



## Case Report on Encephalitis

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### Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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**Case Study**

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## ABSTRACT

**Background:** Encephalitis is type of brain inflammation caused by a virus, although it can also be caused by a bacterial or fungal infection or an autoimmune reaction. Encephalitis is a viral or inflammatory brain infection causes fever and headache as well as a low level of awareness, altered mental status (confusion, behavior abnormalities) localized neurologic impairments, and new onset seizure activity.

**Case Presentation:** The case 7 year, old female patient who was alright one month back admitted in "A.V.B.R. Hospital, Wardha, on date 01/12/2020 with the chief complaint of high grade fever, headache, vomiting, irritability, and alteration of speech and generalized weakness. The patient had undergone various investigation complete blood count, urine analysis, kidney function test, liver function test, peripheral smear and virology test. Cerebrospinal fluid, electroencephalogram (EEG) Test, Magnetic resonance imaging (MRI) test, in MRI report shows altered gyral signal intensity is right fronto-parietal lobe with edema with thickened overlying cortex with effacement of adjacent sulcal spaces features suggestive of viral encephalitis. The patient was treated with antipyretic, antibiotic, loop diuretic, steroid, antiemetic drug to treat vomiting. Monitor all vital signs, checked and recorded intake and output, administered medication as prescribed by doctors.

**Conclusion:** The inflammation of the brain causes encephalitis, which is a rare but deadly disorder. It can be life -threatening and necessitates immediate hospitalization. Anyone can be harmed, but the very young and elderly are the most vulnerable.

**Keywords:** *Herpes simplex virus; viral encephalitis; seizure; inflammation.*

## 1. INTRODUCTION

Encephalitis is the inflammation of brain tissue [1]. It may develop due to direct infection or via hematogenous route. It may occur across the olfactory mucosa or along the peripheral nerves. Immunological reaction may cause encephalitis [2]. Encephalitis is usually caused by viruses including herpes simplex, Japanese B encephalitis, mumps virus, etc. Non-viral causes are uncommon and including acanthamoeba, fungi, and rickettsial agents [3].

A virus causes viral encephalitis, which is an inflammation of the brain parenchyma. It is the most common type of encephalitis, and it frequently occurs in the presence of viral meningitis [4]. Viruses infect the host outside of the central nervous system, then transmit hematogenously or retrogradely from nerve terminal to the spinal cord and brain [5].

Primary and secondary encephalitis are two basic kinds of encephalitis. When a virus attacks the brain and spinal cord directly, it is known as primary encephalitis. When illness begins elsewhere in the body and then spreads to the brain, it is known as secondary encephalitis [6].

A viral infection is the most common cause of encephalitis. The body attempt to combat the virus causes inflammation in the brain [7] Herpes simplex virus (HSV) infection of the cerebral nervous system occurring in the neonatal period (<1 month of age), causes neonatal herpes, while in older children and adults [8].

Fever, headache are common symptoms of encephalitis. Seizures confusion, drowsiness, loss of consciousness, and even coma may occur as the symptoms develop [9]. Meningoencephalitis is encephalitis accompanied by meningitis, whereas encephalomyelitis is encephalitis accompanied by spinal cord involvement [10].

**Incidence:** Encephalitis is relatively common in all ages however, incidence is higher in the pediatric population, 3.5 and 7.4 per 100,000patient years. Although both sexes are affected [11].

## 2. PATIENT INFORMATION

Patient present history:- The7year old female patient who was apparently alright 1 month

back admitted in AVBRH on dated 1/12/2020 with the complaint of high grade fever, headache, vomiting, irritability, altered speech and generalized weakness.

### 2.1 Birth History

#### 2.1.1 Prenatal history

- ✓ Nature of marriage: Non-consanguineous
- ✓ Exposure to radiation: None
- ✓ Antenatal checkup : Not done
- ✓ Tetanus toxoid : Not taken

#### 2.1.2 Perinatal history

- ✓ Type of delivery: Normal vaginal delivery
- ✓ Place of delivery: Home delivery
- ✓ Mother condition following delivery:- mother condition was good and she did not have any complication following delivery.

#### 2.1.3 Postnatal history

- ✓ Child condition at birth : Normal
- ✓ Birth weight: 2.30 kg
- ✓ Developmental history: All milestone achieved according to age.
  - Immunization History: The patient received all immunization according to her age.

Diagnostic assessment: physical examination, patient history and other investigation reveal different outcomes through clinical evaluation.

