

A Case Report on Viral Encephalitis

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ABSTRACT

Encephalitis is the inflammation of the brain tissue. Due to direct infection or a hematogenous path, it can develop. It may occur through the mucosa of the olfactory or along the nerves of the periphery. Encephalitis can also cause an immunological reaction. Patient History: A female child of 4 years old was admitted at AVBRH with complaints of fever, convulsion and depressed sensorium. Clinical Findings: Fever (101oF), convulsion and depressed sensorium. Diagnostic Evaluation: Patient had undergone various diagnostic evaluation such as Complete Blood Count (CBC), MRI (Brain), CSF Study. Therapeutic Intervention: Inj. Meropenem 500mg IV x Q8H, Inj. Vancomycin 260mg IV x Q6H, Inj. Acyclovir 260mg IV x Q8H, Syp. Eptoin 5ml Oral x BD, Syp. Gardenal 8ml Oral x BD. The condition of patient was improved after the initiation of treatment. Fever and convulsion were relieved after the administration of tepid sponging, antipyretic and anticonvulsant. Patient was admitted to Paediatric Intensive Care Unit (PICU), AVBRH with complaints of fever, convulsion and depressed sensorium and was diagnosed with Viral Encephalitis. Immediate treatment was started and patient condition was improved.

KEY WORDS: VIRAL ENCEPHALITIS, BRAIN TISSUE, OLFACTORY MUCOSA, PERIPHERAL NERVES, DEPRESSED SENSORIUM.

INTRODUCTION

Children, young adults or elderly patients are affected by viral encephalitis, but the spectrum of involvement depends on the particular viral agent, host immune status, and genetic and environmental factors (Gendelman HE 2005 & Kennedy PG 2005). The word 'acute viral encephalitis' (from Greek enkephalos + -itis, meaning brain inflammation) is used to define minimal CNS involvement (i.e. brain involvement, meninges sparing); however most CNS viral infections include meninges to a greater or lesser degree, leading to aseptic meningitis or causing mild meningo-encephalitis instead of pure encephalitis (Gondim Aquino F et al., 2016).

Without any proof of brain inflammation, many other neurologic conditions can trigger encephalopathy. This analysis includes encephalopathy with suspected viral aetiology in addition to encephalitis per se (systemic symptoms and signs or laboratory confirmation of systemic viral infection associated with neurologic dysfunction). They are responsible for high rates of morbidity, may cause irreversible neurological sequelae, and may have high mortality rates depending on the virus. Therefore every attempt should be made to ensure protection through vaccination and to include antiviral therapy where available (Costa BK et al., 2020). Seasonal influenza, cytomegalovirus (CMV), Epstein-Barr virus (EBV) and Human Herpes Virus 6 (HHV-6) are other important etiologies (Costa BK et al., 2020). Herpes viruses 1 and 2 (HSV-1 and HSV-2), non-polio enterovirus, and arbovirus are the most common viral encephalitis agents (Koskiniemi M et al., 1991).

Incidence: The recorded annual incidence of encephalitis in children during the second year of life is about 16/100,000 child-years, remains high until 10 years of age, and is about 1/100,000 child-years at 15 years of age (Koskiniemi M et al., 1991).

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Article Information

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Patient Identification:

- Patient Present History: A female child of 4 years old from Yavatmal was admitted to Paediatric Intensive Care Unit (PICU), AVBRH on 4th October, 2019 with complaints of fever (101oF), convulsion and depressed sensorium. She was 12 Kg. and her height was 90 cm. on the time of admission. She was in Ryle's Tube feeding.
- Past Medical History: Patient had complaints of fever with Lower Respiratory Tract Infection (LRTI) in 1015 and was admitted in Private hospital for 3 days.

Birth History:**Prenatal History:**

- Nature of Marriage: Non-Consanguineous
- Exposure to Radiation: None
- Antenatal Check-Up: Done

Perinatal History

- Type of Delivery: Full Term Normal Delivery
- Place of Delivery: Govt. Hospital
- Mother condition following Delivery: Mother had no complications following delivery.

Post Natal History:

- Child condition at birth: Normal
- NICU Stay: Child was admitted to NICU for one day due to Pneumonia.
- Immunization History: Patient received immunizations according to her age group as per Immunization Schedule.
- Family History: There are four members in the family. My Patient was diagnosed to have Viral Encephalitis. All other members were not having complaints in their health condition.

Clinical Findings: Fever (101oF), convulsion, depressed sensorium, anaemia (Hb%: 9gm%).

