Case Reports

Herpes simplex encephalitis: successful treatment with Acyclovir

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Abstract

Introduction:
One of the most common causes of encephalitis is due viral infection like herpes simplex. Traditionally, brain biopsy was required for the diagnosis of HSV encephalitis; however, here we report CSF PCR detection for herpes simplex encephalitis which was successfully treated with Acyclovir.

Case presentation:
A 52 years old female patient brought to emergency department with fever (40^0C), constipation, abdominal pain, fatigue, disorientation, agitation, from two days ago. DNA extraction and Real Time PCR was performed on CSF sample for HSV-1/2 and HSV-1 was positive. Also the brain MRI report showed left and basal temporal oppression, left and basal frontal pus. The patient is discharged after 20 days of hospitalization and treatment with acyclovir and normal physiological indexes and had a good clinical and neurologic outcome with resolution of all the symptoms.

Conclusion:
We would like to emphasize, despite the normal biochemical CSF, imaging results and PCR are convinced evidence of HSV encephalitis.

Key Words: Herpes Simplex Virus, Encephalitis, Acyclovir

1.Introduction

Encephalitis is usually diffuse inflammation of the brain which has a high mortality rate without treatment and it can be refers to an acute or sub-acute[1]. One of the most common cause of encephalitis is due viral infection like herpes simplex which is characterized usually by the acute onset of fever, headache, seizures, focal neurologic signs, and impaired consciousness; therefore, making fast and accurate diagnosis difficult but of critical importance[2, 3].

Historically, brain biopsy was required for the diagnosis of HSV encephalitis[4, 5] but, in this study we report cerebrospinal fluid (CSF) Real Time PCR detection for herpes simplex encephalitis which was successfully treated with Acyclovir. This study was taken place in September 2017 at a teaching hospital in Karaj and this case study has been taken an ethical permission from the Alborz University of Medical Sciences with reference number 3234234.

1.2 Case presentation

A 52 years old female patient brought to emergency department with fever (40^0C), constipation, abdominal pain, fatigue, disorientation, agitation, from two days ago. The patient had a history of diabetes and hypertension that was under medical treatment and according to the initial assessment of nursing blood glucose and blood pressure in the normal range.

Firstly, in the emergency ward, Lumbar Puncture (LP) was done; then various

specialists like infectious diseases, heart and internal, neurologist consultation was initially done and then ceftriaxone, vancomycin for controlling the fever were prescribed. In the emergency ward she experienced a respiratory depression (Bradypnea) and immediately transferred to the CPR room and naloxone was injected and finally she had a partial respiratory recovery.

Laboratory tests revealed leukocytosis (16.6 x 10^3 /mm^3) with relative differentiation count neutrophilia (6) lymphocyte (92), monocyte (1), Eosinophil (1). CSF profile: PMN (4-6), RBC (0-1), blood sugar was 183 mg/dl, and bacterial growth was negative.

Computed tomography (CT), electroencephalography and magnetic resonance imaging (MRI) of the brain were performed and there were lesions on brain parenchyma / basal.

The brain MRI report showed left and basal temporal oppression, left and basal frontal pus.

1.3 Nucleic Acid Extraction

CSF samples (500µL) were used for DNA extraction using the Roche DNA blood mini kit (Roche, Germany). The extractions were carried out according to the manufacturer's instructions.

1.4 Real Time PCR

The HSV-1/2 DNA real-time PCR was performed using Gene Proof kit (Czech Republic) at Razi Pathobiology and Medical Genetics Laboratory, Karaj. The HSV-1/2 real-time PCR uses fluorescent resonance energy transfer (FRET) probe technology and is performed on the Light Cycler 96 (Roche Co. Germany). A negative extraction control is included with each run to ensure that no DNA contamination occurs during the extraction or amplification phase of testing.

There was a detectable positive signal in patient CSF sample in FAM channel which confirm the presence of Herpes Simplex Virus (HSV) type 1.

The patient is discharged after 20 days of hospitalization and treatment with acyclovir and normal physiological indexes and had a good clinical and neurologic outcome with resolution of all the symptoms.

Infection of central nervous system (CNS) by HSV is rare; however, they are associated with significant mortality and morbidity[6]. Usually clinical manifestations show low grade fever along with neurological symptoms which is in agreement with our results[7]. We report a case of HSV-1 encephalitis which was confirmed by Real Time PCR from a CSF sample.

Majority of the cases of HSV encephalitis present with fever and abnormal mental state changes, and also progress with symptoms of vomiting, meningismus, headache, diplopia etc[8, 9]. Therefore, the clinical presentation is variable. In more than 90% of cases of herpes simplex encephalitis CSF examination will show elevated protein and variable glucose levels[7]. In our case glucose and protein level was normal which is in agreement with others which reported normal CSF biochemistry has been reported in some cases of HSV encephalitis[10]. CSF- PCR testing is considered to be the gold standard for the diagnosis of herpes simplex encephalitis and has replaced brain biopsy.

Radiological imaging also holds importance. Our patients MRI brain was suggestive of the left and basal temporal oppression, left and basal frontal pus presentation. The standard therapy given in HSV encephalitis is intravenous acyclovir which reduces the mortality to less than 29%.

Acyclovir treatment is lifesaving and needs to be commenced early to ensure an optimal outcome; in our case it was also prescribed.

2.Conclusion

We would like to highlight, despite the normal biochemical CSF, imaging results and PCR are convinced evidence of HSV encephalitis.

3.Acknowledgments

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Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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