#### 2.1.4 Physical examination

##### Vital signs:

- Temperature : 38<sup>o</sup>c
- Pulse : 80 beats/min
- Respiration: 22 breaths/min
- Blood pressure :110/70mmhg

##### Anthropometry measurement:

- Height: 102 cm
- Weight : 14 kg
- Head circumference: 53 cm
- Chest circumference: 59 cm
- Mid upper arm circumference: 14cm
- BMI (Body mass index) : 13 cm/m<sup>2</sup>

### Head to foot assessment:

- Nourishment : undernourished
- Body build: Thin
- Skin : dry
- Face : Normal facial movement
- Head size: 53cm
- Upper and lower movement: pain while movement
- Lips : dry

### 2.1.5 Blood investigation report

Hb% was 10.35% (decreased), total RBC count was 3.94million/cu.mm (decreased), total platelet count was 2.09lacs/cu.mm (increased).

MCV (mean corpuscular volume) was decreased 77.6cub, micron.

### Virology test:

HCV was reactive and HBSAG was reactive.

### Thyroid test:

T3 (triiodotyronine) 1.9 pg/ml was decreased, T4 (thyroxine) 1.7mg/dl. TSH(thyroid stimulating hormone).

### 2.1.6 MRI (Magnetic resonance imaging)

**Impression:** Magnetic resonance image (MRI) report shows altered gyral signal intensity is right fronto-parietal lobe with edema with thickened overlying cortex with effacement of adjacent sulcal spaces features suggestive of encephalitis.

### 2.1.7 Therapeutic intervention

General measures: To check the vital sign (Temperature, Pulse, Respiration, and Blood pressure), to watch for patient condition and prevention of complication like seizure. Health management includes a healthy diet and a good diversional therapy.

### 2.1.8 Nursing management

As per criteria the nursing care was given the health status and to prevent further complications.

- Provided a comfortable position to the patient.
- Monitored vital signs of the patient
- Administered all the prescribed medication.

- Assisted an doing daily activity of the patient.

### 2.1.9 Nursing diagnosis

Nursing diagnosis according to the patient complaint are as follows:

1. Hyperthermia related to infection.
2. Disturbed sleeping pattern related to hospitalization.
3. Imbalance nutrition less than body requirement related to inadequate food intake.

### 2.1.10 Prognosis

Encephalitis varies according to the age of the patient with the very young are at risk and the particular virus that caused the disease.<sup>11</sup>In patient with viral encephalitis, 91.7 percent (234/255) recovered, 7.5 percent (19/255) experienced neurological complication, and 0.8 percent (2/255) died [12].

### 2.1.11 Follow up and outcomes

At the time of discharge, the patient condition was satisfactory. the relatives were informed about the prognosis of the disease, drug therapy and personal hygiene, diet, exercise and the importance of taking medication in time. It is also told that they should come after 7 days for routine follow to see the disease outcome.

## 3. DISCUSSION

A 7 years old, female child was brought by her parents to AVBRH on 1th December, 2020 with complaints of high grade fever, headache, vomiting, irritability, and alteration of speech and generalized weakness. After physical examination and investigations were done, she was diagnosed with Viral Encephalitis and was admitted to Pediatric ward. Immediate treatment was started according to priority of the patient as prescribed. Patient shows improvement and response well to the treatment given. Recent research indicates that in clinically diagnosed viral encephalitis patients, low GCS scores at admission, focal cognitive defects at admission, and a prolonged overall hospital stay are predictors of a poor discharge outcome. It remains to be verified in further research that early and successful neurological recovery will improve the prognosis of viral encephalitis in patients with focal neurological deficits (Feng Guibo et al) [13].

**Table 1. The following treatment was given to the patient**

Name of medicine	Dose	Frequency	Route
Tab. PCM	650 mg	SOS	Orally
Inj. Dopamine	25 micro/kg	BD	IV
Tab. Pan	40 mg	BD	Orally
Inj. Mannitol	100 ml	OD	IV
Inj. Dexametasone	3 mg	BD	IV

**Strength:** An 7 year old female patient tolerated all medication and responded well within 7days to the therapeutic management.

#### 4. CONCLUSION

Encephalitis is a inflammation of brain affect the overall body. If there a better understanding of biochemical and immunological responses, then immunomodulators can be used to prevent severe sickness in addition, problems in vaccine development, laboratory testing, and early clinical suspicion of severe manifestation must be overcome for the best decrease in HSE morbidity and mortality in children. Which is a rare but deadly disorder. It can be life - threatening and necessitates immediate hospitalization. Anyone can be harmed, but the very young and elderly are the most vulnerable. Encephalitis is usually caused by viruses including herpes simplex, Japanese B encephalitis, mumps virus, etc. Nonviral causes are uncommon and including acanthamoeba, fungi, and rickettsial agents.

#### CONSENT

Before taking this case, information was given to the patient and their relatives and informed consent was obtained from the patient as well as relatives.

#### ETHICAL APPROVAL

Taken from institutional ethics committee.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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