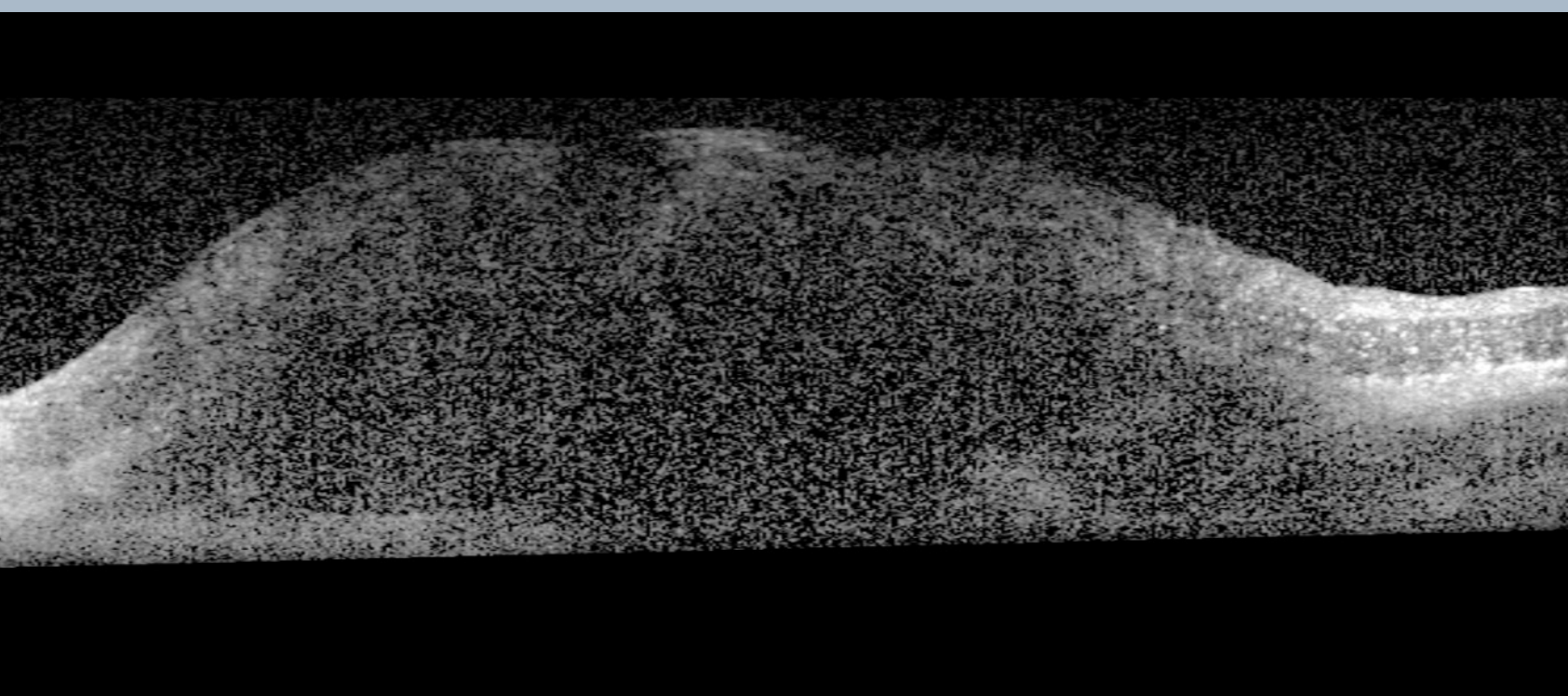
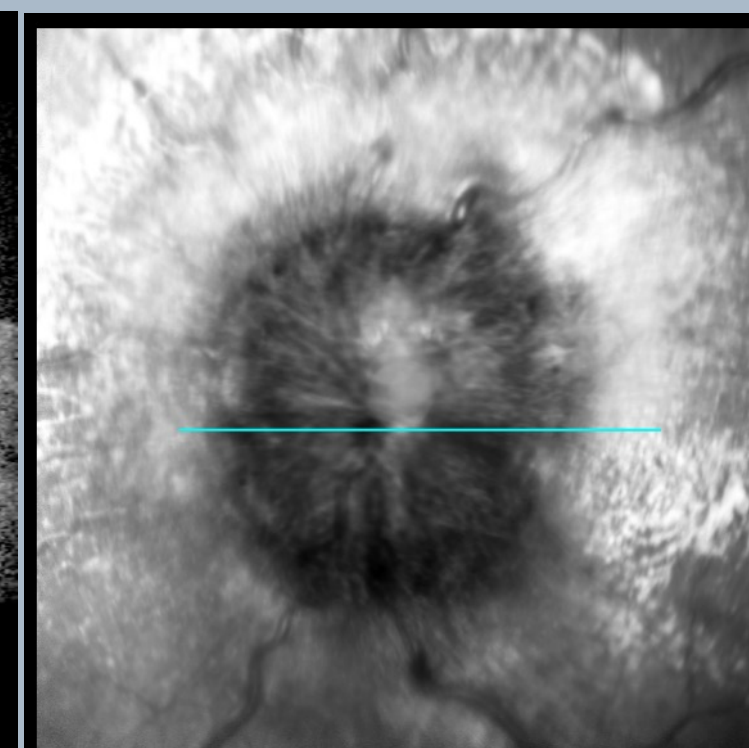
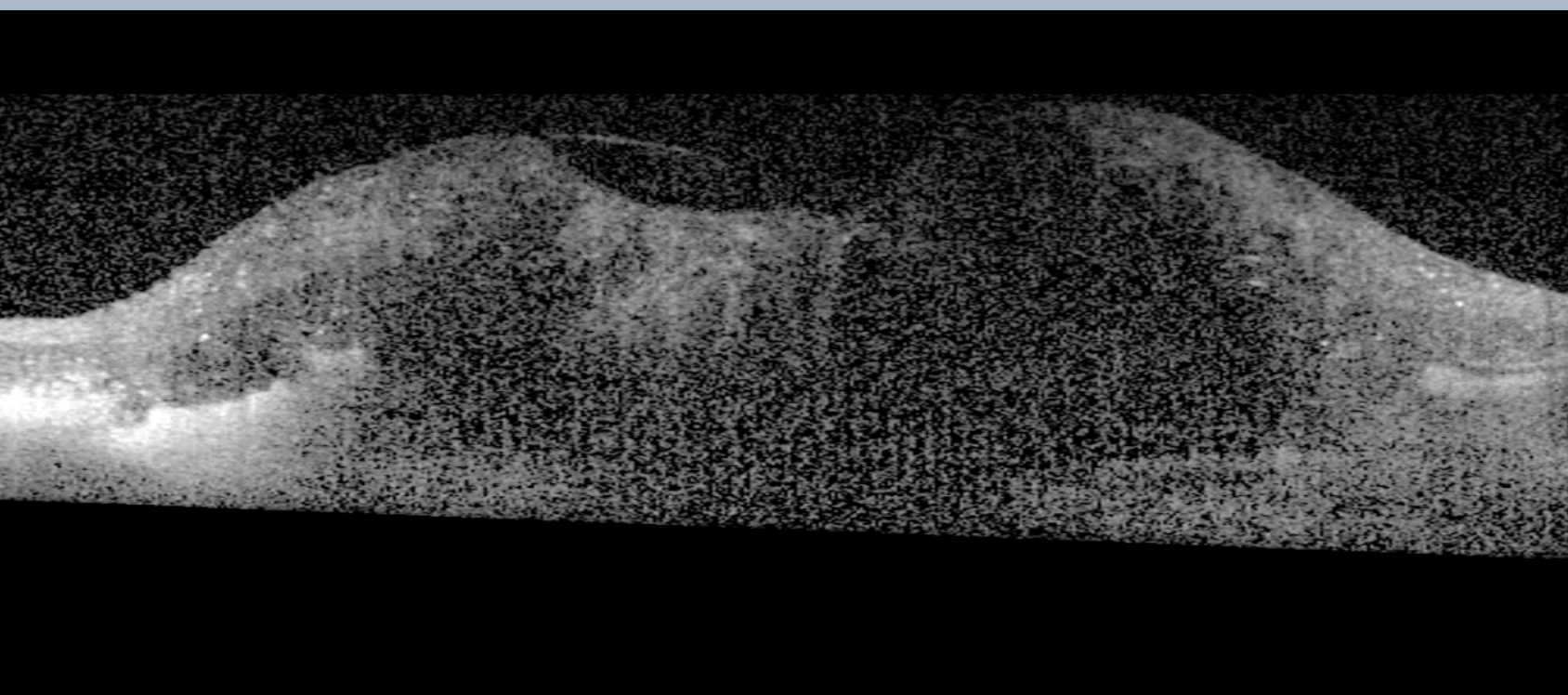
