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Case Report

Hemorrhagic Encephalitis In A Young Female with Sudden Onset of Fever and Seizures

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Abstract

A 16-year-old female presented to the emergency department with a sudden onset of high-grade fever and generalized tonic-clonic seizures. She was previously healthy with unremarkable medical history. Her symptoms began 4 days back. On arrival, she was semiconscious, irritable and actively seizing. Her oxygen saturation was declining rapidly. She was immediately transferred to the Intensive Care Unit (ICU) for close monitoring. Subsequent laboratory workup and MRI brain lead to the diagnosis of hemorrhagic encephalitis secondary to Herpes Simplex Virus-1 (HSV-1) infection.

Keywords: Encephalitis, Hemorrhagic encephalitis, Herpes simplex virus.

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Introduction

Hemorrhagic encephalitis is a rare albeit life-threatening condition characterized by inflammation of the brain parenchyma, accompanied by hemorrhage. It can occur due to underlying viral infections. Herpes Simplex Virus-1 (HSV-1) is the most common pathogen associated with this condition. This case report describes the clinical presentation, diagnostic findings, and management of a young female patient who presented with sudden onset high-grade fever, seizures, and altered mental status, ultimately diagnosed with hemorrhagic encephalitis.

Case Presentation

A young female patient with no significant past medical history was brought to the emergency department with a history of high grade fever for 4 days. The fever was sudden in onset and associated with headache and fits. On arrival to the hospital, she was febrile, semiconscious, irritable, and was having generalized tonic clonic seizures. She was immediately given oxygen inhalation as her oxygen saturation was declining. She was shifted to the ICU for close monitoring. She was started on anti-epileptics while the work up, including the lumbar puncture, was planned. CSF analysis showed normal glucose, mildly elevated proteins and lymphocyte predominance, suggestive of viral encephalitis (Table 1). Consequently, she was started on antiviral therapy along with intravenous steroids.

Examination Findings

General Condition: The patient was semiconscious, irritable and actively seizing upon arrival

Vital Signs:

- Temperature: 101°F
- Heart rate: 110 beats per minute
- BP: 123/62 mmHg
- Respiratory rate: 20 breaths per minute
- Oxygen saturation: 94% on 5 L oxygen via face mask

Neurological Examination:

- GCS: 9/15 (E2, V3, M4)
- Seizures: Generalized Tonic-clonic
- Plantar reflexes: Bilateral upgoing
- Pupils: Symmetrical, reactive
- No signs of meningeal irritation
- Deep tendon Reflexes: Hyperreflexia +3

Respiratory and Cardiovascular Examination:

- Unremarkable

Investigations:

- Laboratory workup (Table 1)
- MRI Brain (Figure 1)

Table 1: *Results of Laboratory Workup*

Hemoglobin	11 g/dl
MCV	78 fl
TLC	TLC 5.2× 10^9/L
RFT	WNL
LFT	WNL
PT	14 sec
ApTT	26 sec
MP ICT	Negative
Blood Culture	No growth seen after 5 days
Thyroid Profile	WNL
B12	208 pg/ml
ANA Profile	Negative
HIV antibodies	Negative
CSF Analysis	WBC count of 55 cells/mL
	(82% lymphocytes)
	Protein 89 mg/dl
	Sugar 84 mg/dl
HSV-1 PCR	Detected

It revealed few abnormal signal intensity areas in bilateral frontal and parietooccipital regions consistent with hemorrhagic encephalitis, with no other significant abnormalities identified.

Figure 1: *MRI Brain*

Diagnosis: Given the clinical presentation, MRI findings and the viral picture on CSF analysis, the diagnosis of viral hemorrhagic encephalitis was made, secondary to HSV-1 infection.

Management: The patient was promptly treated with acyclovir 10 mg/kg 8 hourly for 14 days. She was also given intravenous dexamethasone 10 mg 8 hourly for 5 days. The seizures were controlled with anti epileptic medication. After a period of close monitoring and treatment in the ICU, she was stepped down and eventually shifted to the medical ward after showing clinical improvement. She began to regain consciousness as her neurological status improved.

Discussion

Hemorrhagic encephalitis is a severe condition requiring a prompt diagnosis and management to reduce morbidity and mortality. The spontaneous intracerebral hemorrhage is a rare complication of herpes simplex encephalitis (HSE), emphasizing the need for neuroimaging in worsening cases.[1] The exact pathophysiology behind this complication is not completely understood. However, an underlying immune mediated response is said to be a possibility.[2] This case highlights the importance of early recognition of neurological symptoms such as seizures and altered mentation in the setting of fever, which may point toward encephalitis.[3] The presence of hemorrhage in the brain is indicative of a more severe course of illness following HSV-1 encephalitis.[4] In this case, empiric treatment with antiviral therapy and supportive care, including airway management, played a crucial role in the patient's recovery. Intravenous corticosteroids play a role in management of this condition.[5]

Conclusion

This case report demonstrates the successful management of a young female patient diagnosed with herpes simplex hemorrhagic encephalitis following fever, seizures, and altered mental status. Early intervention, including intravenous antiviral therapy, steroids and supportive ICU care, was critical to her recovery. Further follow-up is necessary to monitor for any long-term neurological sequelae, but the patient's improvement suggests a favorable prognosis.

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Authors' Contribution:

SN: Conception

NM, FM: Design of the work

AS, FB: Data acquisition, analysis, or interpretation

FM, AS, FB: Draft the work

SN, NM: Review critically for important intellectual content

All authors approve the version to be published

All authors agree to be accountable for all aspects of the work

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