Volume 20 Issue 56
Originally issued as C4



Global Journal of Medical Research: C
Microbiology and Pathology
Volume 20 Issue 4 Version 1.0 Year 2020
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

Acute Encephalitis Syndrome (AES): The Case Study of Muzaffarpur District of Bihar

By Mohammad Maaz Ahmad

Asfendiyarov Kazakh National Medical University

Abstract- Acute encephalitis syndrome (AES) is a serious public health problem in India specially Muzaffarpur district in Bihar. Bihar has recorded 188 cases of acute encephalitis syndrome, with 45 deaths since January. All casualties are children, the maximum in Muzaffarpur. Every year there is a repeat of the same, still no specific measures have been taken. The death of over 125 children in Muzaffarpur due to Acute Encephalitis Syndrome is very shocking.

These children come from low-income group families and are poorly nourished. It is time to remember Elizabeth Barrett Browning for her poem 'The Cry of the Children' dedicated to the condition of children in England who were made to clean chimneys and work in hazardous industries. As a result, many would catch serious diseases and eventually die an early death. The poem examines children's manual labor forced upon them by their exploiters. It was published in August 1843 in Blackwood's Magazine. However, since then England has moved far ahead. All the children go to school, get proper nutrition and health care required of them.

Keywords: Acute encephalitis syndrome (AES), chamki fever, Muzaffarpur district, child malnutrition, hypoglycaemic encephalopathy.

GJMR-C Classification: NLMC Code: WL 351



Strictly as per the compliance and regulations of:

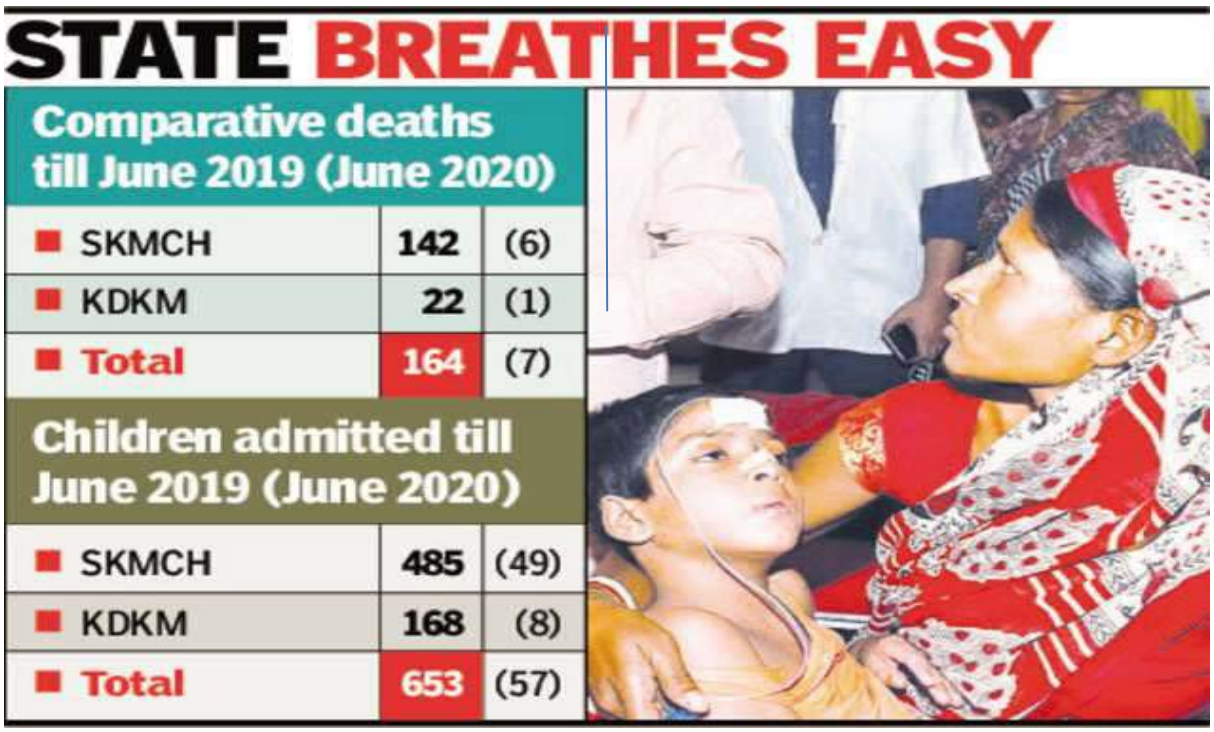


© 2020. Mohammad Maaz Ahmad. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Acute Encephalitis Syndrome (AES): The Case Study of Muzaffarpur District of Bihar

Mohammad Maaz Ahmad

Abstract- Acute encephalitis syndrome (AES) is a serious public health problem in India specially Muzaffarpur district in Bihar. Bihar has recorded 188 cases of acute encephalitis syndrome, with 45 deaths since January. All casualties are children, the maximum in Muzaffarpur. Every year there is a repeat of the same, still no specific measures have been taken. The death of over 125 children in Muzaffarpur due to Acute Encephalitis Syndrome is very shocking.



