

# Ocular Syphilis with Concomitant Neurosyphilis and Tuberculosis: A Case Report

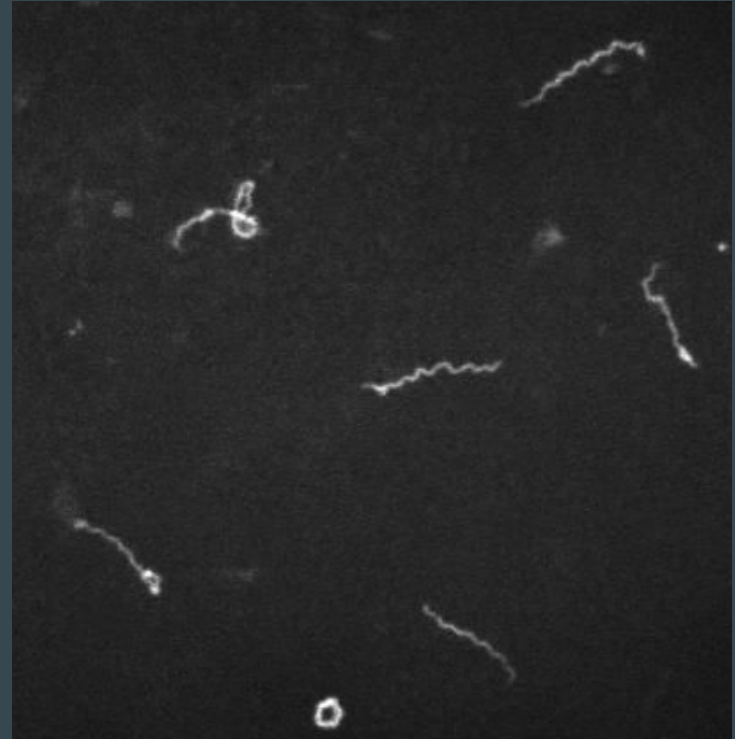


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# Introduction: Syphilis

- Causative Organism: *Treponema pallidum*
- G (-) Spiral (corkscrew) shaped
- Histology:
  - Unidentifiable by direct microscopy
  - Requires darkfield microscopy
    - Casted via oblique axis
- Transmission:
  - Venereal
  - Vertical



Centers for Disease Control and Prevention (CDC):  
Public Health Image Library

# Syphilis Progression

- **Primary: Early Localized (1-3 weeks)**
  - Chancre: Painless Ulceration
  - Painless Lymphadenopathy
- **Secondary: Disseminated (6-12 weeks)**
  - Nonpruritic Maculopapular Rash (Diffuse: including trunk, palm, soles).
  - Generalized Lymphadenopathy
  - Condyloma Lata: Smooth, white, painless lesion
- **Latent: Dormant**
  - Early: Within 1 year
  - Late
- **Tertiary:**
  - Gumma: Central Coagulative Necrosis

# Neurosyphilis

- Pathophysiology: CNS Invasion
- Manifestations
  - Asymptomatic (Early): CSF Findings
  - Symptomatic: headache, confusion, nausea, vomiting, and stiff neck
    - Ocular Syphilis
    - Ootosyphilis: Tinnitus/ Hearing Loss
    - Meningovascular: Infectious Arteritis within subarachnoid space resulting in CVA
  - Late
    - Tabes Dorsalis
    - General Paresis
- CSF Findings: One of the following
  - Lymphocytic Pleocytosis (elevation)
  - Elevated Protein Concentration
  - Reactive CSF-Venereal Disease Research Laboratory test (VDRL)

# Ocular Syphilis

- Infectious inflammation within any portion of the eye
- Types:
  - Uveitis
  - Optic Neuropathy
  - Retinal Vasculitis
  - Interstitial Keratitis
- Presentation:
  - Diminished visual acuity
  - Permanent Vision Loss
- May develop during any infectious stage

# Case Introduction

- Ocular Syphilis
  - Presentation: Progressive monocular vision loss
  - Left chorioretinitis
- Neurosyphilis
  - Presentation: Progressive memory loss
  - Confirmation with lumbar puncture
- Tuberculosis
  - Latent

# Case Report: Initial Presentation

61M presents to emergency department per recommendations of retinal specialist for vision changes.

