ORIGINAL RESEARCH PAPER

Radiodiagnosis

DENGUE ENCEPHALITIS IMAGING

KEY WORDS:

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Introduction

- Dengue virus - non-neurotropic virus with four serotype DEN1-4.
- India is considered as endemicity category A in which dengue is major public health problem.
- Undifferentiated viral fever, dengue fever and dengue hemorrhagic fever.
- Expanded dengue spectrum - neurological, hepatic, renal and other isolated organ involvement
- Increasing incidence of CNS involvement neurotropic effect
- secondary to systemic manifestation
- Post-infectious sequalae including immune mediated reactions

Aims & Objective

- To describe CT and MRI feature of dengue encephalitis

Material and Method

- 10 patients were recruited who were referred for neuroimaging
- 19-45 years of age group
- CT- Toshiba 16 scanner MDCT
- MRI - 1.5 T imager (Toshiba)
- Standard brain protocol with contrast

Inclusion Criteria

- NS1 positive
- Clinically CNS involvement

Exclusion Criteria

- Any contraindication to MRI/CT

Result

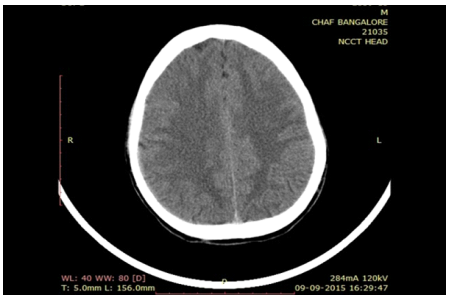
CNS Involvement	CT	MRI
Present	2	4
Absent	8	6

CT Findings

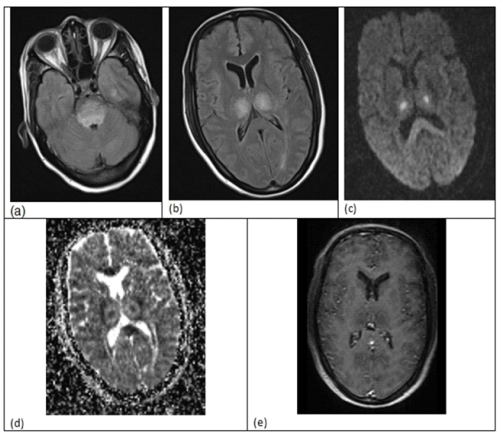
- Diffuse cerebral oedema
- Symmetrical hypo-density in bilateral thalamus, temporal lobe, mid brain, cerebellum
- Tonsillar herniation
- Focal areas of hemorrhage – thalamus

MRI Findings

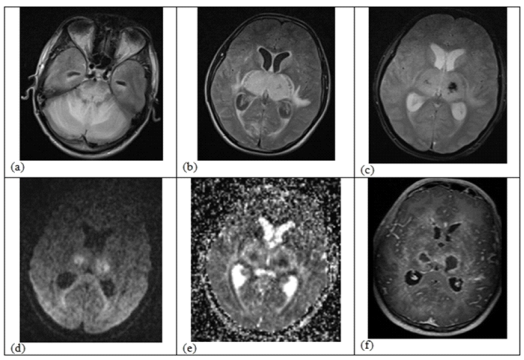
- Bilateral symmetrical FLAIR and T2 hyperintensities in thalami, pons and of medulla, deep white matter, periventricular locations and corona radiata which appears iso to hypo-intense on T1 WI.
- These areas showed restriction on diffusion and may show blooming on GRE.
- Post contrast images show patchy or peripheral enhancement.
- Meningeal enhancement was present on surface of mid brain and pons.



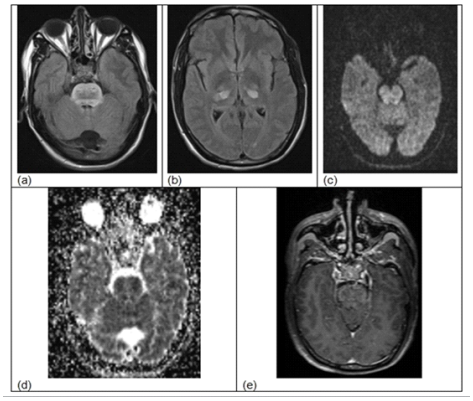
44 years old female, presented with 3 days history of fever with chills and headache



A 19 year old male with history of fever, sudden and progressive deterioration of consciousness with associated vomiting and unsteady gait.



A 40 year old male with history of fever, vomiting, unstable gait and giddiness since one day



Autopsy

Mid brain, pons, medulla, cerebellum, cerebral cortex and dura show diffuse edema.

Hemorrhagic areas in frontal lobe seen which revealed subarachnoid haemorrhage with congested dilated capillaries.

DISCUSSION

Neurological involvement in dengue infection was first reported in 1976.

Common symptoms : Headache, altered sensorium, papilledema, neck rigidity or seizures Involvement of brain in the form of encephalopathy or encephalitis.

Encephalitis occurs due to direct neurological invasion by virus causing inflammation of brain parenchyma.
Encephalopathy is secondary to multi organ involvment by dengue.

Diffuse cerebral oedema, bilateral symmetrical FLAIR and T2 hyperintensities in thalami, pons and medulla with heterogenous or peripheral enhancement on contrast administration with few of these areas showed restriction on diffusion and petechial hemorrhages.

Non-specific and these findings can be seen in Japanese and herpes encephalitis.

In difficult case, serological examination is helpful in differentiate it from other viral encephalitis.

CONCLUSION

High degree of suspicion of dengue encephalitis should be kept in a patient of dengue fever with neurological symptoms.
MRI features are contributory to the diagnosis as it correlate well with autopsy findings.

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