

# Stroke, Covid-19 Infection or Herpes Simplex Encephalitis: A Diagnostic Dilemma

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## Case Presentation

A 71 year old previously healthy lady presented to the emergency department in May 2020 with a two day history of headaches, fever and confusion.

18 hours prior to attendance she also developed expressive dysphasia.

Her background history was not contributory and she took no regular medications.

In line with the guidance at this time for managing patients with fever she was admitted to a Covid-19 isolation unit and a nasopharyngeal swab for viral PCR was sent to test for SARS-CoV-2.

Clinical examination was notable for expressive and receptive dysphasia, vertical gaze nystagmus, right upper limb pronator drift and a positive Babinski's sign on the right side. She was unable to follow more than one stage commands and exhibited perseverance. Of note there was some fluctuation in her clinical signs during the early stages of her admission.

She was pyrexial at 37.9 degrees but was otherwise hemodynamically stable.

From the outset of our management of this patient we maintained a broad differential. Given the presenting features stroke, encephalitis and Covid-19 infection were at the forefront of our differential.

## Investigations



### Blood Tests

Initial investigations showed a normal serum WCC and CRP of 19.0.



### Imaging

CT brain was completed which showed no acute abnormalities.



### Viral PCR

Viral PCR for SARS-CoV-2 returned negative.



### Lumbar puncture

WBC 396 per microlitre

Differentiation

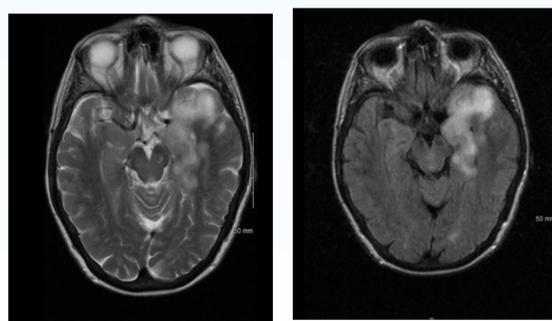
- 87% lymphocytes

- 13% polymorphs

Gram stain - negative

Glucose - 5.2 mmol/L

Protein - 1.12 g/L.



*MRI Brain showing left temporal and posterior insular oedema with cortical effacement without restriction on diffusion weighted images.*



Herpes simplex virus 1 was detected on viral PCR.

## Outcome

Our patient was empirically treated with acyclovir, ceftriaxone and dexamethasone while awaiting results of lumbar puncture. Following diagnosis she continued on acyclovir alone.

She gradually recovered with no residual confusion or neurological symptoms although she reported retrograde amnesia of her initial presentation. Follow up MRI (3 weeks later) showed a resolving process.

## Discussion

Herpes Simplex virus (HSV) is responsible for 19% of cases of infectious encephalitis. It represents significant morbidity and mortality to patients with a one year mortality rate of 14%. 87% of patients in one study required readmission to hospital within a year, most frequently with seizures.

Typically, patients present with symptoms of fever, headache and confusion although speech disturbance can be seen in 57% and focal neurological deficit in 26% of cases.

## Discussion

Encephalitis is a known mimic of stroke due to the overlap in symptomatology and atypical presentations can often be misdiagnosed. In some cases this has led to inappropriate treatment with alteplase and in others misdiagnosis can lead to delay in initiating appropriate treatment.

In the context of the Covid-19 crisis all patients with fever must have this diagnosis excluded. There is a possibility of delaying appropriate treatment while awaiting swab results. There is emerging knowledge of the neurological manifestations of Covid-19 with some studies quoting neurological symptoms in up to 25% of patients. Another case series discusses 5 cases of stroke linked with Covid-19 infection.

## Learning Points

- ✓ The diagnosis of stroke is often complicated by mimicking disorders. Care should be taken not to overlook an alternate cause of symptoms.
- ✓ This case illustrates the importance of a broad differential when initially investigating a patient with atypical symptoms.
- ✓ In the current climate of the Covid-19 pandemic all patients with fever must have this diagnosis out ruled. It is important, however, to not overlook an alternate cause for fever in patients until this diagnosis has either been confirmed or out ruled.