

Misery of Mystery of Muzaffarpur

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The mystery disease that is provisionally referred to as Acute encephalitis syndrome is unfailingly back, casting its deadly spell over the young children of Muzaffarpur and neighbouring districts of the State of Bihar, Northern India. The mystery of etiology remains a misery for everyone from families of hundreds of victims who have already succumbed to this illness this year to the health officials and the government.

This deadly disease was first reported from Muzaffarpur in 1995 with subsequent large outbreaks almost every year, striking with a timely precision of April-July months, mostly affecting young 3-7 year-old children, and with a reported 40-60% mortality. Most children reported being apparently well in the evening with a sudden onset of altered consciousness in the early hours of next day, with or without seizures and hypoglycemia with absence of clues for an infection such as prodromal symptoms, fever, brain edema or inflammatory response in the cerebrospinal fluid. Though many experts agree upon the presentation being that of an encephalopathy rather like an encephalitis, opinions are divided on the etiological factors. It was believed by an investigator that the extreme heat and humidity of Muzaffarpur was causing heat stroke leading to encephalopathy as there was sudden drop in cases when the rains set in and the temperatures dropped [1]. This theory was not widely accepted due to the early morning onset of symptoms, inconsistent hyperpyrexia and the habit of drinking plenty of water by inhabitants.

A hypothesis linking this disease and lychee cultivation has been proposed by some experts as Muzaffarpur is a leading lychee producer [2]. Lychee seeds known to contain a lower analogue of hypoglycin A, namely methylenecyclo-propylglycine (MCPG), has been shown to cause hypoglycemia and derangement of fatty acid oxidation in liver cell mitochondria in experimental animals. This property was correlated with the clinical features in these children of early morning symptoms and signs of hypoglycemia suggestive of a metabolic encephalopathy rather than encephalitis. The

significant association of malnutrition in these children further supported this theory. Associations with this fruit spreading an unknown virus have been made in the 2004-09 Vietnam outbreak of encephalitis. Interestingly, the lychee speculation was also leached onto for several encephalitis deaths in June in Malda District, West Bengal prompting the minister of the state to advise avoidance of unripe lychee. However, experts from Muzaffarpur-based National Center for Litchi under the Indian Council of Agricultural Research (ICAR), have completely refuted the litchi theory claiming a zero link, based on toxicology tests.

Experts from National Center for Disease Control, New Delhi as well as International experts from Center for Disease Control, Atlanta have been roped in by the Indian Government to intensify the search for the etiological agent. As Japanese encephalitis (JE) is known to be a leading cause of viral encephalitis in Northern India, the Government has intensified the immunization efforts against JE as a knee jerk response to the panic. Interestingly, a systemic review of acute encephalitis reports from India in the past decade suggested non-JE etiology in both outbreak investigations and surveillance studies [4]. Therefore, though JE is a major public health problem due to its epidemic potential and high case fatality rate, apart from high vaccine coverage, active surveillance of all cases of encephalitis and research into non-JE causes is of utmost need. An acute heptomyoencephalopathy syndrome which had been plaguing Saharanpur and several neighbouring districts in Western Uttar Pradesh (UP) and which had been attributed to a viral etiology is now confirmed to be due to toxicity from a common weed *Cassia Occidentalis* [5].

I would reiterate the importance of case reporting and sharing experience with peers. Information on clustering of cases has helped investigate illnesses, and planning activities to contain them in the past. All pediatricians are requested to report unusual outbreak cases and keep an accurate clinical and laboratory records for data analysis when needed by the investigators. Interventions to prevent and treat can be targeted satisfactorily only if the

cause is ascertained. The 'IAP Idsurv' has decided to collect data on Acute encephalitis syndrome where physicians can easily log into or use the mobile application on the smart phone and report such cases. Meanwhile, the preventive tools of good nutrition, sanitation and routine vaccination can be strengthened further as the main defence against this invisible killer.

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