30-year-old female presented with right eye discomfort, seeing flashes of light, and headache for a month duration

- Progressive vision impairment in the right eye
- No trauma
- No contact lenses
- No systemic symptoms
- Seen by ophthalmology, referred to me with a note saying: “I suspect TB”
HISTORY

PMH: None
PSH: None
Medications: None
Allergies: None
SOCIAL & EPIDEMIOLOGICAL HISTORY

Single, no children
Tobacco smoking <5pck years, no MJ use
No ETOH & no illicit substance use
No pets
Born in India, New Delhi immigrated to USA about 2 decades ago
International travel limited to travel Mexico yrs ago + travels to India, last 5 years ago
No family or personal hx of TB or known TB exposures
Work as an office manager
No work/volunteering in the medical/school/correctional system
No personal hx of incarceration
No periods of being un-domiciled
No recollection of own immigration TB status
EXAMINATION

VS: Afebrile, no tachycardia, no tachypnea, no hypoxia, and BP at target
In no distress
No external peri-ocular, conjunctival, corneal, or ocular mm pathology seen
Moist oral cavity, no lesions or thrush
No neck LAD
Clear lungs b/l
Soft abdomen w/o tenderness or hepatosplenomegaly
No skin rash or lesions
All joints and spine w/o decr. ROM, tenderness, or swelling
Neuro exam - cranial nn intact. Normal gait
Normal left eye
Rt eye macular edema, posterior uveitis with multifocal serpiginous-like choroiditis
LABORATORY RESULTS

- WBC 6.2 with normal differential
- Hb 13 g/dL, HCT 38%
- Platelets 296 K/UL
- Chemistries - normal
  - AST 14 U/L, ALT 17 U/L
  - HbA1c 4.7%
  - ESR 12

- Treponemal Ab negative
- Toxoplasma IgG Ab negative
- Angiotensin converting enzyme normal
- HIV negative
- HCV Ab negative
- HBV immune by vaccination

- QuantiFERON-TB Gold positive
- Sputum AFB negative,
  - NAAT negative
WHAT TO DO?

TB or not TB?
How do we know?
CLINICAL COURSE
AND
TREATMENT PLAN

- No systemic symptoms of TB
- Negative AFB smear and NAAT
- CXR w/o obvious concern for TB disease
- CT chest ordered, pt did not attend
- No intraocular diagnostics done by ophthalmology
- Based on epi risk, pos Quant, r/o other causes, and rt eye clinical findings = presumptive ocular TB, specifically tubercular multifocal serpiginous-like choroiditis
- Started on RIPE + B6 planned for total course of 6 months
FINAL TREATMENT AND FOLLOW UP

• Based on the recently published collaborative ocular tuberculosis study [COTS] and a clinically useful calculator she had a score of 5, which indicates expert consensus to treat for TB

• Tx: Rifampin 600 mg daily, isoniazid 300 mg daily, pyrazinamide 1600 mg daily, and ethambutol 1200 mg daily with 50 mg of vitamin B6

• Planned course for 6 months total

• Oral steroids was discussed given her vision threatening disease and ultimately decided not to administer until the TB therapy was started

• She had frequent and close optho f/u

• She had remarkable improvement, now with normal vision 20/20
COTS Calculator

statistically-derived, evidence- and experience-based 5-level scoring system derived through a systematic two-step Delphi method for initiation of antitubercular therapy in patients with ocular tuberculosis.

