Acute Encephalitis Syndrome in Bihar - Litchi Connect, Malnutrition

Why in news?

- The outbreak of acute encephalitis syndrome (AES) in Bihar has led to close to 350 cases and around 100 deaths.
- While the causes of AES are still researched, the association with hypoglycaemia and litchi fruit has drawn attention.

What is AES?

- Acute Encephalitis Syndrome (AES) is a broad term involving several infections, and it affects young children.
- AES is not a disease; it is a syndrome.
- Under its umbrella comes the hypoglycaemia, Japanese Encephalitis, Herpes meningitis, Race syndrome, cerebral malaria, scrub typhus, etc.
- All of them are grouped under AES as they have a classical triad of sudden onset of fever, convulsions and loss of consciousness.
How prevalent is AES?

- The first AES case was recorded in 1995 in Muzaffarpur, Bihar.
- Eastern Uttar Pradesh too sees frequent outbreaks.
- There is no fixed pattern, but a year with high temperature and scanty rain usually witnesses high cases.
- Last year, there had been very few cases (in Muzaffarpur) because the general pattern of a few days of high temperature followed by rain showers was there.
- There were 143 deaths in 2013 and 355 in 2014, which dropped to 11 in 2017 and 7 in 2018.
- But this year, the heat has been prolonged with no spells of rain.

What causes AES?

- The syndrome can be caused by viruses, bacteria or fungi.
- In India, the most common cause is the virus that causes Japanese encephalitis (JE).
- Health Ministry estimates attribute 5-35% of AES cases to the JE virus.
- In Bihar, the Directorate of Health Services claimed that the JE virus had caused only two of the total 342 AES cases this year.
- The syndrome is also caused by infections such as scrub typhus, dengue, mumps, measles, and even Nipah or Zika virus.
- In the latest outbreak in Muzaffarpur, the cause is yet to be clinically identified in most of the children.
How is hypoglycaemia linked to AES?

- Hypoglycaemia (low blood sugar) is a commonly seen sign among AES patients, and the link has been the subject of research for long.
- The combination of AES with hypoglycaemia is unique to Muzaffarpur, Vietnam and Bangladesh.
- A 2014 study in Muzaffarpur suggested that hypoglycaemia was the trigger that led to diagnosis of encephalitis.
- So, Hypoglycaemia is not a symptom but a sign of AES.
- With 98% of AES patients in Bihar also suffering hypoglycaemia, doctors are attributing deaths to the latter.
- In Bihar, convulsions in children (which is AES) are found in combination with hypoglycaemia.

What is the litchi connect?

- Early researches have drawn parallel between cases in Bihar’s Muzaffarpur and in Vietnam’s Bac Giang province.
- In both places, there were litchi orchards in the neighbourhood.
- Methylene cyclopropyl glycine (MCPG), also known as hypoglycin A, is known to be a content of litchi fruit.
- Undernourished children who ate litchi during the day and went to bed on an empty stomach presented with serious illness early the next morning.
When litchi harvesting starts in May, several workers spend time in the fields.
There, it is common for children to feed on fallen litchis and sleep without food.
The toxin in litchi (MPCG) lowers blood sugar level during night, and these children are found unconscious in the morning.
Blood glucose falls sharply causing severe brain malfunction (encephalopathy), leading to seizures and coma, and death in many cases.
However, this remains a subject of debate, and the possible association needs to be documented.

What role does malnutrition play?

- If toxins from litchi were causing hypoglycaemia, then these cases should have remained consistent each year.
- Also, it should have affected children of all socio-economic strata.
- But in contrast, this year, all deaths have been recorded in the lower income groups.
- While well-nourished children eating litchi remain unaffected even if they go to bed on an empty stomach, the under-nourished ones were at grave risk.
- This is because under-nourished children lack sufficient glucose reserve in the form of glycogen.
- Also, the production of glucose from non-carbohydrate source is unsafe as it is unsustainable and thus stopped midway.
- This leads to low blood sugar level, giving way for further health complications.
- In all, even if litchi is a triggering factor, the real cause for adverse effects is said to be malnutrition.
- So, while the cause of AES is still being researched, hypoglycaemic AES may be caused by malnutrition, heat, lack of rain, and entero-virus.

What makes Bihar and UP so vulnerable?

- Malnutrition is high in both states, and malnourished children are prone to infection.
- As per Health Ministry data, UP and Bihar together account for over 35% of child deaths in the country.
- National Family Health Survey-4 data show that in 2015-16, 48% children aged less than 5 in Bihar were stunted, which is the highest in India.
- Also, heat, humidity, unhygienic conditions and malnutrition which are unique to these areas, together contribute to the rise in AES.
- Incidence is higher in litchi fields around which malnourished children live.
What are the measures taken?

- In 2014, 74% of sick children were saved through a simple intervention by infusing 10% dextrose within 4 hours of the onset of illness.
- [Infusing dextrose is necessary to completely stop the attempt by the body to produce glucose from non-carbohydrate source.]
- Also, the prevention strategy of ensuring that no child goes to bed without eating a meal was adopted from 2015.
- This ensured a sharp drop in the number of children falling sick.
- The Bihar government introduced free vaccines at all primary health centres. The current coverage is 70%.
- The central and state governments have also conducted awareness campaign asking people not to expose their children to sun.
- Also, ensuring a proper diet and increased fluid intake were insisted.
- Besides these, early hospital referral and standard treatment for convulsions, high fever and vomiting can save lives.

Source: Indian Express, The Hindu

Quick Fact

Litchi

- Lychee, (Litchi chinensis), also spelled litchi or lichi, is an evergreen tree of the soapberry family (Sapindaceae).
- Lychee is native to Southeast Asia.
- Lychee is of local importance throughout much of Southeast Asia and is grown commercially in China and India.
- They require very little pruning and no unusual attention, though they should have abundant moisture around the roots most of the time.
- The trees come into production at 3 to 5 years of age.

Dextrose
Dextrose is the name of a simple sugar that is made from corn and is chemically identical to glucose, or blood sugar. Dextrose is often used in baking products as a sweetener, and can be commonly found in items such as processed foods and corn syrup. For medical purposes, it is dissolved in solutions that are given intravenously, which can be combined with other drugs, or used to increase a person’s blood sugar. As dextrose is a “simple” sugar, the body can quickly use it for energy. Simple sugars can raise blood sugar levels very quickly, and they often lack nutritional value.