Rare disease

A patient with an acute confusional state

Graham Baker,¹ Maurice Jackson,² Sanjay Vydianath,³ Hani Benamer⁴¹Department of Medicine, The Royal Wolverhampton NHS Trust, Wolverhampton, UK²Department of Renal Medicine, The Royal Wolverhampton NHS Trust, Wolverhampton, UK³Department of Radiology, The Royal Wolverhampton NHS Trust, Wolverhampton, UK⁴Department of Neurology, The Royal Wolverhampton NHS Trust, Wolverhampton, UK**Correspondence to** Dr Graham Baker, grahambaker@doctors.org.uk**Summary**

A 49-year-old male presented in an acutely confused state. His examination and basic blood tests were unremarkable. He was started on intravenous aciclovir and an MRI brain scan showed changes consistent with limbic encephalitis. Serum antibodies including para-neoplastic auto-antibodies and cerebrospinal fluid studies were arranged along with a full body CT scan to look for malignancy. All antibody tests returned negative and the CT scan ruled out the presence of malignancy. The patient improved following treatment with intravenous immunoglobulin and was discharged. Follow-up imaging showed significant radiological improvement. He has been able to return to work and repeat CT scans have failed to find evidence of malignancy. A rare and treatable cause for his illness was found. It is worth considering limbic encephalitis when facing a confused patient especially in the young and middle-aged population.

BACKGROUND

Limbic encephalitis is a rare condition that is associated with malignancy and an ultimately poor prognosis. It presents as an acute confusional state and so may be seen by the general physician on call. We have encountered a case with no identifiable auto-antibodies or evidence of malignancy where the patient has been treated successfully and has been able to return to work. This is a rare case of limbic encephalitis to have a good prognosis, absent antibodies and no underlying identifiable malignancy.

CASE PRESENTATION

- ▶ Presenting features – confusion, disorientation
- ▶ Past medical/surgery history – neurofibromatosis type 1, temporal lobe epilepsy
- ▶ Social history – non-smoker, minimal alcohol, machine setter.

INVESTIGATIONS

- ▶ Haemoglobin 18 g/dl
- ▶ Autoimmune antibodies Yo, Hu, Ma, Ta, cv2, amphiphysin and VGKC antibodies – negative

Figure 1 (A) Brain MRI scan on admission showing evidence of the abnormally high signal on T2 imaging associated with increased signal in the left limbic tract and the medial aspect of the left temporal horn of the lateral ventricle. (B) A follow-up brain MRI scan 6 months after presentation showed significant reduction in the signal change in the left temporal lobe and limbic tract.

- MRI – limbic encephalitis (figure 1A).
- Full body CT – no abnormality.
- PSA+testicular ultrasound scan – no abnormality.
- Cerebrospinal fluid results: white blood cells 0, red blood cells 0, no growth, glucose 3.4, protein 0.55
- Herpes, EBV and cytomegalovirus PCR – negative.
- Syphilis serology – negative.

DIFFERENTIAL DIAGNOSIS

- Herpes simplex encephalitis.

TREATMENT

- Intravenous aciclovir
- Intravenous immunoglobulin (Vigam)
- Venesection.

OUTCOME AND FOLLOW-UP

- Clinical and radiological improvement (figure 1B). The patient is now driving and has been able to return to work.
- All autoimmune antibodies negative.
- No malignancy found.
- The patient has been followed up regularly now for 2 years and a repeat full body CT scan performed 23 months after the onset of symptoms has found no malignancy. He will continue to be followed up on a 6-monthly basis.

DISCUSSION

There are two types of limbic encephalitis, paraneoplastic and non-paraneoplastic.¹ We believe that our patient has non-paraneoplastic limbic encephalitis, a condition that is documented in the literature. Non-paraneoplastic limbic encephalitis is a rare treatable cause of encephalitis. No known association between limbic encephalitis and neurofibromatosis has been reported and all documented cases were found to be associated with antibodies with or without malignancy.

The striking feature in this case is the substantial clinical and radiological improvement in this patient's condition to the point that he has been able to return to work. Generally the condition carries a poor prognosis owing to the known association with malignancy.^{1 3 6-8} The excellent progress of the clinical condition in our patient makes hidden underlying malignancy extremely

unlikely. The memory impairment is often irreversible and both these features of the condition have a profound and distressing effect on the patient and the carer's quality of life.⁹

Learning points

- Limbic encephalitis is a rare disorder characterised by mood and behavioural changes and short-term memory problems, with characteristic findings on MRI scan.^{1 2 4 5}
- It is commonly associated with antibodies against intra-cellular or classic paraneoplastic antigens and cell membrane antigens.⁵
- The disorder typically carries with it a poor prognosis owing to its strong association with malignancy, most commonly small cell lung cancer.^{1 3 6-8}
- Our patient proved to have a type of limbic encephalitis that carries a good prognosis.
- It is worth considering limbic encephalitis as a rare but treatable cause when faced with a confused patient especially in the young and middle-aged population.

Competing interests None.

Patient consent Obtained.

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