• An online open-access, cost-effective and automatically generated score based on minimal data points
• Supported by two sets of published consensus guidelines from the COTS CON group

The COTS Consensus guidelines are based on expert inputs based on their experience along with the interpretation of the published literature about initiation of Anti-tubercular therapy (ATT) in patients with ocular tuberculosis. Physician discretion is advised in adopting this tool in their clinical practice and it Should be used as a guide by the treating physician in concurrence with typical signs and symptoms and radiological investigations and after ruling out non-TB causes of intraocular inflammation."
**The COTS Consensus guidelines are based on expert input based on their experience along with their interpretation of the published literature about initiation of Anti-tubercular therapy (ATT) in patients with ocular tuberculosis. Physician discretion is advised in adopting this tool in their clinical practice and it should be used as a guide by the treating physician in concurrence with clinical signs and laboratory and radiological investigations and other ruling out non-TB cause of intracocular inflammation.**  

### Interpretation

<table>
<thead>
<tr>
<th>Median Score</th>
<th>Interpretation</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median score 1</td>
<td>Very low probability for most experts to consider initiating Anti-tubercular therapy (&lt;20%)</td>
<td>IQR 0</td>
</tr>
<tr>
<td>Median score 2</td>
<td>Low probability for most experts to consider initiating Anti-tubercular therapy (21-40%)</td>
<td>Represents absolute consensus, &gt;90% of experts agreeing on the initiation of Anti-tubercular therapy</td>
</tr>
<tr>
<td>Median score 3</td>
<td>Mixed probability for most experts to consider initiating Anti-tubercular therapy (41-60%)</td>
<td>IQR 1</td>
</tr>
<tr>
<td>Median score 4</td>
<td>High probability for most experts to consider initiating Anti-tubercular therapy (61-80%)</td>
<td>IQR 2</td>
</tr>
<tr>
<td>Median score 5</td>
<td>Very high probability for most experts to consider initiating Anti-tubercular therapy (81-100%)</td>
<td>IQR 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Represents weak consensus, &gt;70% of experts agreeing on the initiation of Anti-tubercular therapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Represents poor consensus, &lt;10% of experts agreeing on the initiation of Anti-tubercular therapy</td>
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</tbody>
</table>
#1 Presentation

Ocular TB, can present in various ways, and therefore clinicians need high index of suspicion to make the diagnosis.

#2 Diagnostics

Ocular TB diagnostics are limited, and ocular TB cases may be presumptive based on ocular findings and evidence of systemic infection.

#3 Treatment

Current management of tubercular choroiditis is based on recs from The Collaborative Ocular Tuberculosis Study [COTS] consensus guidelines on the mgmt. of tubercular uveitis.
#1. Ocular TB presentation

- Variable & can affect any part of the eye
- Challenging to recognize from the more common diagnoses
- Need high index of suspicion
- This patient was born in India where the TB rate is 188 per 100,000 population, and she presented with the eye symptoms and a positive QFT.
- **Urgency** - Her eye findings of *unilateral multifocal serpiginous choroiditis* and macular edema was concerning for vision threatening disease and needed urgent diagnostics and treatment decisions.
# DIAGNOSTICS

- Ocular TB diagnostics are limited
- Ocular TB cases may be presumptive based on ocular findings and evidence of systemic infection
- Similarly, to other extra-pulmonary tuberculosis sites, diagnosis can be challenging also for ocular TB
- Ocular TB **often** presents without systemic symptoms and pulmonary findings which limits the usefulness of the current TB diagnostics
- When no intra-ocular fluid/tissue available for nucleic acid amplification testing or culture, practically the diagnosis will end up as presumptive based on epidemiological risk, positive tests for tuberculosis infection, ruled out other causes of ocular or in this case posterior uveitis. **This case display compelling images for unilateral multifocal tubercular serpiginous-like choroiditis**
# TREATMENT

- Current mgmt. of tubercular choroiditis is based on recs from The COTS consensus guidelines
- The COTS calculator can assist with treatment decisions and when to use steroids
REFERENCES


5. Agrawal, R., Ludi, Z., Betzler, B.K. et al. The Collaborative Ocular Tuberculosis Study (COTS) calculator—a consensus-based decision tool for initiating antitubercular therapy in ocular tuberculosis. Eye (2022)
CONCLUSION

This case illustrates a clinical presentation of unilateral multifocal tubercular serpiginous-like choroiditis & highlights how the recently published COTS guidelines on the mgmt. of tubercular uveitis and the COTS calculator can assist with treatment decisions.
THANK YOU

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