These children come from low-income group families and are poorly nourished. It is time to remember Elizabeth Barrett Browning for her poem 'The Cry of the Children' dedicated to the condition of children in England who were made to clean chimneys and work in hazardous industries. As a result, many would catch serious diseases and eventually die an early death. The poem examines children's manual labor forced upon them by their exploiters. It was published in August 1843 in Blackwood's Magazine. However, since then England has moved far ahead. All the children go to school, get proper nutrition and health care required of them. However, where we stand today. The child malnutrition is one of the biggest problems in Bihar. Child malnutrition is an important public health problem in this northern state. According to the National Family Health Survey 2015to –2016, 48.3% of children are stunted, 20.8% are wasted, and 43.9% are underweight. In muzzafarpur district of Bihar, the most accepted cause is hypoglycaemic encephalopathy (known locally as Chamki fever). The children (aged 3–7 years) were from low-income families, had not eaten the previous evening, and had eaten unripe lychee in the morning. Lychee contains hypoglycin and methylenecyclopropylglycine (a toxic metabolite to mammals), which block the alternative pathway for glucose synthesis (fatty acid oxidation), causing a dramatic drop in blood glucose levels and metabolic hypoglycaemia.

Keywords: Acute encephalitis syndrome (AES), chamki fever, Muzaffarpur district, child malnutrition, hypoglycaemic encephalopathy.

I. Introduction

According to the CDC, acute encephalitis fever is a clinical condition most widely caused by infection with Japanese encephalitis virus (JEV) or other infectious and noninfectious causes. Acute Encephalitis Syndrome (AES) Or Chamki fever is an inflammation of the brain outbreak of AES, which is called colloquially chmaki bukkhar (chamki fever), takes place in Muzaffarpur since 1996 almost every year. Malnutrition, climate, hygiene, inadequate health facilities, and lack of awareness are considered as contributing factors. This year, the main cause of death in most cases has been

Author: Undergraduate student, Asfendiyarov Kazakh National Medical University. e-mail: maazahmad.mb@gmail.com

© 2020 Global Journals

year, the main cause of death in most cases has been attributed to hypoglycaemia (low blood sugar level). Acute Encephalitis Syndrome (AES) is considered a very complex disease as it can be caused by various agents including bacteria, fungi, virus and many other agents. Acute Encephalitis Syndrome (AES) is considered a very complex disease as it can be caused by various agents including bacteria, fungi, virus and many other agents. It commonly affects children and young adults, resulting in considerable morbidity and mortality. Currently, the state of Bihar is seeing an outbreak of the deadly neurological disease, which has claimed lives of at least 156 children in Muzaffarpur and the adjoining districts. Cases of acute encephalitis syndrome have been observed mostly during April to June in Muzaffarpur, Bihar, particularly in children who are undernourished with a history of visiting litchi orchards, as per a report in *National Health Portal of India.* As a result of the outbreak, total 154 children died in the first three weeks of June 2019. A total of 440 cases of AES were admitted to hospital in these three weeks. At least 85 children of them died at the Sri Krishna Medical College and Hospital (SKMCH), the largest state-operated hospital in Bihar, while at least 18 children died at the Kejriwal Matrisadan, a trust-run hospital, in these weeks. Most of them were aged between 1 and 10 years.

In the subsequent months of July, August, and September; at SKMCH; 30, 18, and at least 12 cases were reported. Total 647 cases of AES including 161 deaths were reported between 1 June and 20 September 2019. The cause and manner of the disorder in a large number of AES cases still remain unidentified.





II. Sign and Symtoms

The signs and symptoms of AES include:

1. Clinical neurological manifestation that includes mental confusion, disorientation, delirium, or coma.
2. An acute onset of fever.
3. Headache.
4. Problems with speech or hearing
5. Stiff neck and back
6. Drowsiness
7. Hallucinations
8. Memory loss
9. Confusion
10. Vomiting

These are some symptoms of AES, when you see these symptoms immediately contact your doctor.

III. Treatment

The first treatment plan for this viral infection is hydration and increasing the glucose levels in the body. We can treat Acute Encephalitis Syndrome (AES) using antibiotics, antiviral medication, and supportive care. The treatment for hypoglycaemia includes supplying dextrose, a simple sugar similar to glucose, intravenously. "Nutrition and control of fever and seizures form the backbone of treating this disease. Some patients may also require breathing support and ICU care. In viral encephalitis, the antibiotics do not work and antivirals may be used."

© 2020 Global Journals

- The other treatment options are – bed rest, plenty of fluids, anti-inflammatory drugs to relieve the symptoms such as fever and headache. There is no cure for the disease. However, safe and effective vaccines are available to prevent encephalitis.

