

# Differential diagnosis of optic nerve swelling

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## Abstract

A patient with HIV/AIDS presented with miliary TB, a cerebral lesion and a swollen optic nerve. On anti-TB therapy, the cerebral and optic nerve lesions initially worsened. Biopsy of the optic nerve was undertaken to exclude other disorders but only showed necrosis. Anti-TB therapy was continued and with time all lesions resolved.

## Case history

A 38-year-old patient was diagnosed HIV positive in 1992. In February 1999, she developed a stiff right elbow. In December 1999, her CD4 count was 90 cells/ $\mu$ l and viral load 500,000 copies/ml and she was commenced on highly active antiretroviral therapy (HAART) with AZT, 3TC and nelfinavir (1). Five days later she presented with pyrexia, productive cough, abdominal pain and a swollen left optic nerve. A chest X-ray showed reticulo-nodular shadowing and ultrasound showed hepatomegaly and lymphadenopathy. Acid fast bacilli were found in sputum, lymph node biopsy and bone marrow aspirate. An MRI scan of her elbow showed gross synovial thickening compatible with TB involvement. MRI scan of the brain showed a ring-enhancing lesion in the right cingulate gyrus with surrounding cerebral oedema. Her right optic nerve was normal (VA 6/5) but left was swollen with vision at 6/9 (Figure 1). At this stage the differential diagnosis of the optic lesion was TB (2), toxoplasmosis (3), lymphoma (4) and less likely was CMV (5) and cryptococcus. Toxoplasma serology later turned out to be negative as was cryptococcal antigen and TPHA.

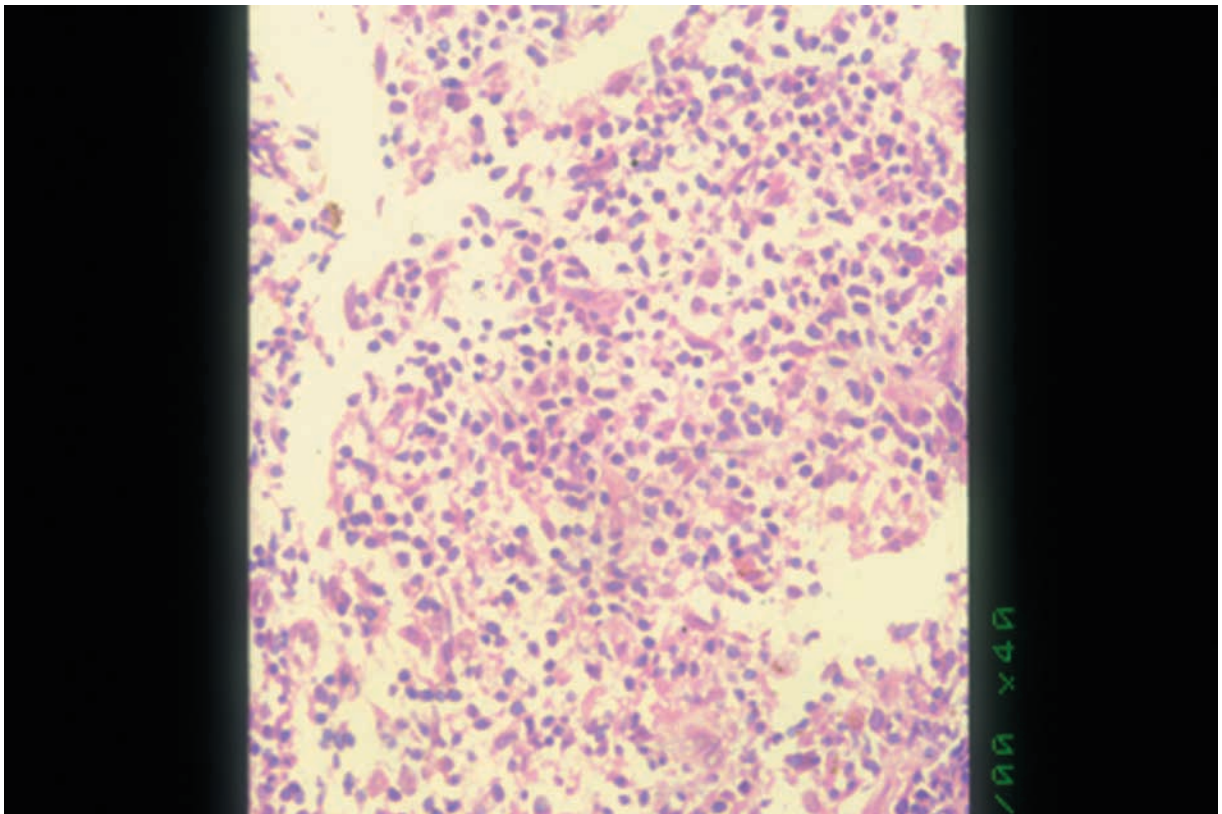
HAART was stopped and she was on quadruple therapy for TB with an increased dose of isoniazid for her CNS lesion. She developed gout so pyrazinamide was stopped. Dexamethasone was started because of the cerebral oedema and to prevent the development of raised intracranial pressure. Over the next few weeks, her optic nerve lesion grew in size and vision reduced to 6/60. A new occipital lesion had also appeared in the brain MRI and empirical anti-toxoplasma therapy was started. Biopsy of the optic nerve revealed necrotic tissue only (Figure 2) — no evidence of active TB, toxoplasmosis or lymphoma was found. This was interpreted as not showing evidence of any new pathology. The TB drugs were therefore continued alone and over the next few weeks, the optic nerve lesion gradually reduced in size (vision remained at 6/60) and no further lesions appeared in the brain.

## Lesson

This lady presented with a swollen optic nerve when her CD4 count was very low and she was known to have miliary tuberculosis. Whilst a TB granuloma was a possibility for the optic nerve swelling, she was also at risk for toxoplasmosis (3) and lymphoma (4). When TB treatment was started, she initially appeared to get worse in that the optic nerve swelling increased and a new lesion appeared in the brain MRI scan. Due to the risk of missing other diagnoses in which completely different treatment would be required, the optic nerve biopsy was carried out. The biopsy did not find positive evidence of toxoplasma or lymphoma so it was decided to continue anti-TB treatment alone and watch. On prolonged anti-TB treatment she did respond and a presumptive diagnosis of TB granuloma of the optic nerve (2) was made. TB is particularly common in HIV infected patients in sub-Saharan Africa and in HIV infected patients with CD4 counts <100 cells/ $\mu$ l there is an increased likelihood of extra-pulmonary/disseminated spread.



**Figure 1** Initial swollen appearance of left optic nerve – vision 6/9.



**Figure 2** Optic nerve biopsy showing necrotic tissue only.

## References

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