

# *“Acute Encephalitis in an infant”*

## *A diagnostic challenge*

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Dr. Venkateswari Ramesh

Dr. Janani Sankar

# History:

- 11month, female, 3<sup>rd</sup> degree consanguinity
- Developmentally normal
  
- Irritability – 5 days.
- Intermittent high grade fever – 2 days
- Vomiting – 1 day.
- 2 episodes of right focal seizure – loading dose of phenytoin given elsewhere – referred.

## In ER:

- Low GCS 10/15 (E2 M5 V3), intermittent posturing, PERL
- Compensated shock
  
- Resuscitated with fluid bolus
- Ceftriaxone, Azithromycin, Acyclovir
- Loading dose of Leviteracetam
- Shifted to PICU

# Investigations:

- TC-20800, P72L28,
- Hb-10.1, plat-3.1
- Renal function test – normal
  
- CT Brain – mild meningeal enhancement
  
- **CSF Analysis:**
- 14 cells, P28 L72, Glucose - 75, protein – 42
- Gram stain – no organism, culture – no growth

# PICU

- Intubated in view of low GCS
- Extubated after 48 hours
  
- Poor sensorium, tonic posturing
- Reintubated after 24hrs
- ICP measures

- Ceftriaxone stopped.
- HSV DNA PCR negative – Acyclovir stopped.
- Azithromycin stopped after 5 days.

# EEG

- Diffuse cerebral dysfunction with predominance over the left hemisphere.
- No clear epileptiform discharges.

# Course in the hospital:

- Repeat LP (after 1 week)
- CSF Glucose – 61, protein – 26, 8 lymphocytes
  
- Extubated
- Shifted out of PICU



# Etiology workup:

- CSF enterovirus, flavivirus, JE virus – PCR - negative.
- Serum JE IgM – negative
- Serum Mycoplasma IgM – 1.4 - positive!!! (>1.1)

# Is this mycoplasma encephalitis??

- No preceding respiratory/GI symptoms
- Serologic evidence of acute infection
- Respiratory/CSF PCR not done
- Work up for other common etiological agents - negative

# MRI Brain

Diffuse changes  
suggestive of  
meningoencephalitis

# Follow up:

- Spasticity, dystonia, poor visual fixation
- On NG feeds/physiotherapy/anticonvulsants
- On regular follow up

# MYCOPLASMA ENCEPHALITIS

- 5 – 15% of all forms of childhood encephalitis
- 3 – 28 days after respiratory illness (mean 10 days)
- No preceding respiratory illness – 20% cases
- Concomitant infection with other viruses – 1/3 rd of patients

# Pathogenesis:

- Encephalitis with in 5 days of onset of prodromal symptoms - **Direct invasion** of CNS
- Encephalitis after 7 days of onset of prodromal symptoms – due to **autoimmune** response

- CSF – normal / mononuclear pleocytosis
- MRI – focal ischemic changes, ventriculo megaly, diffuse edema, postinflammatory demyelination
- Symmetric basal ganglia involvement with/without brainstem involvement
- EEG – diffuse slowing or dysfunction

# DIAGNOSIS:

- Evidence of acute infection – positive IgM
- Significant rise in IgG titres between acute and convalescent sera
- Positive respiratory or CSF PCR (CSF PCR +ve <5% cases)
- Ref: Pediatric Encephalitis: What Is the Role of *Mycoplasma pneumoniae*? *Pediatrics* 2007;120;305
- *IDSA guidelines (acute & convalescent sera, respiratory PCR)*



# Hospital for sick children - Toronto

- **Probable** – CSF PCR/culture +ve with or without serologic evidence  
(or)  
Throat PCR/culture +ve with confirmed serologic evidence
- **Possible** – Serologic evidence +ve with negative CSF/ throat PCR/culture  
(or)  
Throat PCR/culture +ve without serologic evidence  
+ absence of convincing evidence for other etiological agents

# Lessons learnt.....

- Common etiologic agent, but difficult to confirm diagnosis
- Limitations of currently available Diagnostic tests
- Need for testing paired sera
- Treatment options – macrolide, doxycycline, fluoroquinolone/steroid/IVIG
- Variable prognosis

# Points to ponder...

- Duration of treatment?
- Does delayed treatment affect the prognosis?

# Review of literature

- Mycoplasma pneumoniae encephalitis associated with **basal ganglia necrosis**
- Rev Neurol (Paris). 2012 Jan;168(1):49-52.
- Combined Striatum, Brain Stem, and Optic Nerve Involvement due to Mycoplasma pneumoniae in an Ambulatory Child
- Case Rep Neurol. 2011 May;3(2):109-12.
- Mycoplasma pneumoniae-related **postencephalitic epilepsy** in children
- Epilepsia. 2011 Nov;52(11):1979-85.

# Review of literature

- **Levofloxacin** for the treatment of Mycoplasma pneumoniae-associated meningoencephalitis in childhood
- Int J Antimicrob Agents. 2011 May;37(5):472-5.
- Transient basal ganglia and thalamic involvement following Mycoplasma pneumoniae infection associated with **antiganglioside antibodies**
- J Child Neurol 2010 Aug;25(8):1029-33
- Immediate relief of Mycoplasma pneumoniae encephalitis symptoms after **intravenous immunoglobulin**
- Pediatr Neurol. 2009 Nov;41(5):375-7.

# Review of literature

- Bickerstaff brainstem encephalitis associated with *Mycoplasma pneumoniae* infection
- J. Child Neurol. 2006 Jun;21(6):533-4.
- Diagnosis, treatment, and prognosis of *Mycoplasma pneumoniae* childhood encephalitis: systematic review of 58 cases
- J Child Neurol 2004 Nov;19(11):865-71