Etiology: Based on the geographical area, the aetiology of viral encephalitis varies. The Japanese encephalitis virus (JEV) was the main cause of viral encephalitis in children in Southern Vietnam (Le VT et al., 2010). Enterovirus has been a major cause of encephalitis in children in Uttar Pradesh, India (Kumar A et al., 2012). In eastern India, however, herpes simplex virus was the most widely known pathogen (children and adults) (Rathore SK et al., 2014).

Diagnostic Assessment			
Investigations	Patient Value	Normal Value	Inference
Pathology			
Hb%	9 gm%	13-15.5gm%	Decreased
MCV	74 cub.micron	80-90 cub.micron	Decreased
MCH	23.8 pico gm	26.5-33.5 pico gm	Decreased
MCHC	32.1 %	30-36.5%	Normal
HCT	28 %	33-42 %	Drcreased
Platelets	1.78 lacs	1.5-4 lacs	Normal
Biochemistry			
ALT/SGPT	259	30-90 U/L	Increased
AST/SGOT	110	10-34 U/L	Increased
Alkaline Phosphatase	92 U/L	10-30 U/L	Increased
S. Creatinine	0.3	0.7-1.4mg/dL	Decreased
Potassium	4.2 mmol/dL	3.5-5.5mmol/dL	Normal
Sodium	143 mmol/L	135-145mmol/L	Normal
Urea	16 mg/dL	12-20mg/dL	Decreased
Total bilirubin	0.5 mg/dL	0.1-1.2 mg/dL	Normal
Bilirubin Unconjugated	0.1 mg/dL	0.2-0.7 mg/dL	Decreased
Bilirubin Conjugated	0.4 mg/dL	0.3-1.0 mg/dL	Normal

Pathophysiology:

Viruses invade the host and replicate.

↓

Diffuse cerebral edema, congestion and haemorrhage.

↓

Necrosis and degeneration of neurons.

↓

Glial proliferation due to meningeal congestion, tissue necrosis and myelin breakdown.

↓

Demyelination, vascular and pvascular destruction according to type of infecting agent.

Physical Examination: Patient looks weak and not much co-operative. There was not much abnormality found in physical examination. Glasgow Coma Scale - E₄V₄M₆.

- MRI (Brain): S/o Viral Encephalitis
- CSF Study:

TLC: 11 cells
 Glucose: 77
 Protein: 78

Management:

• Medical Management:

- Nursing Management:
Nursing care was given to patient as priority.
- Assessed the condition of patient.
- Monitored vital signs and recorded.
- Assess level of consciousness.
- Provided comfortable, semi-fowler's position.

- Administered medications as prescribed and assess for any reaction.
- Performed tepid sponging.
- Monitored intake and output.

Complications: Shock, cardio-respiratory abnormalities, epilepsy, paralysis, cerebral ataxia, mental retardation, obesity and behavioural problems are common complications (Datta Parul et al., 2018).

Prognosis: The prognosis can differ. Recovery may be complete or there may be serious neurological sequels. In complex cases, the mortality rate is typically high (Datta Parul et al., 2018).

Drugs	Patient Picture	Justification
Inj. Meropenem (Anti-infective)	500mg IV BD	As it can cause hypotension, tachycardia, dyspnoea and hyperventilation, etc. patient should be closely monitored.
Inj. Vancomycin (Anti-infective) Tricyclic Glycopeptide	250 mg IV BD	BP should be monitored during administration, sudden drop may indicate redman syndrome.
Inj. Acyclovir (Antiviral)	260mg Oral Q8H	It decreases viral replication time of lesional healing. Routine blood studies to assess for thrombocytopenia, increased ALT/AST, etc.
Syp. Eptoin (Anticonvulsant)	5ml Oral BD	It effects mental status. Purple glove syndrome, phenytoin hypersensitivity syndrome and respiratory depression may occur.
Syp. Gardenal (Anticonvulsant) Phenobarbital	8ml Oral BD	It effects the brain at cerebral cortex level increasing seizure threshold.

Follow-Up and Outcomes: Patient's condition was improving and responds well to the treatment given. The relatives were informed about the condition of patient and the importance regular taking of medication as prescribed and follow-up care after discharge.

DISCUSSION

A 4 years old, female child was brought by her parents to AVBRH on 4th October, 2019 with complaints of fever, convulsion and depressed sensorium. After physical examination and investigations were done, she was diagnosed with Viral Encephalitis and was admitted to Paediatric Intensive Care Unit (PICU). Immediate treatment was started according to priority and Ryle's Tube Feeding was done 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., 2020).

Informed Consent: An informed consent was taken from parents of the patient prior to collection of data. All necessary information was given to relatives and doubts were cleared.

CONCLUSION

Viral Encephalitis is one of the life threatening conditions of children. Appropriate and immediate treatment should be given to patient with Viral Encephalitis. My patient shows great improvement after receiving treatment and nursing care.

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