Progressive L eye vision loss since 2022.

- 2023: Ophthalmologist diagnosed retinal artery branch occlusion
- 2023: Retinal specialist referral revealed L eye examination consistent with chorioretinitis. Diagnostics were initiated.
- 2024: Retinal specialist reevaluation: worsening subretinal fluid in the macula. Recommended emergent hospital evaluation.

Progressive memory issues & forgetfulness

- 2023: PCP conducted stroke diagnostic testing (unremarkable)
- 2023: Unremarkable ambulatory neurology evaluation

# Case Report: Additional History

**Past Medical History:** HTN

**Surgical History:** N/A

**Social History:**

- Residence: Mexican expatriate to American metropolis (1981)
- Sexual: 2 heterosexual, monogamous, lifelong relations

**Allergies:** NKDA



# Case Report: Physical Examination

- **Initial Vitals:** T (36.6), HR (72), RR (18), BP (142/84), SpO2 (97% RA)
- **Constitutional:** No acute distress, conversant
- **Eyes:** Anicteric, **nonerythematous sclerae** w/ normal conjunctiva
- **Neck:** Supple, full range of motion, **(-) cervical lymphadenopathy**
- **Lungs: Clear to auscultation**
- **Cardiovascular:** Heart regular in rate and rhythm, **no audible murmurs appreciated along base**
- **Abdominal:** Soft, Nontender, no guarding
- **Skin:** Normal temperature, tone, and turgor **without truncal rash.**
- **Extremities:** No digital cyanosis/ No clubbing. **No rash appreciated on visual inspection of palmar tissue.**
- **Psychiatric:** Alert and oriented to person, place and time/ **Appropriate affect/ Intact judgement**
- **Neurological:** **Inferior-nasal visual field defect of left eye.** Pupillary constriction to light (8 mm bilaterally in dark room, 5 mm b/l in response to light), no major pupillary restriction to accommodation (though limited to compliance)
- **GU:** No penile ulceration or femoral lymphadenopathy

# Case Report: Diagnostics

Sample	Measurement	Value	Reference
Serology (HD #1)	ESR	7	0 - 20 mm/hr
	CRP	<0.30	0.0 - 0.8 mg/dL
	TSH	4.88	0.3 - 5.5 UIU/mL
	ANA	Negative	Negative
	RF	<15	0-15
	ACE	37	16 - 85 U/L
	Treponemal Antibody	1:8 RPR titer x 2	Negative
	QuantiFERON Gold	Positive x 2	Negative
	HIV 1 Ab	Non-Reactive	Non-Reactive
	HIV 2 Ab	Non-Reactive	Non-Reactive
	HIV 1 P24 Ag	Non-Reactive	Non-Reactive
	CMV IgG	Reactive x 2	Non-Reactive
	CMV IgM	Non-Reactive x 2	Non-Reactive
	Toxoplasma IgG	Reactive x 2	Non-Reactive
	Toxoplasma IgM	Non-Reactive x 2	Non-Reactive