Vaccination: As per Govt. of India guidelines, 2 doses of JE vaccine have been approved to be included in UIP to be given one along with measles at the age of 9 months and the second with DPT booster at the age of 16-24 months w.e.f. April, 2013.

IV. Diagnosis

Laboratory-Confirmed case: A suspected case with any one of the following markers:

- Presence of IgM antibody in serum and/ or CSF to a specific virus including JE/Entero Virus or others
- Four fold difference in IgG antibody titre in paired sera
- Virus isolation from brain tissue
- Antigen detection by immunofluroscence
- Nucleic acid detection by PCR.

V. Prevention

- Personal preventive health measures such as the use of repellents, wearing long-sleeved clothes, practicing good hygiene - washing hands frequently and thoroughly with soap and water, especially after using the toilet, before and after meals - can help prevent viral encephalitis. Improve nutritional status of children at risk of JE/AES. Clothing reduces the risk of mosquito biting if the cloth is sufficiently thick or loosely fitting. Long sleeves and trousers with stockings may protect the arms and legs, the preferred sites for mosquito bites. School children should adhere to these practices whenever possible. Repellents are a common means of personal protection against mosquitoes and other biting insects. These are broadly classified into two categories, natural repellents and chemical repellents. Essential oils from plant extracts are the main natural repellent ingredients, i.e. citronella oil, lemongrass oil and neem oil.
- Govt. of India, as part of the National Programme for Prevention & Control of JE/AES, follows a multi-pronged strategy encompassing preventive (sanitation, safe drinking water, improvement in nutrition etc.), case management (capacity building of medical and para-medical staff, referral etc.) and rehabilitation (physical and social rehabilitation of disabled children), measures to address the problems relating to JE/AES. Doctors also suggest drinking plenty of water to stay hydrated, which supplies essential vitamins and flushes out any toxins from the body. The children return home in the evening and sometimes skip dinner. This leads to night-time hypoglycaemia, does not sleep without eating dinner to prevent from this, *Malnutrition is the obvious result as poor families do not take healthy diet. Had they been taking a healthy diet, children would not have died in such large number.*

VI. Conclusion

Today one of the big problem face by Bihar is *acute encephalitis syndrome* (AES). The main problem of this disease is *Poverty, malnutrition and lack of awareness*. The logic behind the link between litchi fruit consumption and AES is that when children eat large amounts of unripe litchi fruits (on an empty stomach), it may lead to hypoglycemic encephalopathy. It is a that causes prolonged or severe hypoglycemia or low blood sugar. Unripe litchi has the toxins hypoglycin and methylene cyclopropyl glycine (MCPG) that cause vomiting if ingested in large quantities so, please do not eat litchi in an empty stomach. Well-nourished children are not affected by the consumption of Litchi fruit. AES affects only undernourished children who consumed litchi fruit the previous day and went to bed on an empty stomach.

References Références Referencias

1. Tiwari JK et al. Aetiological study of viruses causing acute encephalitis syndrome in North West India. Indian Journal of Medical Microbiology. 2017; 35:529-34. Accessed from www.ijmm.org/article. nvbdcp.gov.in/WriteReadData/l892s/25510462041546326501.pdf
2. Chaudhuri A, Kennedy PG (October 2002). "Diagnosis and treatment of viral encephalitis". Postgraduate Medical Journal. 78 (924): 575–83. doi:10.1136/pmj.78.924.575. PMC 1742520. PMID 12415078. Archived from the original on 18 June 2019. Retrieved 18 June 2019.
3. "Nitish Kumar Visits Encephalitis Ground Zero, "Go Back" Cry Protesters". NDTV.com. Archived from the original on 18 June 2019. Retrieved 18 June 2019.
4. "Heat, lack of nutrition, awareness add to AES, Bihar kids toll over 100". The Indian Express. Indian Express Group. 18 June 2019. OCLC 70274541. Archivedfrom the original on 18 June 2019. Retrieved 18 June 2019.
5. "Muzaffarpur Deaths: CM Calls for Hospital Expansion, Toll at 109". The Quint. 18 June 2019. Archived from the original on 18 June 2019. Retrieved 18 June 2019.
6. "Acute Encephalitis Syndrome strikes north Bihar again, 2 children dead". www.downtoearth.org.in. Retrieved 4 January 2020.
7. "India - Acute Encephalitis Syndrome (AES) in Bihar (DG ECHO, media) (ECHO Daily Flash of 17 June

© 2020 Global Journals

2019) - India". ReliefWeb. Archived from the original on 18 June 2019. Retrieved 18 June 2019.

8. Chaudhuri A, Kennedy PG (October 2002). "Diagnosis and treatment of viral encephalitis". Postgraduate Medical Journal. 78 (924): 575–83. doi:10.1136/pmj.78.924.575. PMC 1742520. PMID 12415078. Archived from the original on 18 June 2019. Retrieved 18 June 2019.

© 2020 Global Journals