HISTORY & EXAM:
A 41 year-old african-american woman developed a shadow over her left eye in early May. She denied pain. Visual
acuity was 20/20 OD and 20/25+2 OS. Central static perimetry showed moderate nasal, superior and inferior
constriction in the left eye. There was 360-degrees of left optic nerve head elevation. Right eye examination was
normal. A diagnosis of optic neuritis was felt most likely. MRI report was consistent with this.

By early June left eye vision had deteriorated to 20/400. The left optic nerve remained swollen. Neuro-ophthalmic
and neurologic examinations were otherwise normal. She was admitted to the hospital for IV steroids and further
workup.

She had no previous medical or ocular history. She was not taking any medications. She worked in an office at the
county jail and did not have exposure to inmates. PPD had been negative. There was no history of toxin exposure.
There was no family history of ophthalmic, neurologic or autoimmune disease.

MR imaging was reviewed. It showed perineural enhancement in both orbital apices, as well as multiple superficial,
nodular, enhancing lesions of the brain and upper spinal cord (see figures). MR angiography of the brain, CTs of the
chest, abdomen and pelvis, and gallium scan were normal.

Vitamin D was low. ESR was 34. Blood work was otherwise unremarkable including CBC, BMP, LFTs, TSH, ACE, C-
ANCA, P-ACNA, anti DS-DNA and SSA/B. Serum infectious studies were negative including quantiFERON TB gold,
Lyme, HIV, toxoplasma and cystercercosis.

Spinal fluid analysis showed normal glucose, elevated protein (105 mg/dL), and a lymphocytic pleocytosis (89 wbc/µL,
85% lymphocytes, 9% monocytes, 6% neutrophils). There were no oligoclonal bands. JC virus was negative. AFB
smear and culture were negative. Bacterial and fungal cultures were negative.

A procedure was performed. When that failed to reveal the diagnosis, a second procedure was performed.

FINANCIAL DISCLOSURE: NONE
'Tis Nobler in the Mind to Suffer... Or to Take Arms Against a Sea of Troubles and by Opposing End Them? 

Answer

FINAL DIAGNOSIS:
Neuro-sarcoidosis

SUMMARY OF CASE INCLUDING PATHOLOGY:
Biopsy of left orbital fat showed chronic inflammation and normal adipose tissue (see figures). Flow cytometry did not identify a monoclonal population. 

A superficial cervical spinal cord lesion was biopsied. Microscopic examination showed coalesced granulomata with central caseous necrosis surrounded by chronic inflammation. Gram, GMS and acid fast stains did not reveal organisms (see figures). Acid fast culture was negative. Bacterial culture was negative. PCR for Mycobacterium TB was negative. There were no features typical for neoplasia. CSF angiotensin converting enzyme was elevated. Within 5 days of receiving IV steroids left eye vision improved to 20/30. Optic nerve edema resolved and MRI demonstrated decreasing size of the lesions (see figure), which are typical for granulomatous disease (1). In mid-July she developed a shadow in the right eye. Visual acuity was 20/20 with each eye and automated visual fields were normal. She was treated with steroids, then four drug antimycobacterial therapy without improvement in subjective symptoms. Antimycobacterial agents were stopped after 2 weeks due to side effects. Off all therapy, her clinical examination and imaging have remained stable. 

Both tuberculosis and sarcoidosis are known as mimickers with diagnosis relying on a high degree of clinical suspicion coupled with, often elusive, confirmatory laboratory or pathological evidence. In this case the lack of demonstration of infectious organisms using multiple modalities (serology, CSF and tissue culture, tissue stains and tissue PCR), elevated CSF ACE, which is reported to have greater than 90% specificity for sarcoidosis (2), response to steroids and lack of worsening off antimicrobial therapy led to a diagnosis of sarcoidosis. While necrotizing granulomata are considered classic for mycobacterial disease, they have been reported in sarcoidosis (3-5) and therefore do not dissuade us from this diagnosis.

T.B. or not T.B.? When pathology shows caseating granulomata, the burden of proof for a diagnosis other than tuberculosis is on the physician. In this case circumstantial evidence is plentiful. Exoneration requires proof of an alternative diagnosis. How does one prove a diagnosis of exclusion (i.e. sarcoidosis)? Dilemmas regarding empiric therapy are coupled to the diagnostic dilemma. When is antimycobacterial therapy indicated in a patient who tolerates it poorly? When is monotherapy with steroids appropriate?

KEYWORDS: Optic Neuropathy, Meningitis, Brain Lesions, Granulomatous Disease

REFERENCES:
1. Mafee, Dorodi, Pai, Sarcoidosis of the eye, orbit and central nervous system, Radiologic Clinics of North America, 37, 73-87, 1999
4. Karkhanis, Joshi, All that Caseates is not T.B., Lung India, 24, 100-101, 2007