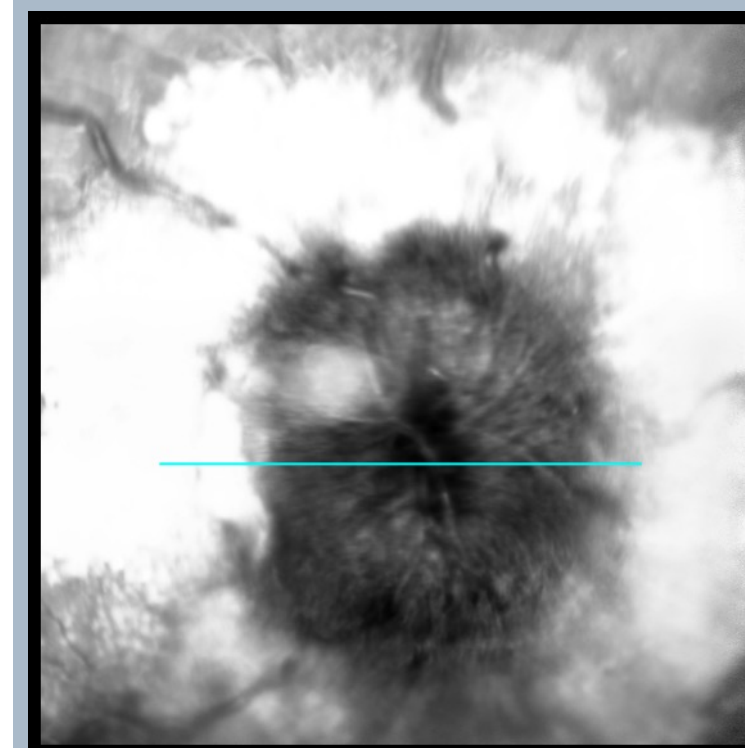
**IVFA Late Phase: Leakage surrounding the optic nerve consistent with the optic nerve head edema**