# Case Report: Clinical Progression

## 15 Day Hospitalization (2024)

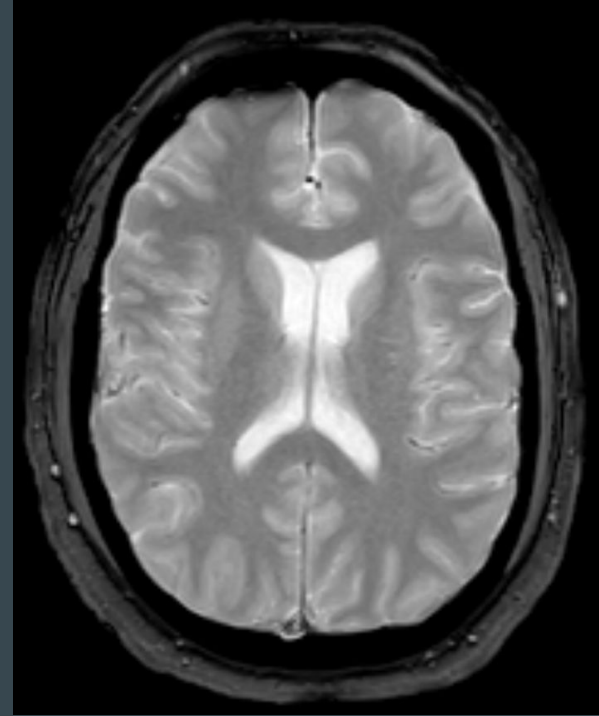
- Consultations: Infectious Disease, Neurology
- Antibiotic Regimen: PCN (4 million U Q4H x 14 days)
- Lumbar Puncture (HD #3): Neurosyphilis was confirmed with elevated CSF protein.
- MRI Brain (HD #4): Mild chronic small vessel ischemic changes. No intracranial pathology.
- MRI Orbital (HD #15): No abnormal enhancement, inflammatory changes, or mass.
- L Vitreous Fluid (HD #15): Confirmation of Treatment
- Anterior Chamber Aspiration (outpatient): Results below
- Outpatient EEG: Normal EEG in the awake, drowsy and sleep states for the patient's age.
- Outpatient ID reevaluation: Latent tuberculosis management
- Clinical Progression: Improvement in vision & memory

Sample	Measurement	Value	Reference
Cerebrospinal Fluid (HD #3)	Protein	76.7	15 - 45 mg/dL
	Glucose	65	40 - 70 mg/dL
	Gram Stain	Negative	Negative
	VDRL	Negative	Negative
	CMV	Negative	Negative
	HSV 1 & 2	Negative	Negative
	ACE	1.8	0-2.5 U/L

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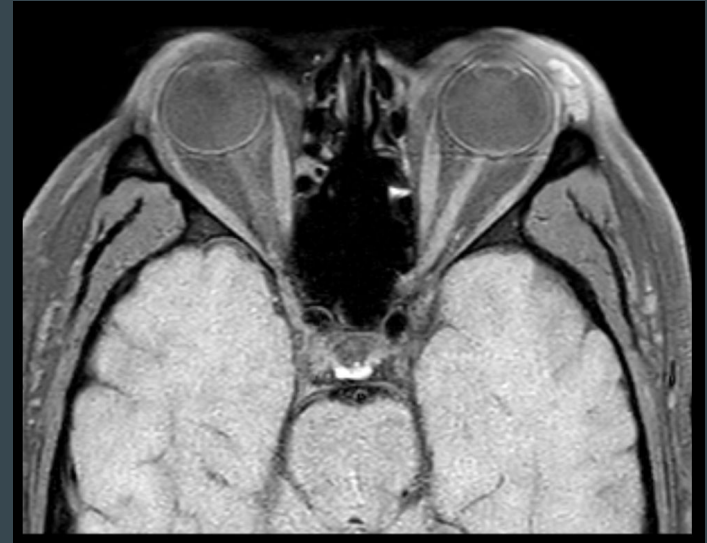
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Sample	Measurement	Value	Reference
Vitreous Fluid (HD #15)	Acid Fast Cx	Negative	Negative
	Aerobic Cx	Negative	Negative
	Anaerobic Cx	Negative	Negative

Sample	Measurement	Value	Reference
Aqueous Fluid (Outpatient)	CMV	Negative	Negative
	HSV	Negative	Negative
	VZV	Negative	Negative

# Discussion: Key Learning Points

- Recent reemergence of Syphilis has resulted in an increased incidence of comorbid complications, including neurosyphilis and ocular syphilis.
- CDC Guidelines recommend HIV screening in individuals with testing consistent with Syphilis. Our case suggests utility in testing individuals for other concomitant infectious diseases, as well.
- Vitreous Fluid analysis is a novel means to assess for ocular syphilis. Inconsistency in laboratory results suggest further analysis is required to evaluate its sensitivity and specificity.

