Acute Encephalitis Syndrome: Causes and Lapses

This editorial is based on the article "A failing state" which appeared in Indian Express on 19th June, 2019. The article talks about cause and lapses in dealing with Acute Encephalitis Syndrome and suggests a way forward.

More than 100 children in Bihar's Muzaffarpur district have died of acute encephalitis syndrome (AES), with the state's medical authorities initially blaming the deaths on the heat wave, hypoglycemia (sudden drop in blood sugar levels) and **lack of awareness.** Now, belatedly, they have acknowledged the two most critical causes for the deaths — **malnutrition** and the **inadequacy of primary health centres** (PHCs).

The AES cases in Muzaffarpur, Bihar and adjoining **litchi producing districts** have been observed **every year** in summers(mostly from April to June), particularly in children who are **undernourished** with a history of visiting litchi orchards.

What makes region so vulnerable to AES?

- It has been found that regions with high heat, humidity, unhygienic conditions and malnutrition, contribute to the rise in AES.
    - AES has struck Muzaffarpur with regularity in the summers since 1995.
- Incidence is higher in litchi fields around which malnourished children live.
    - Malnutrition is high Bihar, and malnourished children are prone to infection.
    - National Family Health Survey-4 data show that in 2015-16, 48% children aged less than five in Bihar were stunted — the highest in India.

Causes: Litchi is being most commonly blamed for the Acute Encephalitis Syndrome (AES) outbreak in Bihar. However, experts are of the view that fruit is only a triggering factor for malnourished children as the toxin methylenecyclopropyl glycine (MCPG) can lead to hypoglycaemia (fall in sugar levels) in undernourished children that in turn results into unconsciousness, coma and even death.

- **Malnutrition cause hypoglycaemia:** Malnourished children have depleted glycogen store in the liver. So if there is no glycogen reserve, the glycogen breaks into glucose and when the shortage further increases, even fats start burning and this process produces by products like ketones and amino acids which are neurotoxic and are responsible for inflammation of the brain tissue.
- **Heat waves:** when temperature and humidity were recorded over consecutive days at more 38 degrees Celsius and 50% respectively, the epidemic had been at its worse. In other parts of northern India there is fluctuation in temperature and humidity, and the nights are cooler, but in Muzaffarpur humidity increases at night making it worse than the day, especially for children.
- The main **causative agents** of acute encephalitis are the **viruses** like herpes viruses,

enteroviruses, West Nile, Japanese encephalitis, Eastern equine viruses, tick-borne viruses etc.
- Encephalitis is also caused due to **bacteria, fungi or parasites, chemicals, toxins and non-infectious agents.**

The death of children in Muzaffarpur due to AES, a preventable disease, shows the inaction of the state machinery, which has failed to take appropriate steps to prevent the seasonal outbreak of disease.

Lapses

- **Primary health centres:** the first point of healthcare for most AES patients are **ill-equipped** to deal with the disease.
    - Most of them do not have, **virology lab** or adequate number of **paediatric beds** and **glycometers** to monitor blood sugar levels.
- **Standard operating procedure :** to treat AES, have clearly not been implemented in Bihar, which mandates grassroots health workers, including auxiliary nurse-midwives, accredited social health activists, and anganwadi workers, to do daily **household-level surveys** to check children for JE/AES symptoms during the outbreak season from June to September.
- **Lack of preparedness:** of the state government in terms **special nutrition programme** for AES-prone areas (as undernourished children are more prone to the disease).
- **Inadequate Machinery:** Unavailability of **doctors, beds, intensive care units, medical professionals** to deal with an epidemic level situation which has resulted in more than 126 reported death of children in the state of Bihar particularly in Muzaffarpur and its adjoining areas.

Way Forward

- **Surveillance and Monitoring:** of AES vulnerable region (for identifying AES prone cases) is necessary for **early diagnosis and treatment** of disease.
    - AES can be contained if the child is administered dextrose within 4 hours of the onset of symptoms
    - **10% Dextrose infusion** within the golden hours can speed up the pace of recovery.
- **Awareness campaigns and symptom management:** as a **pre-emptive** measures must be put in place for dealing with the AES cases.
    - State Government should learn from the ***dastak*** initiative (for treating Japanese Encephalitis) taken by Uttar Pradesh, that has brought together health, rural development and primary education officials to promote clean drinking water, sanitation, vaccination and early referral to hospitals for treatment through symptom management.
- **Infrastructural and Institutional set up:** Primary Health Care centres must be equipped with all necessary equipments and amenities that are crucial for diagnosing and treating AES patients.
- **Medical Research and Studies:** conducted in AES prone regions that are crucial for establishing link between causes and symptoms of the disease must be taken into account for formulating **treatment strategy.**
- **Special Nutrition programmes:** and **mid day meals** must be implemented in the AES prone regions as it has been identified that toxins in litchi is just a triggering factor in the already malnutritioned children.

Drishti input

Examine the failures at various levels that has led to the deaths of more than 100 children due to Acute Encepha

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