**OCT macula: Retinal thinning with peripapillary and sub foveal exudates OD>OS with associated peripapillary retinal atrophy**

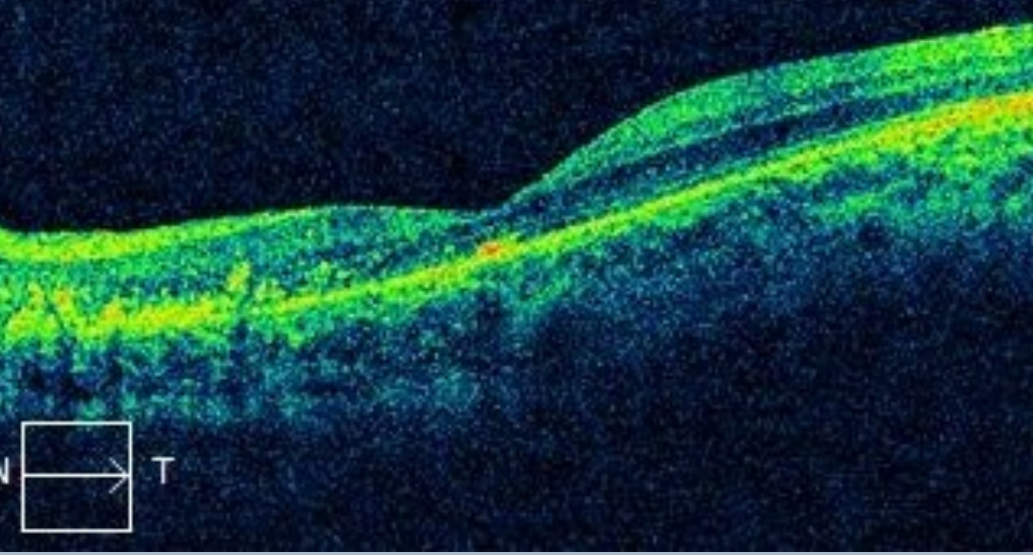
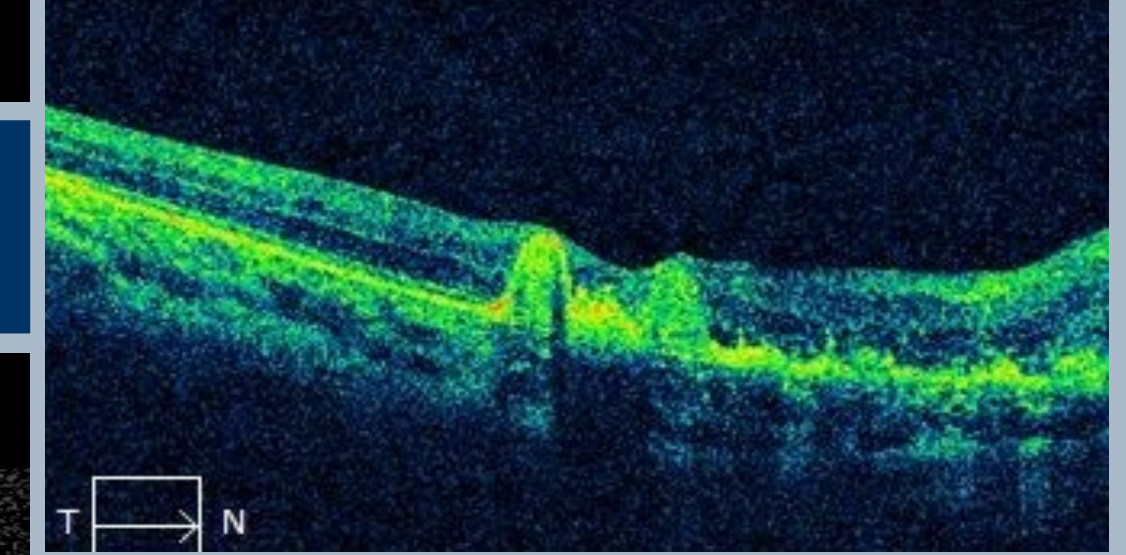
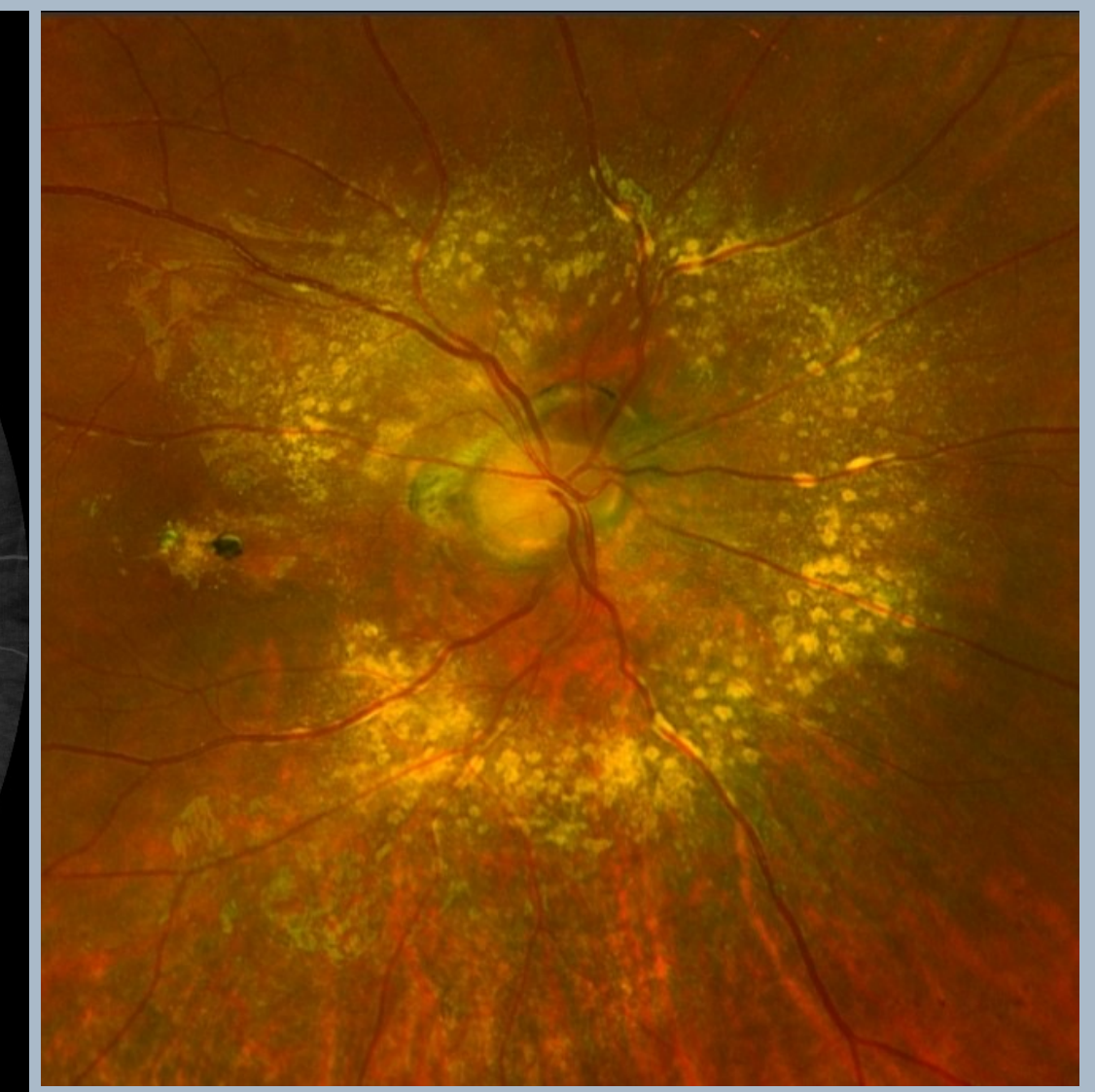


