# The diagnostic challenge of a rare CNS infection mimic: neuro-Behçet's disease

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## Background

Behçet's disease is a systemic vasculitis syndrome, a rare but grave manifestation of the disease is neuro-Behçet's disease (NBD) involving the central nervous system. The diagnosis of neuro-Behçet's disease depends on clinical criteria, however atypical presentation such as our case of a prolonged history of pyrexia of origin pose a diagnostic challenge and ambiguity about application of these criteria for the clinician.

## Case description

We report a 35-year-old Nicaraguan man with residence in Ireland for 5 years who presented to the emergency department with abdominal pain and generalised weakness. He reported a 5-month history of recurrent fevers, night sweats and weight loss of 15 kgs. He had a 3-week history of cough and haemoptysis. This was his third admission to the third hospital with similar symptoms over the course of 5 months. On admission denied any headache, neck stiffness, photophobia, rash or any urinary symptoms.

He worked in a pet factory, handling meat for dog food. He was a non-smoker, non-drinker. There was no personal or family history of tuberculosis.

On examination the patient had generalised abdominal tenderness, had bibasal crepitations on auscultation of his chest, no heart murmurs, no lymhadenopathy or rash. Neurological assessment was completely normal.

Clinically the patient had recurrent daily fevers every night and became progressively oedematous throughout his prolonged admission. He also complained of progressive bilateral lower limb weakness and had objective decreased power and hyperreflexia in the lower limbs too. A week into his admission he developed an aseptic meningitis, which was treated empirically. His lumbar puncture and serology results were inconclusive (Figure 2).

Computed tomography (CT) pulmonary angiogram revealed moderate pleural effusions, compressive atelectasis with superimposed consolidation, pericardial effusion and mildly enlarged right hilar and infrahilar nodes (Figure 1). Magnetic resonance imaging (MRI) of the brain revealed a tiny focus of right occipital horn intraventricular diffusion restriction, suspicious for ventriculitis. All his infective and autoimmune serologies came back negative. Given he didn't show satisfactory clinical improvement and considering the high protein in his CSF results he was treated as tuberculous meningitis and was discharged home.

Three months into his CNS tuberculosis treatment he started spiking high grade fevers and was re-admitted. Multidisciplinary review of the patient's history revealed he had recurrent oral ulcerations, last time three months prior to the admission. Clinical suspicion of neuro-Bechet's disease was raised, and the patient was commenced on high dose steroids and Infliximab. The patient showed rapid clinical improvement after introduction of steroids and was subsequently discharged without further re-admission to date.

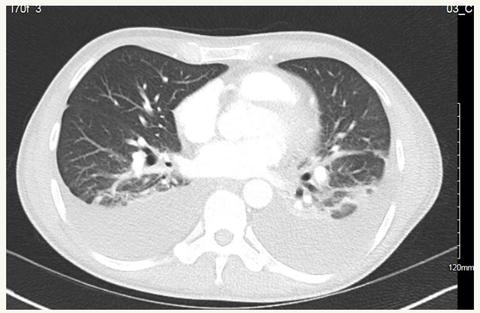

Figure 1: CT of the thorax

| Diagnostic test | Result – week 1 of admission | Result – week 3 of admission |
|---|---|---|
| CRP | 143 | 47 |
| Cerebrospinal fluid (CSF) white cell count (normal range: 0 to 10) | 462 – 406 – 544 Polymorphs 99% | 18 – 16 – 10 |
| CSF protein (normal range: 15-45 mg/dl) | 268 mg/dl | 123 mg/dl |
| CSF glucose (normal range 2.2 to 3.9 mmol/l) | 1.4 mmol/l | 2.7 mmol/l |
| CSF BioFire PCR panel | all negative | all negative |
| CSF cytology | no malignant cells, increased number of monocytes seen | normal cytology |
| CSF tuberculosis (TB) GenXpert | negative | negative |
| CSF TB culture | no growth | no growth |
| TB blood culture | no growth | - |
| Quantiferon | indeterminate | - |

Figure 2: CSF and blood results

| Differential diagnoses | Cells/ mm3 | Lymphocyte/ Polimorphonuclear (PMN) | Protein (mg/dl) | Glucose (mg/dl) |
|---|---|---|---|---|
| Normal adult | 0-3 | Lymphocyte dominant | <45 | >40 |
| NBD | 50-200 | Lymphocyte or PMN dominant | Midly increased | Often normal |
| Multiple sclerosis | <50 | Mostly lymphocyte dominant | Mildly increased | Almost always normal |
| Chronic infectious meningitides | 50-500 | Mostly lymphocyte dominant, rarely PMN | ↑ | Often ↓ |
| CNS-vasculitides | <50 | Mostly lymphocyte dominant | ↑ | Often normal |
| Carcinomatous meningitis | 5-500 | Mostly lymphocyte dominant | ↑ | Normal or ↓ |
| TB meningitis | 100-600 | Mostly lymphocyte dominant | ↑ (50-300) | ↓ |

Figure 3: characteristics of CSF components in NBD and major differential diagnoses

## Discussion

NBD is defined as a combination of neurologic symptoms and/or signs in a patient with Behçet's disease. Relevant syndromes include brainstem syndrome, multiple-sclerosis like presentations, movement disorders, meningoencephalitic syndrome, myelopathic syndrome, cerebral venous sinus thrombosis, and intracranial hypertension. Clinical presentation, the patient's history, imaging and CSF characteristics (Figure 3) can help evaluate differential diagnoses. Central nervous involvement falls into parenchymal and non-parenchymal subtypes. The parenchymal type is more prevalent and presents as brainstem, hemispheric, spinal, and meningoencephalitic manifestations. In parenchymal NBD, cerebrospinal fluid (CSF) generally exhibits pleocytosis, increased protein and normal glucose. The typical acute NBD lesions in brain MRI are mesodiencephalic lesions. Parenchymal NBD attacks can be treated with glucocorticoids alone or in combination with azathioprine.

## Conclusion

Neuro-Behçet's disease is a challenging clinical diagnosis. During the patient's evaluation the clinical presentation and history need to be assessed in light of the cerebrospinal fluid and neuroimaging results. Main differential diagnoses to be outruled are infectious meningitides including tuberculous meningitis, CNS-vasculitides, multiple sclerosis, carcinomatous meningitis. Complex medical presentations require multidisciplinary team approach to achieve diagnosis in a timely manner.

## References

The patient's consent was obtained for presentation.

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