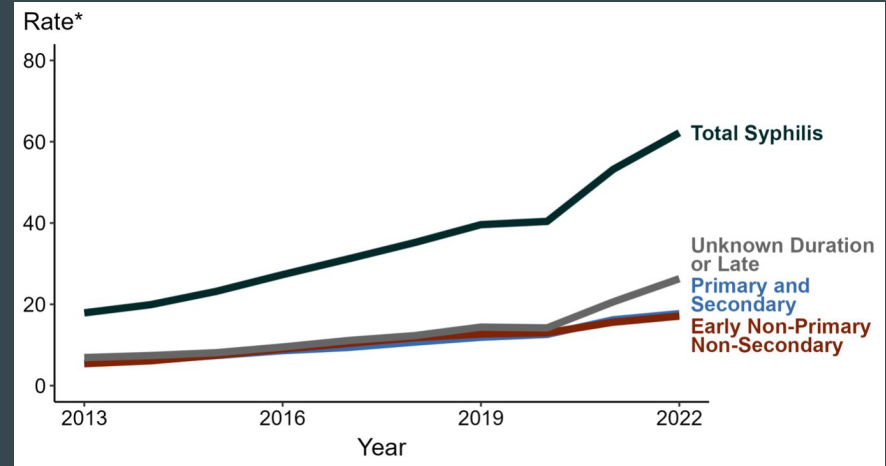
# Discussion: Syphilis Epidemiology

## Global Prevalence:

- **Average:**
  - Males: 17.7 cases per 100,000
  - Females: 17.2 cases per 100,000
- **Region:**
  - Western Pacific: 93 cases per 100,000 adults
  - Africa: 46.6 cases per 100,000 adults
  - Americas: 34.1 cases per 100,000 adult

## National Prevalence:

- 1990: 20.3 cases per 100,000 (mini epidemic)
- 2000: Nadir
- 2021: 176,713 cases (32% increase from 2020)



## Rates of Reported Syphilis Cases by Stage (United States, 2013–2022)

\*Per 100,000

CDC: 2022 STI Surveillance Report



# British Ocular Syphilis Study (BOSS)

Mathew, et al., 2014

- **Significance:** Largest prospective series of intraocular syphilis (IOS)
- **Goal:** To ascertain the prevalence and demographics of IOS
- **Methods:** Reviewed the British Ocular Surveillance Unit from 2009 to 2011 to identify the UK incidence, demographics, clinical features, laboratory data, and posttreatment visual outcomes of IOS patients
- **Findings:**
  - Incidence: 41 new cases (63 eyes)
    - Annual Incidence: 0.3 per million UK adult population
  - Demographics:
    - Average Age: 48.7 years (range: 20.6–75.1)
    - Gender: 90.2% male
  - Pathology:
    - Panuveitis: 41.3%
    - Anterior uveitis: 9.5%
  - Laterality
    - Bilateral: 56%
    - Unilateral cases: the left eye was more commonly affected ( $P = 0.009$ ).

# Discussion: Prevalence of Ocular Syphilis

- **Growing Incidence**
  - Exemplified in Baltimore:
    - 1.7 cases annually from 1984 to 2014
    - 5 cases annually from 2013 to 2017

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# Discussion: Ocular Fluid Analysis

## External Case Series:

- “Polymerase Chain Reaction Testing of Vitreous in Atypical Ocular Syphilis” (Ocular Immunology and Inflammation: Troutbeck et al., 2013)
- “Vitreous Treponemal Antibody as a Supplementary Test to Serology for the Confirmation of Syphilitic Chorioretinitis” (Retinal Cases & Brief Reports: Silpa-Acha et al., 2020)
- “Utility of Treponemal Testing from Aqueous Fluid in the Diagnosis of Ocular Syphilis in Patients with HIV/AIDs” (Retinal Cases & Brief Reports: Nair et al., 2020)

## Our patient: Conducted on HD #15

- Assisted in confirming completion of treatment duration

**Future Direction:** Requires extensive further research to confirm its utility

# Conclusion

- We present a unique case of a 61 male presenting with Ocular Syphilis with Concomitant Neurosyphilis and Tuberculosis
- Recent reemergence of Syphilis has resulted in an increased incidence of comorbid complications, including neurosyphilis and ocular syphilis.
- Our case suggests utility in broadening screening testing to include Syphilis testing.
- Vitreous Fluid analysis is a novel means to assess for ocular syphilis.

# Sources

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