**OCT RNFL: significant optic nerve head thickening without cup OS as well as peripapillary hyperreflective exudates**



## Findings on 9 Month Follow Up

- Vision Subjectively Stable
- Admitted to hospital a second time for blood pressure control after BP in 200s/100s at routine nephrology visit
- VA OD 20/200 OS 20/40



## Discussion

- Patients renal biopsy showed regional parenchymal scarring with secondary focal and segmental glomerulosclerosis consistent with chronic pyelonephritis
- It was noted during biopsy that the patient had severe HTN when prone
- Hypertension did not resolve after biopsy and required multiple day stay in the pediatric ICU for blood pressure control
- Chronic pyelonephritis can result in scarring of the renal parenchyma and lead to renovascular HTN
- After extensive negative work up it was determined that the patient's ocular findings were consistent with hypertensive retinopathy secondary to chronic kidney disease
- Incidence of HTN in children in the US is estimated to be 0.3 to 4%<sup>1</sup>
- Renal disease is estimated to cause 30% of HTN in children<sup>1</sup>
- Hypertensive retinopathy has been shown in 8-50% of hypertensive children<sup>2</sup>
- Optic nerve head edema in a child has many possible etiologies. Hypertensive retinopathy is an important diagnostic consideration and warrants a multiple disciplinary approach to diagnosis and patient care.

## Conclusions

- After extensive work up the was diagnosed with hypertensive retinopathy secondary to chronic renal disease
- Causes of secondary hypertension are important diagnoses to consider in a child with hypertensive retinopathy

## References

- Rao G. Diagnosis, Epidemiology, and Management of Hypertension in Children. *Pediatrics*. 2016;138(2).
- Foster et al. Prevalence and Severity of Hypertensive Retinopathy in Children. *Clinical Pediatrics*. 2009;48(9).

## Further Workup

### Infectious workup:

#### Positive:

- Varicella Zoster IgG
- Strep O Quant Antibody

#### Negative:

- Syphilis IgG/IgM
- Quantiferon TB Gold
- Toxoplasma Gondii IgG/IgM
- Lyme IgG/IgM
- Bartonella antibody panel
- Herpes Simplex PCR 1 and 2
- Cytomegalovirus IgG/IgM
- Varicella Zoster IgM
- COVID-19 IgG

### Cerebrospinal Fluid:

#### Negative (opening pressure 7):

- C. neoformans/gattii
- Cytomegalovirus
- Enterovirus
- Escherichia coli K1
- Haemophilus influenzae
- HSV1, HSV2, HSV6
- Human Parechovirus
- Listeria Monocytogenes
- Neisseria meningitidis
- Streptococcus agalactiae
- Streptococcus pneumonia
- Varicella zoster Virus

### Urine Culture:

**Positive:** Hematuria, Enterococcus, Pseudomonas

### Inflammatory workup:

#### Abnormal:

–ESR, CRP, LDH, Beta-2 microglobulin

#### Normal:

–ANA, ANA specificity, C3, C4, ANCA, PR3, Cardiolipin IgG/IgM, ACE

### Imaging:

- MRI Brain normal
- MRI Orbits normal
- CTA/CTV Head normal
- Renal US – asymmetric size, right renal cyst
- CTA Abdomen – Mild cardiomegaly

### Pathology:

- Renal Biopsy – regional parenchymal scarring with secondary focal and segmental glomerulosclerosis consistent with chronic pyelonephritis



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